Kingdom of Saudi Arabia
Ministry of National Guard - Health Affairs
Infection Prevention & Control Program

The GCC Infection Prevention *and* Control Manual

3rd Edition

GCC CENTRE FOR INFECTION CONTROL
MINISTRY OF NATIONAL GUARD - HEALTH AFFAIRS

EXECUTIVE BOARD OF THE MINISTERS'
COUNCIL FOR COOPERATION COUNCIL STATES

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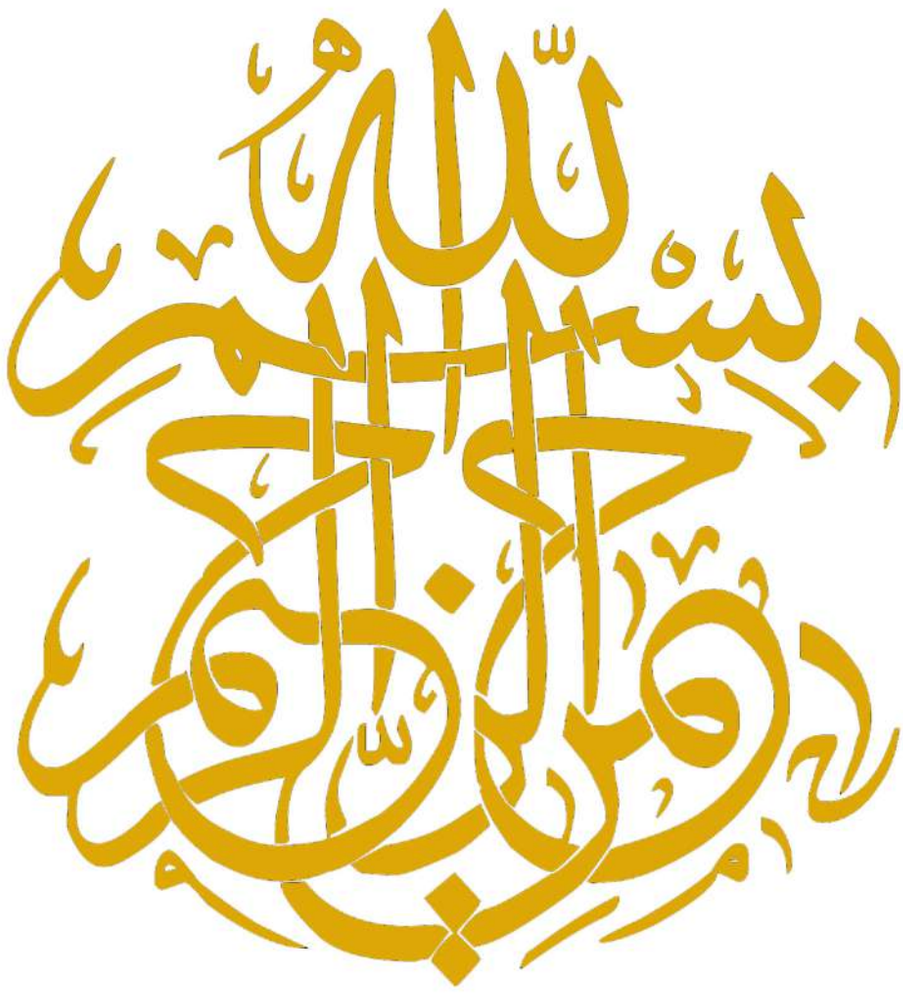

In the name of God,
Most Gracious, Most Merciful

المركز الخليجي لمكافحة العدوى - مدينة الملك عبدالعزيز الطبية - الرياض
GCC - CENTRE FOR INFECTION CONTROL - King Abdulaziz Medical City - Riyadh

MESSAGE

from the CHIEF EXECUTIVE OFFICER

It is with utmost enthusiasm that I would like to congratulate all members of the GCC Centre for Infection Control (CIC) on the release of the third (3rd) edition of the Infection Prevention & Control Manual. This has been a successful journey for the GCC-CIC Team as they have established a truly helpful, effective, and comprehensive manual touching the core of patient safety. The Ministry of National Guard Health Affairs' King Abdulaziz Medical City in Riyadh continues to host and support the GCC Centre for Infection Control and will provide in its full capacity the assistance needed for the member countries to achieve their goals.

This updated third edition of the Infection Prevention & Control Manual is an invaluable publication that provides a huge resource for all infection control preventionists and healthcare facilities to significantly improve the quality, well-being, and patient safety of all.

We are proud of such an accomplishment borne out of the collaborative efforts among GCC States. I would like to extend my gratitude to each and everyone on the GCC-CIC Advisory Board and their staff for their continuing efforts and contributions that have resulted in the commendable success of the GCC Centre for Infection Control.

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FOREWORD

In all humility, we acknowledge Your aid, O Allah. Without your guidance, love and cause, this humble contribution would never become a reality.

It is with immense pleasure that we present the third (3rd) edition of the GHC-Centre for Infection Control (CIC) Infection Prevention & Control Manual. This 3rd Edition had been duly reviewed and adopted by the recent Advisory Board of the Gulf Health Council (Centre for Infection Control GHC-CIC).

Designed to give up-to-date guidelines for the GCC States, this manual provides evidence-based infection control practices for all healthcare settings. The consistent application of proper infection control principles and practices in all healthcare activities is necessary to achieve the goals of optimum patient safety and ensure best outcomes.

These policies and procedures when incorporated into the fabric of each healthcare facility functions should yield a healthy and safe environment for patients, staff, and visitors.

The Gulf Health Council wishes to encourage its members to continue to strive for excellence in the prevention of healthcare associated infections and improved safety for all who interface with its health-care facilities through partnership activities.

Sulaiman Al Dakheel
General Manager
Gulf Health Council
For Cooperation Council States

PREFACE

The necessity for robust hospital and community based infection control programs around the world has become obvious for the subsistence of modern medicine. Healthcare facilities serve as a platform for the emergence of bacterial resistance and a cradle for infection transmission. This comes as no surprise, especially with overcrowded healthcare facilities and the difficulty for healthcare systems to keep up with the large demand for patient care.

Antimicrobial resistance (AMR) has been in the limelight for some time now. Stronger, more resistant superbugs have emerged, such as Methicillin-resistant Staphylococcus aureus (MRSA) and Vancomycin-resistant Enterococcus (VRE). Variations in mechanisms of resistance, sprouting from the diversity and complexity of resistance genes, unclear and varied transmission patterns, and the inability to identify proper cohorting policies, is like nothing we have ever seen before.

In 2014, for the first time in two decades, Ebola has caused a global threat and led to a major alert, instigating the public health community to react. The Global Health Security Agenda (GHSA) was established and the enforcement of International Health Regulations (IHR) had never been stronger. In 2012, a new corona virus emerged, the Middle East Respiratory Syndrome coronavirus (MERS CoV), here on our own Arabian Peninsula, and mobilized a vigorous movement to enhance infection control practices, not only in the Gulf Health Council (GHC) countries but around the world. Establishing and sustaining infection control programs has made it as one of the top priorities for healthcare systems worldwide.

The GHC countries have acknowledged the importance of implementing and auditing infection control practices as a necessity to ensure Global Biosecurity. We here introduce the third edition of the GCC Infection Control Manual, where the policies were revised and updated, and new policies introduced to address the new challenges we face.

We hope that more and more healthcare settings will adopt the standard infection control practices with patient safety as a top priority. Further revisions and policy addition will continue to unfold as we go along together on this journey for patient care.

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Gulf Cooperation Council-Center for Infection Control (GCC-CIC) Mission Statement

CORE VALUE

Do No Harm

VISION

Healthcare systems (in the Gulf States and beyond) without infections, supported by robust infection prevention and control programs, based on evidence and international best practices, reflecting the global biosecurity agenda mandate, and moving the antimicrobial resistance (AMR) agenda forward through effective regional liaising and networking.

MISSION

To contribute to the regional and international leadership in mitigating healthcare associated infections and potential infectious threats of devastating economic impact and human loss. Our approach is scientific, evidence based when available, and consultative; as we provide new findings, concepts and practices. The aspired outcomes are not limited to enhancing patient safety but to establish the well-being of the population as a whole; including healthcare providers, visitors and sitters, and in the larger picture to maintain **Global Biosecurity.**

GOALS AND OBJECTIVES

Short Term:

1. Head and lead the regional antimicrobial resistance (AMR) agenda.
2. Prevent and mitigate the risk of outbreaks in the region and its global transmission, specifically related to MERS-CoV.
3. Minimize healthcare associated infections in patients, visitors and staff members at all levels of healthcare facilities.
4. Align and unify the surveillance practices to establish and strengthen the benchmark process for healthcare associated infections in the region.
5. Enhance the networking process among the experts nationally and regionally and connect with global entities and experts in the field.
6. Provide a global model(s) from the region in hospital based infection control best practices.
7. Share challenges and successes in mitigating healthcare associated infections.

Long Term:

1. Sustain infection prevention and control as an autonomous entity and a cornerstone for hospital and community healthcare services at the highest standards. **(An imminent and continuous agenda item).**
2. Support a research culture that will enhance collaboration in addressing pressing research questions relevant to the field in the region; with a focus on collaboration with academic and research centers.
3. Support "Centers of Excellence in Infection Control" within the region with a focus on either:
    a. Excellence in infection control practices;
    b. Infection control training and development;
    c. Infection control research; or a combination of any.
4. Develop a granting process to be awarded for research or training development relevant to the field of Infection Prevention and Control.

ADVISORY BOARD MEMBERS

Introduction: User Guide

As a reference guide for easy use of this revised manual, we would like to introduce you to the following modifications made on the new policy titles, as well as, additional new policies updating the previous editions, particularly:

SECTION	PAGE	OLD TITLE	NEW TITLE
ICM-V-01	132	Tuberculin Skin Testing: Administration and Interpretation	Diagnosing Latent Tuberculosis Infection (LTBI): Tuberculin Skin Testing or Interferon-Gamma Release Assays (IGRAs)
ICM-V-05	145	Tracing Contacts of Infectious Tuberculosis other than Healthcare Workers	Tracing Contacts of Infectious Mycobacterium Tuberculosis for Non-Healthcare Workers
ICM-VIII-05	266	Ophthalmology & Clinics	Ophthalmology Services & Clinics
ICM-IX-02	333	Waste Management	Management of Infectious Waste
ICM-X-09	381	Infection Prevention and Control Procedures for Hospital and Healthcare Facility Construction and Renovation	Construction and Renovation Measures in the Healthcare Facility

The following new policies were added in this revised manual:

SECTION	PAGE	NEW POLICY TITLE
ICM-I-06	10	Infection Prevention and Control Core Components
ICM-II-07	34	Annual Infection Control Competency Training for all Healthcare Workers "Right care Right now"
ICM-III-12	79	Management of Influx of Airborne Infectious Diseases
ICM-IV-11	121	*Clostridium Difficile* Management
ICM-IV-12	126	*Carbapenem-Resistant Enterobacteriaceae (CRE)* Management and Patient Transfer
ICM- IV-13	129	Management of Patients in Isolation in the Operating Room
ICM-VII-04	208	Management of Sharps Injury and Exposure to Bloodborne Pathogens
ICM-VII -08	237	Antimicrobial Stewardship Program
ICM-VIII -12	302	Ambulatory Care
ICM-VIII-13	307	Emergency Medical Services/Ambulance Services
ICM-VIII-14	312	Home Care
ICM-VIII-15	314	Interventional Radiology and Radiation Oncology
ICM-VIII-16	318	Laboratory Services
ICM-X-10	392	Multidisciplinary Environmental Rounds (MDER)
ICM-X-11	395	Prevention of Legionella in the Healthcare Setting

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Section 1: POLICY

TITLE/DESCRIPTION:	INDEX NUMBER
JOINT COMMISSION ON INTERNATIONAL ACCREDITATION (JCIA) STANDARDS FOR HOSPITALS - PREVENTION AND CONTROL OF INFECTIONS (PCI)	**ICM - I - 01**

EFFECTIVE DATE:	APPLIES TO:	ISSUING AUTHORITY:
01/01/2009 **01/01/2013** **01/01/2018**	**All GCC Countries**	**GULF COOPERATION COUNCIL – CENTRE FOR INFECTION CONTROL (GCC-CIC)**

STATEMENT

Surveillance, prevention and control of infection cover a broad range of processes and activities carried out by the organization's Infection Prevention and Control Department to identify and reduce risks of acquiring and transmitting infections among patients, staff, healthcare professionals, contract workers, volunteers, students, and visitors.

This function also involves links to external organization support systems to reduce the risk of infection from the environment, including food and water sources.
This function coordinates all activities related to the control and prevention of healthcare-associated infections (HAIs), as well as infections brought into the hospital.

REFERENCE

Joint Commission International Accreditation Standards for Hospitals, 5th edition, April 2014.

STANDARDS

The following is a list of the Prevention and Control of Infections (PCI) standards for this function as outlined by the Joint Commission International Accreditation (JCIA) standards for hospitals:

PCI.1 One or more individuals oversee all infection prevention and control activities. This individual(s) is qualified in infection control practices through education, training, experience or certification.

PCI.2 There is a mechanism to coordinate all infection control activities that involve physicians, nurses, and others as appropriate to the size and complexity of the hospital.

PCI.3 The infection control program is based on current scientific knowledge and accepted practice guidelines, as well as, applicable laws and regulations such as the use of clinical practice guidelines, antimicrobial stewardship programs, reduction of community and healthcare-associated infections (HAIs) programs, and initiatives to decrease the use of unnecessary invasive devices to reduce rates of infections.

PCI.4 Hospital leadership provides resources to support the infection control program.

PCI.5 The hospital designs and implements comprehensive programs to reduce the risk of HAIs in patients and healthcare workers.

PCI.5.1 All patient, staff, and visitor areas in the organization are included in the infection control program.

PCI.6 The hospital uses a risk-based approach in establishing the focus of the infection prevention and reduction program.

PCI.6.1 The hospital tracks infection risks, infection rates, and trends in HAIs to reduce the risk of those infections.

Each hospital must identify those epidemiologically important infections, infection sites and associated devices, procedures and practices that will provide the focus of efforts to prevent and to reduce the risks and incidences of HAIs. A risk-based approach uses surveillance as an important component for gathering data that will guide the risk assessment.

Hospitals collect and evaluate data on the following relevant infections and sites:

a. Respiratory tract - such as the procedures and medical technology associated with intubation, mechanical ventilator support, tracheostomy, and so forth.
b. Urinary tract - such as the invasive procedures and medical technology associated with indwelling catheters, urinary drainage systems, their care, etc.
c. Intravascular invasive devices - such as the insertion and care of central venous catheters, peripheral venous lines, and so forth.
d. Surgical sites - such as the care and type of dressing and associated aseptic procedures.
e. Epidemiologically significant diseases and organisms - multidrug-resistant organisms and highly virulent infections.
f. Emerging or reemerging infections within the community,

PCI.7 The hospital identifies the procedures and processes associated with the risk of infection and implements strategies to reduce infection risk.

PCI.7.1 The hospital reduces the risk of infections by ensuring adequate equipment cleaning and sterilization and the proper management of laundry and linen.

PCI.7.1.1 The hospital identifies and implements a process for managing expired supplies and the reuse of single-use devices when laws and regulations permit.

PCI.7.2 The hospital reduces the risk of infections through proper disposal of waste.
PCI.7.3 The hospital implements practices for safe handling and disposal of sharps and needles.
PCI.7.4 The hospital reduces the risk of infections associated with the food service operations.
PCI.7.5 The hospital reduces the risk of infections associated with mechanical and engineering controls during demolition, construction, and renovation.

PCI.8 The hospital provides barrier precautions and isolation procedures that protect patients, visitors, and staff from communicable diseases and protects immunosuppressed patients from acquiring infections to which they are uniquely prone.

PCI.8.1 The hospital develops and implements a process to manage sudden influx of patients with airborne infections and when negative-pressure rooms are not available. Refer to policy **ICM-III-12** Management of Influx of Airborne Infectious Disease.

PCI.9 Gloves, masks, eye protection, other protective equipment, soap, and disinfectants are available and used correctly when required.

PCI.10 The infection control process is integrated with the hospital's overall program for quality improve ment and patient safety; using measures that are epidemiologically necessary to the hospital.

PCI.11 The hospital provides education and training in infection control practices to staff, physicians, patients, families and other caregivers when indicated by their involvement in healthcare.

TITLE/DESCRIPTION:	INDEX NUMBER
INFECTION CONTROL COMMITTEE RESPONSIBILITIES	**ICM - I - 02**

EFFECTIVE DATE:	APPLIES TO:	ISSUING AUTHORITY:
01/01/2009 **01/01/2013** **01/01/2018**	**All GCC Countries**	**GULF COOPERATION COUNCIL – CENTRE FOR INFECTION CONTROL (GCC-CIC)**

STATEMENT

Responsibility for the prevention and control of infections within the healthcare facility and for the evaluation of the infectious potential of the related environment is vested in a multidisciplinary Infection Control Committee (ICC) reporting to the highest patient safety body.

The ICC coordinates an objective and systematic review process to evaluate the quality and appropriateness of patient care as it relates to infection prevention and control.

PURPOSE

To coordinate, evaluate, and support the activities of the Infection Prevention and Control Program and to communicate with all departments of the healthcare facility to ensure the engagement and full support to the program by all stakeholders. The ICC advocates for the program shall ensure all resources needed are available.

RESPONSIBILITIES

1. Pursue opportunities to improve patient care and clinical performance.
2. Recommend practices to resolve identified infection control problems in care and performance.
3. Recommend corrective actions to governing bodies when necessary.
4. Establishes, reviews and approves the hospital infection prevention and control (IP&C) policies and procedures at least every three years
5. Approve the type and scope of surveillance activities including stratified infection risk, focused infection studies, and prevalence and incidence studies.
6. Determine the amount of time required to conduct infection surveillance, prevention and control activities based on several parameters:
   a. Needs of the patient population.
   b. Risk factors of the patient population.
   c. Complexity of the services.
   d. Educational needs of the personnel.
   e. Resource and support services available.
7. Establishes and approves criteria used to determine the appropriate definitions and criteria to recognize the existence of health care-associated infection (HAIs).
8. Establish a review process that is directed to detect epidemics, clusters of infections and incidences of infections above the usual baseline levels. Initiates and conducts an epidemiological investigations if required.
9. Reviews, approves and make revisions if necessary of the yearly infection control plan submitted by the infection prevention and control (IP&C) team based on the infection control risk assessment (ICRA).
10. Reviews at least annually, the data reports and analysis of the healthcare-associated surveillance activities during the past year submitted by the IPC team and the effectiveness of prevention and control intervention strategies in reducing the infection risks, priorities or problems . Recommends appropriate actions if needed.
11. Evaluates and revises on a continuous basis the procedures and mechanisms developed by the (IP&C) team to serve established standards and goals.
12. Brings to the attention of the (IP&C) any infection control related issues arising in different departments of the hospital and suggests solutions.
13. Review and approve the cleaning procedures, agents, and schedules that are used throughout the hospital. This review is to be done biannually or more frequently if necessary.
14. Each member of the committee acts as an advocate of infection control , promoting infection control principles and ensuring implementation

INFECTION CONTROL COMMITTEE RESPONSIBILITIES	ICM - I - 02

STRUCTURE

The committee consists of multidisciplinary team members.
Membership includes representation from the Medical, Administration, Nursing, Microbiology, Quality Improvement, and Infection Control Departments (the last should include those individuals directly responsible for the management of the infection surveillance and the prevention and control program).
Representation from ancillary departments is available for consultative purposes as discussion items dictate.

Membership is selected from:

Members:
- Representative from Consultant, Adult ID, Department of Medicine
- Representative from Employee Health Clinic, Department of Family Medicine
- Representative from Deputy Chairman, Department of Surgery
- Representative from Department of Obstetrics/Gynecology
- Representative from Nephrology department of Medicine
- Representative from Ambulatory care, Nursing Services
- Representative from Home Health care, Nursing Services
- Representative from Nursing Services
- Representative from Support Services, Operations
- Representative from Microbiology, Department of Pathology and Laboratory
- Representative from Intensive Care Unit
- Representative from Central Sterile Supply Department (CSSD)
- Representative from Infection Prevention and Control
  - Antimicrobial Stewardship Program
  - Infection Control Coordinator(s),
  - Environmental Health and Occupational Health & Safety
  - Community and Public Health

- Representative from Quality Management
- Representative from Department of Emergency Medicine
- Representative from the Pharmacy department
- Representative from utilities and Maintenance (U&M) section
- Representative from Housekeeping section

From other department upon request such as:
Laundry, Clinical Nutrition and Respiratory Services are invited on an ex officio basis when matters pertaining to their services are to be discussed.

PROCEDURE

A. Meeting

The committee meets quarterly or as scheduled in each hospital and healthcare facility. Special meetings will be called by the Chair when circumstances dictate.

NB: All matters to be addressed by the committee should be brought to the attention of the chairperson, Infection Preventionist (IP), and/or the appropriate committee members.

B. Documentation

Discussions, conclusions, recommendations, assignments, actions, and approvals are documented in the minutes of the Committee meetings.
Minutes are distributed to each Committee member and are forwarded to other appropriate staff.

TITLE/DESCRIPTION:	INDEX NUMBER
STATEMENT OF AUTHORITY	**ICM - I - 03**

EFFECTIVE DATE:	APPLIES TO:	ISSUING AUTHORITY:
01/01/2009 **01/01/2013** **01/01/2018**	**All GCC Countries**	**GULF COOPERATION COUNCIL – CENTRE FOR INFECTION CONTROL (GCC-CIC)**

STATEMENT

The Infection Control Committee (ICC), through its chairperson and members, is vested with the responsibility and authority to institute any appropriate prevention and control measure when it is reasonable to presume that an infectious risk to any patient or personnel exists.

The Director of the Infection Prevention and Control Program/Chair of the ICC of the healthcare facility has the responsibility and authority to establish policies and procedures for the instruction of its personnel and for the overall supervision of infection prevention and control activities in its facilities.

PROCEDURE

This statement of authority is reviewed and authenticated by the Administration of the institution at least every three years or sooner, as per policy.

APPROVAL – TITLES	DATE
Executive Director (Head), Infection Prevention and Control	
Executive Director (Head), Medical Services	
Chief Executive Officer	

TITLE/DESCRIPTION:	INDEX NUMBER
INFECTION PREVENTION AND CONTROL PROGRAM	**ICM - I - 04**

EFFECTIVE DATE:	APPLIES TO:	ISSUING AUTHORITY:
01/01/2009 **01/01/2013** **01/01/2018**	**All GCC Countries**	**GULF COOPERATION COUNCIL – CENTRE FOR INFECTION CONTROL (GCC-CIC)**

STATEMENT

The organization supports a comprehensive infection prevention and control program within the standards of the JCIA, the recommendations of the World Health Organization (WHO) and Centers for Disease Control and Prevention (CDC), and the guidelines of the respective country's Ministry of Health (MOH).

PURPOSE

To eliminate the risk of HAIs and work related infections within the healthcare facility through the implementation of established guidelines and policies.

PROCEDURE

The infection control staff must have the knowledge and expertise in microbiology, epidemiology, sterilization and disinfection, infectious diseases, antiseptic usage, clinical practices and statistics. The Infection Preventionist functions in pivotal roles as educator, investigator, researcher, patient advocate, agent of change, consultant, statistician, sanitarian, role model, coordinator, and diplomat.

The program is executed by the Infection Prevention & Control (IPC) Department supported by the Infection Control Committee (ICC) through the following services:

- Surveillance of healthcare-associated infections (HAIs)
- Education
- Consultation
- Outbreak and exposure investigation
- Environmental health
- Occupational health and safety (Employee Health)
- Act as liaison with MOH

The program adapts the system of Standard Precautions, which emphasizes the need to consider all body substances as potentially infectious regardless of the patient's diagnosis.

In adapting this approach to infection prevention and control, the ICC has carefully considered each policy and procedure in order to provide the following:

- Protection
- Feasibility
- Consistency
- Efficiency
- Cost Effectiveness

An ongoing program of theory and practice for continuing education is a major requirement and mandate. Therefore, education, reminders, and instructions on infection prevention and control practices and the principles of Standard Precautions are available for all categories of staff, patients, families and sitters through the IPC Department.

TITLE/DESCRIPTION:	INDEX NUMBER
REPORTING COMMUNICABLE DISEASES TO THE MINISTRY OF HEALTH	**ICM - I - 05**

EFFECTIVE DATE:	APPLIES TO:	ISSUING AUTHORITY:
01/01/2009 **01/01/2013** **01/01/2018**	**All GCC Countries**	**GULF COOPERATION COUNCIL – CENTRE FOR INFECTION CONTROL (GCC-CIC)**

DEFINITION

Each National Health Regulatory Authority (NHRA), in compliance with the WHO, mandates and identifies the list of communicable diseases to be reported by healthcare facilities. This is necessary for proper implementation of epidemiology protocols, monitoring processes, and education. It is also important to establish the national and regional risk assessments needed for preparedness protocols.

FORMS

Reporting forms and documents as stipulated by each Gulf State authority.

COMMENTS

Compliance with this policy and procedure must be within the scope and responsibility of the designated persons.

PROCEDURE

To be outlined and carried out as per institution and NHRA guidelines.

TITLE/DESCRIPTION:	INDEX NUMBER
INFECTION PREVENTION AND CONTROL CORE COMPONENTS	**ICM - I - 06**

EFFECTIVE DATE:	APPLIES TO:	ISSUING AUTHORITY:
01/01/2018	**All GCC Countries**	**GULF COOPERATION COUNCIL – CENTRE FOR INFECTION CONTROL (GCC-CIC)**

DEFINITION

To ensure all healthcare facilities are equipped with infection prevention and control strategies targeting healthcare-associated infections (HAIs) and combating antimicrobial resistance (AMR).

REFERENCE

1. World Health Organization (2016). Guidelines on Core Components of Infection Prevention and Control Programmes at the National and Acute Health Care Facility Level. Geneva, Switzerland.
2. Core Components of Infection Prevention and Control, 2016 – Technical. http://www.gdipc.org/professionals.html.

COMMENTS

The World Health Organization (WHO) Guidelines on Core Components of Infection Prevention and Control (IP&C) Programmes is an extensive document that may be utilized at the local and national levels. However, other countries may use other models for infection prevention and control, such as, their respective Ministry of Health infection control core components.

POLICY

The objective of these guidelines is to support IP&C improvements at both local and national levels by utilizing the WHO guidelines, as applicable, in both the public and private sectors. Included in these guidelines are tools for self-assessment and continuing improvement.

1. The core components include:

   a. IP&C program
   b. IP&C guidelines
   c. IP&C education and training
   d. Health care-associated infection Surveillance
   e. Multimodal strategies
   f. Monitoring/audit of IP&C practices and feedback
   g. Workload staffing and bed occupancy (acute health care facility only)
   h. Built environment, materials and equipment for IP&C at the facility level (acute healthcare facility only).

2. Assessment for compliance with the WHO self-assessment tool needs to be conducted by all healthcare facilities on a regular basis and implement action plans for any deficiencies that are identified for improvement.

Section 2: STANDARD INFECTION CONTROL POLICIES

TITLE/DESCRIPTION:	INDEX NUMBER
REPORTING INFECTIONS AND INFECTION CONCERNS	**ICM - II- 01**

EFFECTIVE DATE:	APPLIES TO:	ISSUING AUTHORITY:
01/01/2009 **01/01/2013** **01/01/2018**	**All GCC Countries**	**GULF COOPERATION COUNCIL – CENTRE FOR INFECTION CONTROL (GCC-CIC)**

DEFINITION

To provide guidelines for raising significant infection concerns to the Infection Prevention and Control (IP&C) Department.

COMMENTS

All employees must be able to participate in the monitoring of infections and be able to report their concerns.

All employees having knowledge of an infectious process are required to report that infection to the IP&C Department. Any environmental conditions (i.e., infection control risks) that may contribute to an infection must also be reported to the IP&C Department.

PROCEDURE

Notify the IP&C Department through the assigned staff responsible for your area of any patient admitted with an infection or a communicable disease and/or who develops an infection after admission.

Notify the IP&C Department through the assigned Infection Preventionist (IP) or Environmental Health Specialist, if available, in your hospital of any environmental condition(s) that could contribute to an infection.

Call the IP&C Department or page the assigned IP to report the following information:

A. Patient condition(s)
   - Medical record number
   - Patient name
   - Patient location
   - Type of infection

B. Environmental condition(s)
   - Location
   - Type of infection control concern
   - Person(s) at risk

C. Follow-up / Feedback
   IP&C will endeavor to investigate, follow up, document, and give feedback as necessary.

TITLE/DESCRIPTION:	INDEX NUMBER
REQUESTING INFECTION CONTROL REVIEW AND CONSULTATION	**ICM - II - 02**

EFFECTIVE DATE:	APPLIES TO:	ISSUING AUTHORITY:
01/01/2009 **01/01/2013** **01/01/2018**	**All GCC Countries**	**GULF COOPERATION COUNCIL – CENTRE FOR INFECTION CONTROL (GCC-CIC)**

DEFINITION

Infection Control activity works in tandem with all healthcare disciplines to provide quality patient care through education and practical application of the principles of microbiology, epidemiology, and infection prevention and control.

COMMENTS

Infection control is **Everyone's Responsibility,** but the scope and magnitude encompassed by Infection Control requires a "key person" to coordinate the activities of the program. The Infection Preventionist (IP) is that "key person."

In some hospitals, Environmental Health is a complementary service to the IP&C Department depending on its size. The Environmental Health personnel assigned to the IP&C Department would be the appropriate person to report any environmental-health related infection concerns.

PROCEDURE

Any staff, patient, and/or visitors of the healthcare facility may request infection control review and consultation as they relate to infection prevention and control activities, such as:

- Surveillance
- Investigation
- Research
- Statistics
- Education

TITLE/DESCRIPTION:	INDEX NUMBER
STANDARD PRECAUTIONS	**ICM - II - 03**

EFFECTIVE DATE:	APPLIES TO:	ISSUING AUTHORITY:
01/01/2009 01/01/2013 01/01/2018	**All GCC Countries**	**GULF COOPERATION COUNCIL – CENTRE FOR INFECTION CONTROL (GCC-CIC)**

DEFINITION

To provide guidelines on the basic infection control practices to prevent the transmission of infectious agents within the healthcare facility between patients, healthcare workers, sitters and visitors.

REFERENCES

1. Association for Professionals in Infection Control (APIC) and Epidemiology, Inc. (2014). Chapter 29: Isolation Precautions. In APIC Text of infection control and epidemiology (4th ed.)
2. Center for Disease Control and Prevention (CDC). Guidelines for environmental infection control in healthcare facilities. Recommendations of CDC and the Healthcare Infection Control Practices Advisory Committee (HICPAC). MMWR 2003;52(RR10);1-42
3. CDC. Cluster of severe acute respiratory syndrome (SARS) among protected healthcare workers -Toronto, Canada, April 2003. Morbidity Mortality Weekly Report (MMWR) 2003;52(19):433-6.
4. HICPAC/CDC Guidelines for isolation precautions: preventing transmission of infectious agents in healthcare setting, 2007.
5. United States Department of Labor. Occupational Safety and Health Administration: Standard Number: 1010-141:1910:141(a)(2):1910:141(g)(2). https://www.osha.gov/SLTC/etools/hospital/hazards/univprec/univ.html

COMMENTS

- Delivery of healthcare in all settings—e.g., acute care hospitals, long-term care facilities, ambulatory care centers, and home care—is associated with a risk for transmission of infectious agents, via other patients and healthcare workers, or in association with medical devices.
- Standard Precautions is used to break the chain of infection transmission and is used in conjunction with Isolation Precautions.
- A method of infection prevention and control in which all human blood and body substances (e.g., blood, body fluids, secretions, excretions, non-intact skin and mucous membranes) are considered potentially infectious.
- The basic requirement for infection prevention and control strategies such as strict hand hygiene will reduce spread of microorganisms.
- Adherence to aseptic technique and appropriate use of Personal Protective Equipment (PPE) is highly recommended.
- These guidelines are designed to be used for the care of all patients (regardless of their diagnosis or presumed infection status), by all healthcare personnel, all sitters, and all visitors.

PROCEDURE

A. Hand Hygiene (HH)

Methods of HH involve either antibacterial soap and water or alcohol-based waterless hand rub. HH is used to remove or kill microorganisms that colonize the hands.

The WHO's 5 moments for HH:

1. Before patient contact
2. Before clean/aseptic tasks
3. After body fluid exposure risk
4. After patient contact
5. After contact with patient surroundings/environment

Refer to **ICM–II-04** Hand Hygiene

B. Personal Protective Equipment (PPE)

PPE is used to create a barrier between HCWs and patients, body substances, or surfaces. Use appropriate PPE (gloves/gowns/plastic aprons/eye protection) to prevent skin and mucous membrane exposure. Use one or more of these items based on the degree and risk of exposure. However, most routine patient care activities at the bedside do not require the use of PPE.

1. Gloves
   a. Wear gloves whenever in contact with blood, other body substances or contaminated items and surfaces and when in an isolation room.
   b. Wear and change gloves between tasks/procedures on the same patient.
   c. Remove gloves promptly after use and before touching clean items and environmental surfaces.
   d. Perform hand hygiene immediately after removing gloves.
   e. Use non-sterile gloves for examinations and other clean procedures, and use sterile gloves for sterile procedures. Refer to **ICM-II-05** Aseptic Technique.
   f. Gloves are not to be worn after leaving the patient room or procedure area.

2. Gowns/plastic aprons
   a. Wear a gown/plastic apron to protect skin and clothing during procedures that may generate splashes or aerosolization of body substances and cause the soiling of clothes.
   b. Securely fasten the tabs/ties to keep the gown/plastic apron in place while performing patient care activities in the patient room/procedure area.
   c. Remove the gown/plastic apron by untying the tabs/ties and folding it away from you in an inside-out manner. Roll it into a ball and discard.
   d. Change the gown/plastic apron for each patient and/or procedure.
   e. Gloves/aprons are not to be worn after leaving the patient room or procedure area.

3. Mask (surgical or N95)
   a. Wear a surgical mask (with protective eye/face wear) if splashing or aerosolization of blood or body fluids is expected.
   b. Change mask between patients and sooner if mask becomes wet, moist or torn.

c. Wear an N95 mask when indicated to enter an airborne isolation room, and remove it only when outside of the room.
d. Surgical mask are not to be worn after leaving the patient's room or procedure area.
e. Surgical mask or N-95 mask are meant to be used as single use every after patient encounter.

4. Protective eye/face wear
   a. Wear protective eye/face wear if required for combined protection from eye/face contamination by aerosolized body substances.
   b. Wash and disinfect visibly soiled reusable face shields or protective eyewear prior to reuse, according to hospital policy.
   c. Protective eyewear /face wear are not to be worn after leaving the patient room or procedure area.

5. Sequence of donning and doffing of PPEs (with eyewear, e.g., goggles or face shield) before entering and leaving a patient's room:
   a. Don PPEs in this order: Hand hygiene, gown, surgical mask, goggles/face shield then gloves.
   b. Doff PPEs in this order: Gloves, hand hygiene, goggles/face shield, gown, hand hygiene, surgical mask then hand hygiene.

C. Handling/Disposal of Contaminated Items

1. Needles/sharps
   a. Dispose used sharp items into an approved puncture-resistant container immediately after use, at the point of use, or as close to point of use, as possible.
   b. Do not place used sharp items on any environmental surface.
   c. Do not recap or manipulate needles using both hands because this increases the risk of injury. If recapping or manipulating the needle is deemed essential, then use either a one-handed "scoop" technique or a mechanical device designed to hold the needle sheath.
   d. Before attempting to remove needles from reusable aspirating syringes, recap them with either a one-handed "scoop" technique or a mechanical device designed to hold the needle sheath.
   e. Close sharps containers when ¾ full and remove for incineration.

2. Linen
   a. Handle and transport linen in a manner that will prevent skin/mucous membrane exposure and contamination of clothing or transferring microorganisms to other patients or the environment.
   b. Place wet/heavily soiled linen in a designated impermeable bag and close the bag securely or wrap wet linen in another piece of linen to avoid soaking of the bag.
   c. Refer to **ICM–VIII-02** Laundry for details.

3. Medical waste
   a. Place biomedical waste in identifiable (color-coded) bags or appropriate containers.
   b. Securely tie or close bags/containers and remove for appropriate disposal.
   c. Refer to **ICM–IX-02** Management of Infectious Waste for details.

4. Patient care equipment
   a. Handle used patient care equipment in a manner that prevents skin and mucous membrane exposure, contamination of clothing and transfer of microorganisms to other patients or the environment.

b. Commonly used equipment must be clean and disinfected between patients.
c. Do not reuse single-use items.
d. Remove organic material from critical and semi-critical instruments/devices using recommended cleaning agents before transfer to CSSD for high-level disinfection or sterilization.
e. Ensure that reusable equipment is properly transported in leak-proof containers to CSSD for reprocessing before use with another patient.

D. Laboratory specimens

1. Wear gloves before obtaining laboratory specimens.
2. Place laboratory specimens in designated containers and seal appropriately.
3. Remove gloves and perform hand hygiene once all laboratory specimens are in the appropriate containers.
4. Label containers with appropriate patient data.
5. Transfer to the laboratory in an upright position as much as possible and as promptly as possible.
6. Ensure no leakage of the laboratory specimens.
7. Ensure that the requisition has the complete information as this is critical for laboratory analysis and clinical interpretation.

E. Room cleaning

1. Rooms should be cleaned daily and after patient discharge.
2. Cleaning is required as per housekeeping policies. Refer to **ICM-X-07** Housekeeping.

F. Patient placement

Place patients who pose as risk of transmission to others (e.g., those with uncontained secretions, excretions, or wound drainage) in single-patient rooms when available. If a single room is not available, ensure contact isolation precautions are applied in a shared room.

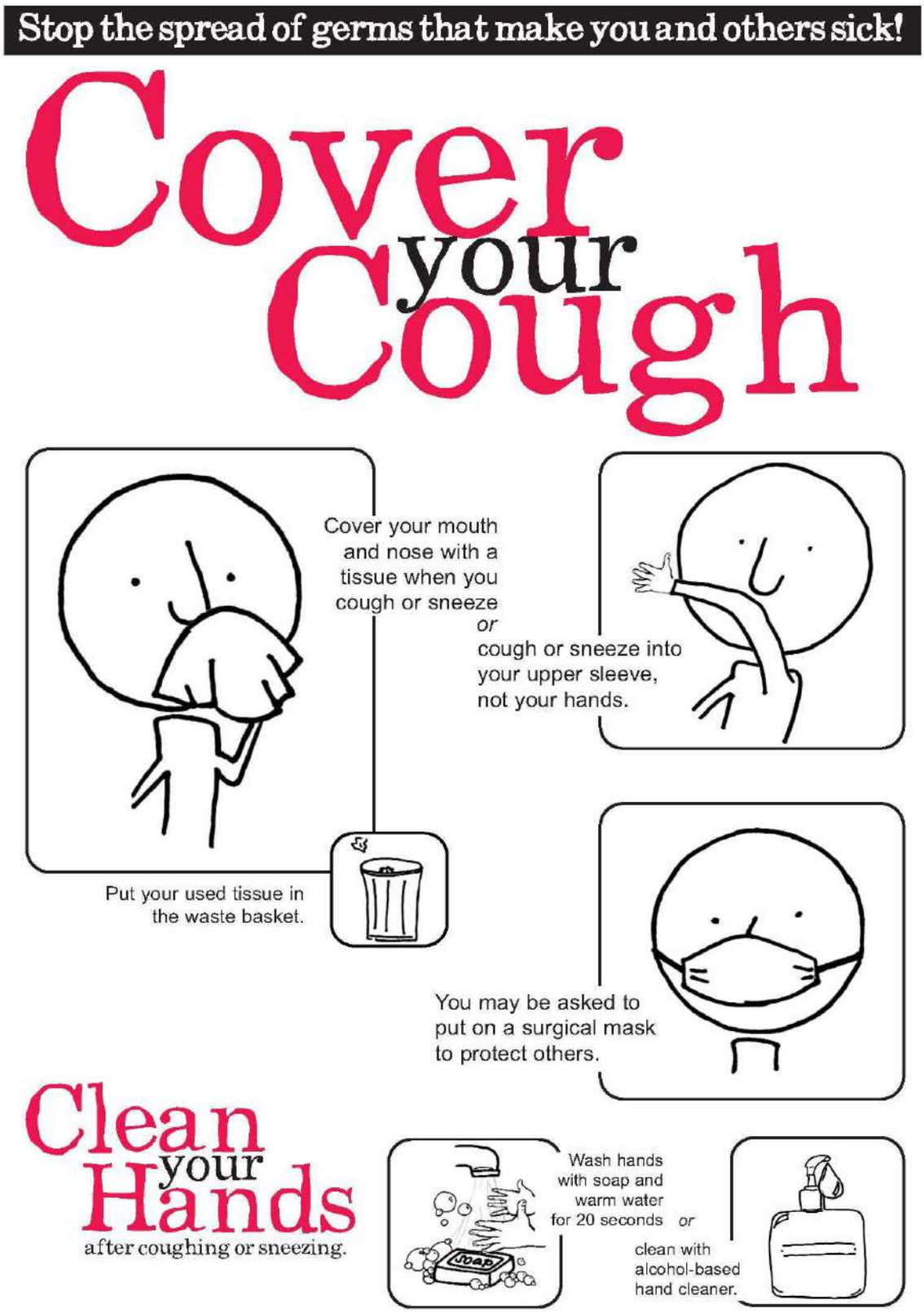
G. Cough etiquette

1. Cover nose and mouth with a tissue when coughing or sneezing. See **Figure 1-II-03 .**
2. Dispose used tissue in the nearest waste receptacle.
   a. Clean hands with soap and water or antiseptic solution or with an alcohol-based hand rub after touching respiratory secretions or handling contaminated objects.

H. Food and drinks at the work station

Consumption of food and drinks in clinical areas with potential for exposure to blood or other infectious material or where the potential for contamination of work surfaces exist are prohibited. However, water bottles with protective lids, properly labeled with the employees name are allowed.

Figure 1-II-03: Cough Etiquette



TITLE/DESCRIPTION:	INDEX NUMBER
HAND HYGIENE	**ICM - II - 04**

EFFECTIVE DATE:	APPLIES TO:	ISSUING AUTHORITY:
01/01/2009 01/01/2013 01/01/2018	**All GCC Countries**	**GULF COOPERATION COUNCIL – CENTRE FOR INFECTION CONTROL (GCC-CIC)**

DEFINITION

To emphasize the importance of hand hygiene (HH) as the single most effective measure for preventing disease transmission in the healthcare setting; and, to describe indications and techniques for hand hygiene.

REFERENCES

1. Association for Professionals in Infection Control (APIC) and Epidemiology, Inc. (2014). Chapter 27: Hand Hygiene. In APIC Text of infection control and epidemiology (4th ed.).
2. WHO Guidelines on Hand Hygiene in Healthcare 2009 (World Alliance for Patient Safety).
3. Patrick M and Wicklin S. Implementing AORN recommended practices for hand hygiene. AORN Journal, 2012; 95:4.

COMMENTS

1. Hands may easily become contaminated with infectious microorganisms, which can enter the body through a break in the skin or be transmitted to a susceptible host and cause infection.
2. All personnel, physicians, nurses, technicians and others who are responsible for complying with the hand hygiene policy should lead by example and call observed infractions to the attention of any offenders.
3. Artificial nails and chipped nail polish may be associated with an increase in the number of bacteria on finger nails and should not be used.
4. Resident flora (resident bacteria) refers to the microorganisms residing under the superficial cells of the stratum corneum and also found on the surface of the skin.
5. Transient flora (transient bacteria) refers to the microorganisms that colonize the superficial layers of the skin and are easily removed by routine hand hygiene.

PROCEDURE

A. Agents used for HH

1. Water
   a. Water is described as the universal solvent for a large number of substances.
   b. When used alone, water cannot remove dirt from hands.

2. Drying Methods
   a. Drying practice is a critical factor to determine the level of bacterial residue.
   b. Use paper towels.
   c. Pat the skin dry rather than rub it to avoid cracking (skin excoriation may lead to bacteria colonizing the skin).
   d. Do not reuse or share hand drying towels.

3. Plain (non-antimicrobial) soap
   a. These soaps are detergent-based and will remove lipids, adhering dirt, and organic matter.
   b. They have no antimicrobial activity.
   c. Such soaps can remove transient flora from the skin.

4. Antimicrobial soap
   a. These soaps are detergent-based and will remove lipids, adhering dirt, and organic matter.
   b. They have antimicrobial activity.
   c. They can remove transient and resident flora from the skin.

5. Alcohols
   a. Alcohol-based hand antiseptics contain ethanol, isopropanol, n-propanol or a combination of two of these products.
   b. They have the ability to denature proteins.
   c. The most effective solutions contain 60%-80% alcohol (a higher concentration is less effective).
   d. They are rapidly germicidal.
   e. Such antiseptics are available in gels, liquid, and foam.

B. Indications for Hand Hygiene (HH)

Clean your hands:

1. Before touching a patient
2. Before clean/aseptic procedures
3. After body fluid exposure risk
4. After touching a patient
5. After touching patient's surroundings

Other Opportunities for HH:

1. When hands are visibly soiled
2. After contact with a source of microorganisms (body fluids and substances, mucous membranes, non-intact skin, surfaces that are likely to be contaminated).
3. After removing gloves.
4. Before and after smoking, eating or preparing food.
5. Before leaving the patient's room.
6. After bodily functions (e.g., using the toilet, blowing one's nose, sneezing).
7. When moving from a contaminated body site to a clean body site during patient care.
   Hands and other skin surfaces exposed to blood or body fluids must be cleansed as soon as patient safety permits.

C. Techniques (Refer to **Appendices 1-II-04 and 2-II-04**)

Hand washing

Wash hands for a minimum of 40-60 seconds:

1. Remove excess jewelry;
2. Select a comfortable water temperature;
3. Wet hands with running water;
4. Apply soap to cover all surfaces of the hands;
5. Rub hands palm to palm;
6. Right palm over left dorsum with interlaced fingers and vice versa;
7. Palm to palm with fingers interlaced;

8. Backs of fingers to opposing palms with fingers interlaced;
9. Rotational rubbing of the left thumb clasped in the right palm and vice versa;
10. Rotational rubbing backward and forward with clasped fingers of the right hand in the left palm and vice versa;
11. Rinse the hands with running water to remove all soap residue, while holding hands in upward position over the sink;
12. Dry the hands with a paper towel; and
13. Turn the faucet off with the used paper towel.

Hand rubbing

Use alcohol-based hand antiseptic and rub for a minimum of 20-30 seconds:

1. Apply to dry, visibly clean hands;
2. Rub hands vigorously to apply hand antiseptic to all surfaces of hands (as in steps 5 to 10 above); and
3. Allow hands to dry.

NB: USE ONLY SOAP AND WATER WHEN DEALING WITH SPORE-FORMING BACTERIA (e.g., Clostridium difficile) AND/OR WHEN YOUR HANDS ARE VISIBLY SOILED.

D. Care of Hands

1. Use hand moisturizers to replace the oils lost by frequent hand hygiene procedures.
2. Ensure that the skin on your hands is intact. Cover non-intact skin areas with an occlusive dressing.
3. Do not use petroleum-based lotions, as they may interfere with glove integrity.

E. Medical Assessment

1. Seek medical assessment for any suspicion of dermatological conditions such as exudative and vesicular lesions. It must be evaluated by an Employee Health Physician or the appropriate medical service.
2. HCWs that have exudative lesions or vesicular dermatitis should refrain from all direct patient care and from handling patient care equipment until the condition is resolved.

F. Use of Gloves

1. Do not use gloves as an alternative for hand hygiene.
2. Identify the correct type of glove to be used **(**Refer t**o Appendix 3-II-04).**
3. Wear gloves when it can be reasonably anticipated that contact with blood or other potentially infectious materials, mucous membranes, or non-intact skin will occur.
4. Change or remove gloves during patient care if moving from a contaminated body site to either another body site (including non-intact skin, mucous membrane or a medical device) within the same patient or the environment.
5. Change gloves between patients.
6. Remove gloves after any procedure with a patient.
7. Dispose gloves before leaving the patient's room or procedure area.

G. Surgical hand hygiene (Refer to **Appendix 4-II-04)**

Before starting surgical hand hygiene preparation (hand scrub or hand rub)

1. Remove all jewelry and wristwatches before entering the operating room (OR) suite.
2. Wash hands and arms up to the elbows with an antimicrobial soap before entering the OR area.
3. Use a nail cleaner for the first surgical hand scrub of the day.

Surgical hand scrub with antimicrobial soap

1. Start timing and then scrub each side of each finger, between the fingers and the back and front of the hand for two minutes.
2. Scrub the arms, keeping hands higher than the arms at all times.
3. Wash each side of the arm from wrist to the elbow for one minute, repeating the process on the other hand and arm.
4. Rinse hands and arms by passing them through the water in one direction (from fingertip to elbow), always keeping the hands above the elbows.
5. Proceed to the OR holding hands above the elbows.
6. Dry hands with a sterile towel and use aseptic technique to put on gloves.

NB: The duration of the procedure depends on the ingredients and the manufacturer's instructions (can range from 3-5 minutes).

Surgical hand rub with the hospital-approved alcohol-base preparation

1. Start timing.
2. Use sufficient product to keep hands and forearms wet with the hand rub throughout the procedure.
3. See attachment for proper technique.
4. After application of the product, allow hands and forearms to dry before donning sterile gloves.
5. Proceed to the OR holding hands above the elbows.

NB: The duration of the procedure depends on the ingredients and the manufacturer's instructions and should last until hands are dry.

Use of brushes

1. Use of brushes is discouraged.
2. A disposable sponge or a combination of a sponge and brush has been shown to reduce bacterial counts on the hands.

Appendix 1 - II-04: Hand Rubbing Technique

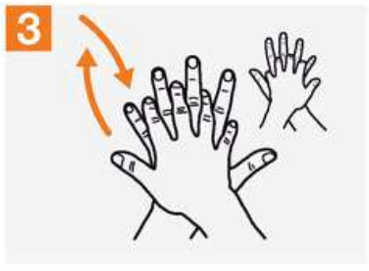
Hand Hygiene Technique with Alcohol - Based Formulation

RUB HANDS FOR HAND HYGIENE! WASH HANDS WHEN VISIBLY SOILED

Duration of the entire procedure: 20-30 seconds

Apply a palmful of the product in a cupped hand, covering all surfaces;

Rub hands palm to palm;



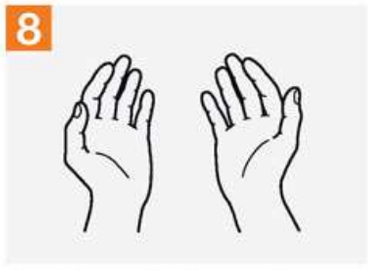
Right palm over left dorsum with interlaced fingers and vice versa;

Palm to palm with fingers interlaced;

Backs of fingers to opposing palms with fingers interlocked;

Rotational rubbing of left thumb clasped in right palm and vice versa;

Rotational rubbing, backwards and forwards with clasped fingers of right hand in left palm and vice versa;

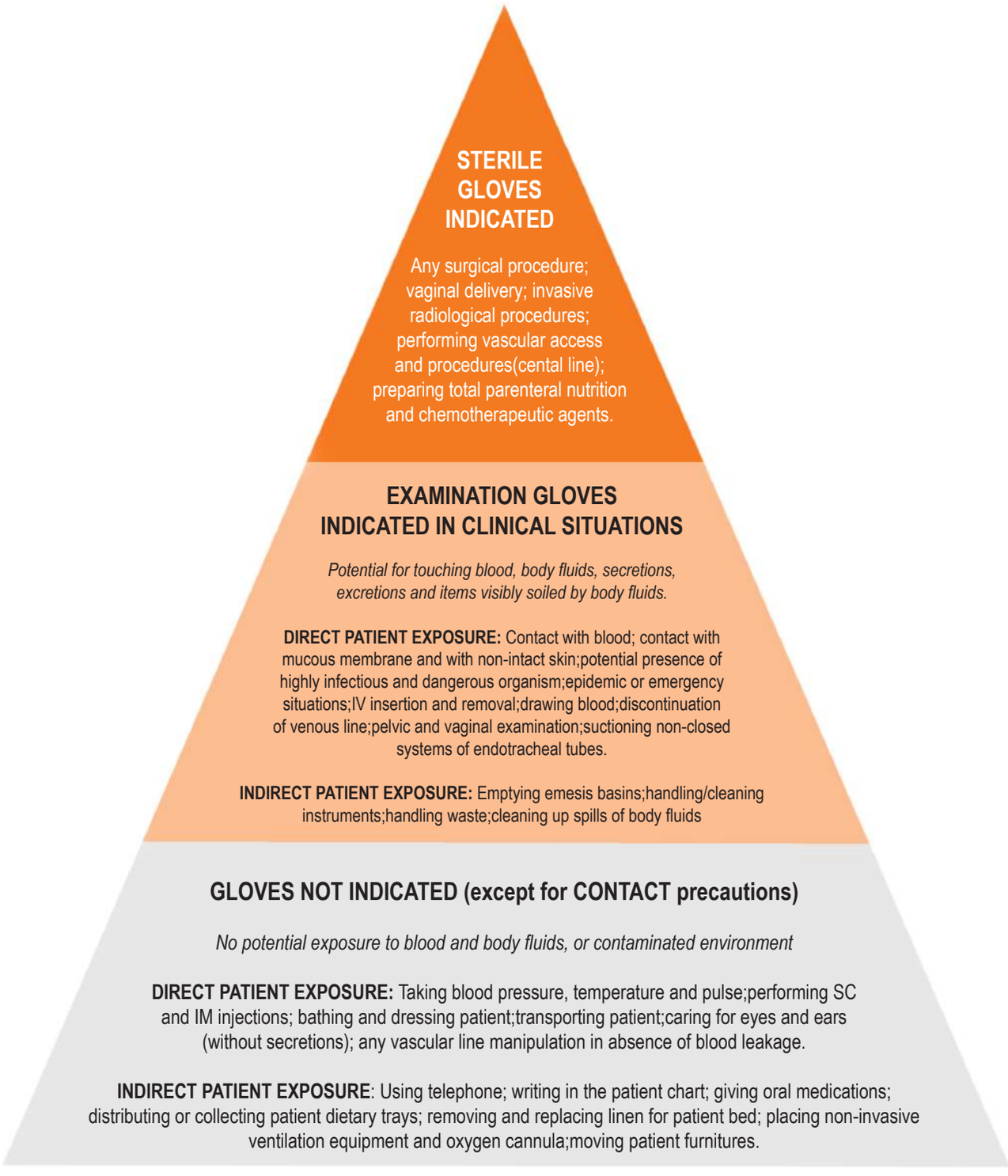


Once dry, your hands are safe.

Appendix 2-II-04: Hand Washing Technique

Handwashing Technique with Soap and Water

Appendix 3-II-04: Pyramid on Glove Use



Appendix 4-II-04: Surgical Hand Hygiene

The handrubbing technique for surgical hand preparation must be performed on perfectly clean, dry hands.
On arrival in the operating theatre and after having donned theatre clothing (cap/hat/bonnet and mask), hands must be washed with soap and water.
After the operation when removing gloves, hands must be rubbed with an alcohol-based formulation or washed with soap and water if any residual talc or biological fluids are present (e.g. the glove is punctured).

Surgical procedures may be carried out one after the other without the need for handwashing, provided that the handrubbing technique for surgical hand preparation is followed (Images 1 to 17).

1

Put approximately 5ml (3 doses) of alcohol-based handrub in the palm of your left hand, using the elbow of your other arm to operate the dispenser

2

Dip the fingertips of your right hand in the handrub to decontaminate under the nails (5 seconds)

3

Images 3–7: Smear the handrub on the right forearm up to the elbow. Ensure that the whole skin area is covered by using circular movements around the forearm until the handrub has fully evaporated (10-15 seconds)

4

See legend for Image 3

5

See legend for Image 3

6

See legend for Image 3

7

See legend for Image 3

8

Put approximately 5ml (3 doses) of alcohol-based handrub in the palm of your right hand, using the elbow of your other arm to operate the dispenser

9

Dip the fingertips of your left hand in the handrub to decontaminate under the nails (5 seconds)

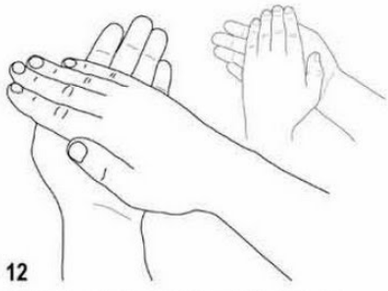
Appendix 4-II-04:…cont.

10

Smear the handrub on the left forearm up to the elbow. Ensure that the whole skin area is covered by using circular movements around the forearm until the handrub has fully evaporated (10-15 seconds)

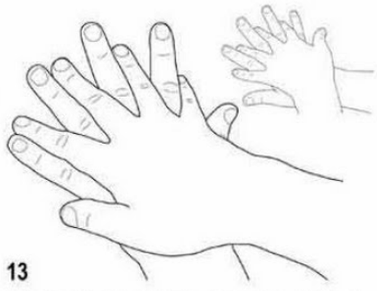
11

Put approximately 5ml (3 doses) of alcohol-based handrub in the palm of your left hand, using the elbow of your other arm to operate the distributor. Rub both hands at the same time up to the wrists, and ensure that all the steps re-presented in Images 12-17 are followed (20-30 seconds)



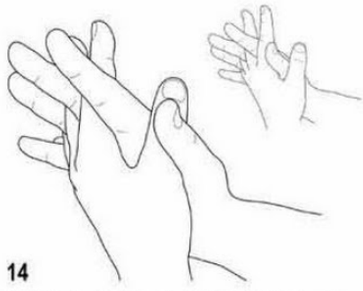
12

Cover the whole surface of the hands up to the wrist with alcohol-based han-drub, rubbing palm against palm with a rotating movement



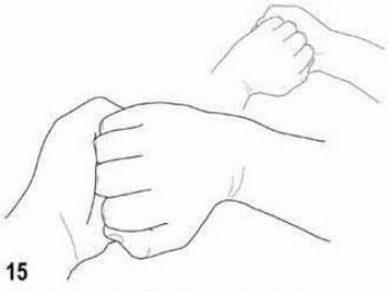
13

Rub the back of the left hand, including the wrist, moving the right palm back and forth, and vice-versa



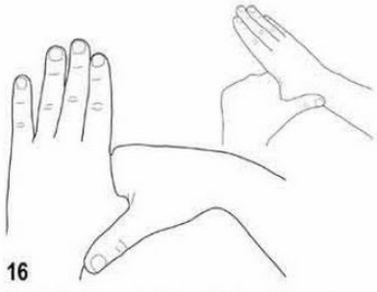
14

Rub palm against palm back and forth with fingers interlinked



15

Rub the back of the fingers by holding them in the palm of the other hand with a sideways back and forth movement



16

Rub the thumb of the left hand by rota-ting it in the clasped palm of the right hand and vice versa

17

When the hands are dry, sterile surgical clothing and gloves can be donned

Repeat the above-illustrated sequence (average duration, 60 sec) according to the number of times corresponding to the total duration recommended by the manufacturer for surgical hand preparation with an alcohol-based handrub.

TITLE/DESCRIPTION:	INDEX NUMBER
ASEPTIC TECHNIQUE	**ICM - II - 05**

EFFECTIVE DATE:	APPLIES TO:	ISSUING AUTHORITY:
01/01/2009 01/01/2013 01/01/2018	**All GCC Countries**	**GULF COOPERATION COUNCIL – CENTRE FOR INFECTION CONTROL (GCC-CIC)**

DEFINITION

To provide guidelines on practices to reduce the number of microorganisms on hands, supplies and equipment during patient care procedures.

REFERENCE

1. Association for Professionals in Infection Control (APIC) and Epidemiology, Inc. (2014). Chapter 27: Hand Hygiene. In APIC Text of infection control and epidemiology (4th ed.).
2. Association for Professionals in Infection Control (APIC) and Epidemiology, Inc. (2014). Chapter 30: Aseptic Technique. In APIC Text of infection control and epidemiology (4th ed.).
3. Maki DG and Tambyah PA. Engineering out the Risk of Infection with Urinary Catheters. Emerg Infect Dis [serial on the Internet]. 2001 Mar-Apr [date cited]. http://dx.doi.org/10.3201/eid0702.700341
4. Association of Women's Health. Evidence Based Clinical Practice Guideline. Neonatal Skin Care. Obstetrical and Neonatal Nurses, 2013.
5. Gould CV, Umscheid CA, Agarwal RK, Kuntz G, Pegues DA, and the Healthcare Infection Control Practices Advisory Committee (HICPAC), Guidelines for Prevention of Catheter-associated urinary tract Infection.2009. Downloaded from**:** https://www.cdc.gov/hicpac/pdf/CAUTIguideline2009final.pdf

COMMENTS

1. The practice of asepsis is a key strategy for preventing transmission of microorganisms capable of causing illness in humans transmitted by both direct and indirect contact.
2. Asepsis is a basic infection prevention method as well as an important factor in patient safety in all healthcare settings.
3. Aseptic technique is adaptable in all practice settings to minimize the risk of infectiontransmission. This technique prevents contamination from person to person and from one body site to another.
4. Aseptic technique refers to practices designed to render and maintain objects and areas maximally free from microorganisms and aid in the prevention of surgical site, urinary tract, bloodstream, and pneumonia infections that may be device or procedure-related.
5. Clean technique refers to medical aseptic practices that sue clean and disinfected or sterile equipment and supplies to reduce the numbers of microorganisms and minimize the risk of transmission from personnel or the environment to the patient.
6. Surgical asepsis implies sterility and is applied to patients undergoing invasive procedures to prevent potential contamination of the operative or procedural field.

PROCEDURE

A. Aseptic Technique

Aseptic technique involves using barriers, such as sterile gloves, sterile gowns, masks, and sterile drapes, to prevent the transfer of microorganisms from care providers and the environment to the patients during the procedure being performed

Components:

1. Appropriate attire
   a. Appropriate attire is based on the risk of the procedure and the area of the hospital where the procedure is performed.
   b. Scrubs are not considered personal protective equipment (PPE).
   c. Personnel performing procedures resulting in splashed or potential exposure to body fluids should wear impervious or fluid-resistant barriers as well as face and eye protection.
   d. Depending on the aseptic procedure being performed, barriers may include gloves, gown, and hair covering or as per hospital policy on PPE.
   e. Freshly laundered scrubs are worn in semi-restricted and restricted zones in the surgical areas to prevent microbial contamination from shed skin squames and particulate (e.g., lint) transference to the sterile field, including surgical site and patient.
   f. Additional attire (e.g., sterile gowns) may also be required to reduce risk of occupational exposure to bloodborne pathogens and other potentially infectious materials, as well as, to maintain sterile field.
   g. Head and facial hair covering and clean shoes should also be worn in semi-restricted and restricted areas of the operating room.
   h. Mask should be worn in restricted areas when open sterile supplies and equipment are present.
2. Hand hygiene
   Hand decontamination prior to any procedure is an integral step of the process that should be done by the team working in direct contact with the patient, equipment, instruments, and/or sterile field. Refer to **ICM-II-04** Hand Hygiene.
3. Skin antisepsis
   a. It is imperative to use the appropriate recommended antiseptic for each procedure type as well as screening for contraindications such as allergies.
   b. Antiseptic agents should be used following manufacturer's direction for use, including ensuring skin is clean before placement as well as antiseptic contact and drying time.
4. Single-use devices, equipment, and supplies
   a. Personnel should maintain the sterile packaging and/or container integrity to ensure an intact seal and confirm that sterilization indicators with expiration date are verified. Refer to **ICM-IX-01** Sterile Supplies and Equipment Management.
   b. Before use, sterile packages should always be inspected for signs of contamination such as moisture, tears, discoloration, and expiration.
5. Environmental cleaning
   a. Clean and disinfect the environmental surfaces using hospital-approved disinfectants and the use of an efficacious germicidal agent for cleanup of blood or body fluid spills are recommended for controlling environment to reduce the risk of contamination and microbial transmission all patient care settings.
   b. Use clean equipment and supplies (i.e., mops, water, cleaning cloths) for environmental hygiene.
   c. Use checklist for training and quality monitoring of operating room cleaning procedures.

B. Clean Technique

1. Wear clean gloves instead of sterile gloves after hand antisepsis where clean technique is indicated.

2. Use the "no-touch" dressing technique to prevent contamination of sterile dressings, depending on the type and extent of the procedure.
3. Use clean gloves for routine changing of surgical site dressings, tracheostomy care, and maintenance of intravascular lines, as long as you use techniques that prevent the transfer of new organisms or movement from one site to another patient.
4. Wear a clean gown to minimize contamination of clothing, following standard precaution guidelines.

C. Surgical Aseptic Technique Outside the OR

Settings outside the OR may not have the capacity to follow the same strict level of surgical asepsis applied in the operating room. However, the goal to avoid infections remains in all clinical settings.

Using environmental controls to maximize the reduction of microorganisms during surgical procedures is essential. Such strategies may include the following:

1. Use of special treatment or operating rooms.
2. Managing activities to reduce airborne transmission if procedures are performed at the bedside.
3. Keeping doors closed during procedures.
4. Using physical barriers such as screens.
5. Diverting traffic in open units.
6. Excluding visitors and unnecessary personnel.
7. Avoiding cleaning activities in the area during invasive procedures.
8. Providing environmental controls such as ventilation to further reduce contamination.

D. Aseptic Technique for Sterile Fields in the OR

1. Strictly adhere to sterile technique in the operating room when maintaining the sterile field, or the area surrounding the site of incision or perforation into tissue, or the site of introduction of an instrument into a body orifice that has been prepared for an invasive procedure.
2. Use barriers to decrease the risk of transmission from practitioner or environment to the patient by maintaining a sterile field with sterile drapes, sterile gloves, and sterile gowns. Use sterile drapes and drape accessories to cover all working areas, furniture, and equipment.
3. Wear sterile attire in the sterile field.
4. A higher rate of air exchanges and maintenance of positive pressure in relation to the adjacent corridors or spaces is appropriate.
5. It is required to have appropriate air duct filters checked and changed at appropriate intervals.
6. Maintain environmental controls in the operating room by monitoring temperature and humidity.

Procedure	Example	Hand hygiene	Gloves	Preparation of patient's skin	Comment
A. Medical Asepsis (Clean Procedures)					
Procedures in which instruments come in contact with intact mucous membranes	1. Bronchoscopy, gastrointestinal endoscopy, tracheal suction	Antibacterial soap and water or alcohol-based hand rub**	Clean	None is required	
	2. Peripheral Intravenous Insertion	Antibacterial soap and water or alcohol hand rub**	Clean	Hospital-approved antiseptics* should be used. Select appropriately for the patient's site.	
	3. Urinary tract catheterization	Antibacterial soap and water or alcohol hand rub**	Sterile	Hospital-approved antiseptics* and rinse with sterile water	DO NOT use alcohol-containing antiseptic
B. Surgical Asepsis (Sterile Procedures)					
I. Procedures in which instruments go through sterile tissue or fluid	1. CVL insertion - CVL wire insertion - Cardiac pacemaker insertion	Surgical hand scrub with antibacterial soap and water or Alcohol surgical hand scrub**	Sterile	Hospital-approved antiseptics* should be used.	"Defatting" agents do not appear to decrease infections and can cause skin irritation
	2. Arterial line insertion	Surgical hand scrub with antibacterial soap and water or Alcohol surgical hand scrub**	Sterile	Hospital-approved antiseptics* should be used.	Most epidemics of infection associated with arterial pressure monitoring devices appear to be caused by hospital-associated contamination of components external to the skin, such as transducer heads or domes; "endemic" IV-related bloodstream infections are frequently associated with skin flora.

*Antiseptics available are:

1. 2% aqueous chlorhexidine gluconate swabs (for CVC insertion in neonates <2 wk and <1500 grams- avoid excessive skin exposure, remove excess CHG with sterile gauze & observe for skin reactions)
2. 2% chlorhexidine in 70% alcohol swabs
3. 10% povidone iodine (swabs or liquid)
4. 70% alcohol (swabs or liquid)

**Hand preparations available are:

1. Antibacterial soap
2. 62%-70% alcohol-based hand rub
3. 2% chlorhexidine in 70% alcohol surgical hand scrub (according to the manufacturer's recommendations)

Con't…Table 1: Recommendations for HCWs regarding hand and skin preparation of patient skin (site) ONLY

Procedure	Example	Hand hygiene	Gloves	Preparation of patient's skin	Comment
	3. Spinal tap Thoracentesis Abdominal paracentesis Bone marrow biopsy	Antibacterial soap and water or alcohol surgical hand rub**	Sterile	Hospital-approved antiseptics* should be used	
	4. Cystoscopy	Antibacterial soap and water or alcohol surgical hand rub**	Sterile	Hospital-approved antiseptics* and rinse with sterile water	DO NOT use alcohol-containing antiseptic
	5. Chest tube insertion Colposcopy Laparoscopy Peritoneal catheter insertion	Surgical hand scrub with antibacterial soap and water or Alcohol surgical hand scrub**	Sterile	Hospital-approved antiseptics* should be used If hair removal is considered necessary, clippers should be used immediately before the procedure	
II. Minor skin surgery	1. Skin biopsy, suturing of small cuts, lancing boils and mole removal 2. Circumcision	Surgical hand scrub with antibacterial soap and water or Alcohol surgical hand scrub**	Sterile	Hospital-approved antiseptics* should be used	
III. Other procedures (major and minor surgery) that enter tissue below the skin	1. Hysterectomy 2.Cholecystectomy 3.Herniorrhaphy	Surgical hand scrub with antibacterial soap and water or Alcohol surgical hand scrub**	Sterile	Antiseptic* should be used after the site has been scrubbed with detergent If hair removal is considered necessary, clippers should be used immediately before the procedure	Hand disinfection before surgical procedures that enter deep tissue is usually prolonged to ensure that all areas that harbor bacteria are adequately cleaned.

*Antiseptics available are:

1. 2% aqueous chlorhexidine gluconate swabs (for CVC insertion in neonates <2 wk and <1500 grams- avoid excessive skin exposure, remove excess CHG with sterile gauze & observe for skin reactions)
2. 2% chlorhexidine in 70% alcohol swabs
3. 10% povidone iodine (swabs or liquid)
4. 70% alcohol (swabs or liquid)

**Hand preparations available are:

1. Antibacterial soap
2. 62%-70% alcohol-based hand rub
3 2% chlorhexidine in 70% alcohol surgical hand scrub (according to the manufacturer's recommendations)

TITLE/DESCRIPTION:	INDEX NUMBER
THERAPEUTIC PROCEDURES	**ICM - II - 06**

EFFECTIVE DATE:	APPLIES TO:	ISSUING AUTHORITY:
01/01/2009 **01/01/2013** **01/01/2018**	**All GCC Countries**	**GULF COOPERATION COUNCIL – CENTRE FOR INFECTION CONTROL (GCC-CIC)**

DEFINITION

Procedures or any therapy that bypass the body's normal defense mechanisms can allow bacteria to gain access to tissues and organs that are normally sterile. Such access sometimes results in infection.

EQUIPMENT / MATERIAL

Nursing policies and procedure on:

- Management of patients with urinary catheterization
- Management of patients with intravascular devices
- Management of patients with tracheostomy
- Management of patients with cardiopulmonary ventilation
- Others as existing

COMMENTS

Specific instructions for carrying out therapeutic procedures should be outlined in the healthcare facility Nursing Policy and Procedure Manual.

To eliminate any duplication the policies described above and any other existing policies and procedures that have infection control implications will be reviewed in collaboration with the Nursing Practice Council.

PROCEDURE

See specific policies and procedures in related Nursing Policy and Procedure Manual.

TITLE/DESCRIPTION:	INDEX NUMBER
ANNUAL INFECTION CONTROL COMPETENCY TRAINING FOR ALL HEALTHCARE WORKERS "Right care Right now"	**ICM - II - 07**

EFFECTIVE DATE:	APPLIES TO:	ISSUING AUTHORITY:
01/01/2018	**All GCC Countries**	**GULF COOPERATION COUNCIL – CENTRE FOR INFECTION CONTROL (GCC-CIC)**

DEFINITION

The Right care Right now (RcRn) program aims to ensure and sustain the competencies of healthcare workers (HCWs) in infection control practices by limiting the chances of infectious disease transmission among HCWs, patients, sitters, and visitors.

This can be achieved by ensuring all HCWs are properly informed, trained and provided with the required knowledge and skills on infection control best practices. Further, by engaging leadership support to provide the necessary resources for implementing trainings on infection control best practices. Finally, by establishing auditing tools on performance measurements to ensure the accountability of leadership and HCWs.

REFERENCE

IP Competency Task Force. APIC Competency model for the Infection Preventionist: A conceptual approach to guide current and future practice." APIC 2010-2011.

COMMENTS

1. **Competency** is defined as the proven ability to use knowledge and skills on personal, social, and/ or methodological capabilities in work and study situations, especially in professional practices and professional development.
2. **Accountability** is defined as being responsible for one's own actions and disclosing the results in a transparent manner.

PROCEDURE

A. Education and Training

This program provides a model for hospitals to adopt and modify according to their needs in order to achieve the above mentioned goals.

1. Provide education and training on infection control best practices through available teaching modalities using adult education principles.
2. Establishing a hospital-based certification policy to ensure that HCWs' knowledge and skills are updated, to be renewed regularly and/or as needed.
3. Incorporate a fit testing module, within the program or as a separate activity, to ensure that all HCWs at risk of exposure to respiratory pathogens are protected and aware of the proper respirator to be used and how to don and doff it. The program shall also include a commitment ceremony whereby HCWs make a pledge to abide by the infection control best practices, and make HCWs aware of the hospitals' accountability and hierarchy.

4. IP&C Department (IP&C) will train and validate the competence of trained observers every two years and a certificate/badge will be provided. **Appendix 5** indicates the date of certification, type of respirator used, and validity date and expiration of the badge.
5. If the HCW does not meet the criteria for competencies, his/her learning needs will be identified and an education plan will be developed. The HCWs will be reassessed after completion of the education plan, and will need to be within one week prior to being involved in patient care.

B. Five (5) Elements of the RcRn Program

The following 5 elements are required by the "Right care Right now" program from all newly hired HCWs before they can commence work in their respective clinical areas. A copy of these requirements will be placed in the personnel file and renewed every 1-2 years or as per hospital policy.

1. Complete the educational module and pass the post-test with a minimum of 80% passing rate. Training should be completed within the first month of employment in the institution for those newly-hired clinical staff. For renewal of employment, RcRn status must be valid.
2. Demonstrate competency on hand hygiene (refer to **Appendix 1-II-07**), by undertaking a practical test under the supervision of a trained observer.
3. Demonstrate competency on donning and doffing of personal protective equipment (PPEs) (refer to **Appendix 2-II-07**), by undertaking a practical test under the supervision of a trained observer.
4. Pass the N95 mask fit test or if the HCW fails the N95 fit testing, undergo Powered Air Purifying Respirator (PAPR) testing refer to **Appendix 3-II-07**. N95 and/or PAPR fit tests should be mandated by the designated department and made as a hospital policy that would be valid for 1-2 years or as per hospital policy.
5. Understand and sign the pledge of accountability (refer to **Appendix 4-II-07**).

C. Training of Trained Observers

1. Nursing staff will be trained by a designated educator during the nursing orientation phase.
2. Other allied healthcare workers will be trained by the designated trained observers of their units
3. Physicians and residents to be trained by the Infection Preventionist (IP) assigned in their areas.
4. Housekeeping Supervisors to be trained by the Environmental health specialist
5. Housekeepers to be trained by their Housekeeping Supervisors

D. Resources

1. Post-test from IP&C Department (i.e., online exam, if available)
2. **Appendix 1:** Competency Form for Hand Hygiene
3. **Appendix 2:** Competency Form for Donning and Doffing of PPEs
4. **Appendix 3:** Certificate of Passing the N95 Fit Testing Program
5. **Appendix 4**: Pledge for Accountability
6. **Appendix 5:** Sample Badge for the RcRn Trainer

Appendix 1-II-07: Competency Checklist for Hand Hygiene

Competency Checklist for Hand Hygiene			
Steps	Performance Checklist	Competent	Non competent
1	Apply a palm full of the alcohol gel in a cupped hand.		
2	Rub hands palm to palm.		
3	Right palm over left dorsum with interlaced fingers and vice versa.		
4	Palm to palm with fingers interlaced.		
5	Backs of fingers to opposing palms with fingers interlocked.		
	Rotational rubbing of left thumb clasped in right palm and vice versa.		
6	Rotational rubbing, backwards and forwards with clasped fingers of right hand in the left palm and vice versa.		
7	Dry your hands.		

Date: _____

Name of Staff: _____ Badge Number: _____ Signature: _____

Trained Observer: _____ Badge Number: _____ Signature _____

Appendix 2-II-07: Donning and Doffing PPE

Donning PPE

Required PPE for Healthcare workers:

- Isolation gown;
- Surgical mask or (Fit-tested, seal checked-N95 mask if on Airborne Precaution)
- Gloves.
- Full face shield or goggles.

Observers will monitor and document successful donning and doffing of PPE.

Steps	Performance Checklist	Competent	Non competent
1	**Engage Observer:** The donning process is conducted under the guidance and supervision of a trained observer who confirms visually that all PPE is serviceable and has been donned successfully. The observer will use a written checklist to confirm each step in donning PPE .		
2	**Perform Hand Hygiene:** When using ABHR, allow hands to dry before moving to next step.		
3	**Put on isolation gown .** Fully cover the torso from neck to knees, secure at neck and waist.		
4	**Put on a surgical mask.** Place over nose, mouth and chin the fit flexible nose over nose bridge, secure on the head with ties.		
5	**Put on eye protection (Goggles or face shields)**		
6	**Put on gloves:** extend gloves over the isolation gown.		

Doffing PPE

PPE should be removed and discarded before leaving the patient's room or care area, except for N95 mask which should be removed immediately outside the room if in Airborne Precaution.

Steps	Performance Checklist	Competent	Non competent
1	Remove gloves.		
2	Perform hand hygiene.		
3	Remove goggles or face shield by lifting the head band or earpieces.		
4	Remove gown: unfasten ties, peel gown away from the neck and shoulder, turn it inside out , fold into a bundle and discard.		
5	Perform hand hygiene.		
6	Remove the surgical mask by grasping the bottom ties or elastics of the mask, then the ones at the top without touching the front.		
7	Perform hand hygiene.		

Name of Staff : _____ **Badge Number:** _____ **Signature:** _____

Trained Observer: _____ **Badge Number:** _____ **Signature:** _____

Appendix 3-II-07: N-95 Mask Fit Testing Result

Full name:		
Badge Number:		
Professional category:		
Ward/Department:		
Type of N-95 Mask		
N95 Kimberly clark	*PASSED*	*FAILED*
Regular		
Small		
Fit tester Signature:		
N95 3-M		
1805		
1805S		
1870 PLUS		
Fit tester signature		
Note: This N-95 Mask Fit testing result is not valid unless it has the stamp of the fit testing department		

Appendix 4-II-07: My Pledge

I will work with all my colleagues in this institution to save lives and improve our patient outcomes by eliminating transmission of MERS-CoV and other organisms (respiratory pathogens, resistant organisms) and hospital-associated infections through:

1. **Educating** our healthcare community and our patients in their role to prevent infections and transmissions;

2. Promoting and following **best infection prevention practices** that keep my patients and my colleagues safe;

3. Being **responsibl**e – and always reminding my colleagues when they forget to follow these best practices;

4. Being **personally accountable** for my behavior and supporting those people who help me practice the best patient care.

Signed by:

_____	_____	_____
Signature above Printed Name	**Badge No.**	**Date**

Appendix 5-II-07: Sample Badge for RcRn Trainers

COMPETENCY DATE: _____

RENEWAL DUE DATE: _____

N-95 FIT TESTING DATE: _____

RENEWAL DUE DATE: _____

TYPE / SIZE OF N95: _____

(Note: If there is a change in the facial Appearance - growth of beard or lost/gained weight-N-95 fit testing must then be repeated.)

TRAINING COORDINATOR SIGNATURE:

_____

This card certifies that the above individual has successfully completed the "Right Care, "Right Now Train the Trainer Program" Infection Control Competency Program, in accordance with the MNG-HA Infection Prevention & Control Department policies and guidelines.

Section 3: ISOLATION PROCEDURES

TITLE/DESCRIPTION:	INDEX NUMBER
EPIDEMIOLOGY OF INFECTION	**ICM - III - 01**

EFFECTIVE DATE:	APPLIES TO:	ISSUING AUTHORITY:
01/01/2009 **01/01/2013** **01/01/2018**	**All GCC Countries**	**GULF COOPERATION COUNCIL – CENTRE FOR INFECTION CONTROL (GCC-CIC)**

DEFINITION

The purpose of this policy is to provide information about the epidemiological principles and methods used to describe how microorganisms are transmitted and how to reduce or prevent disease transmission.

REFERENCES

1. Association for Professionals in Infection Control (APIC) and Epidemiology, Inc. (2014). Chapter 10: General principles of epidemiology. In APIC Text of infection control and epidemiology (4th ed.)
2. Association for Professionals in Infection Control (APIC) and Epidemiology, Inc. (2014). Chapter 20: Research and study design. In APIC Text of infection control and epidemiology 4th ed.)
3. HICPAC Guidelines for isolation precautions: preventing transmission of infectious agents in healthcare settings, 2007.

COMMENTS

1. The spread of infection within the hospital requires three essential elements: a source of infectious agents, a susceptible host, and a mode of transmission. Each element can be equated to a link in a chain.
2. This chain analogy is used to represent the series of interactions that are necessary to produce an infection process. To prevent the transmission of infectious agents, it is important to understand the role that each element (link) plays.
3. Healthcare workers are encouraged to become familiar with this concept to develop and expand a knowledge base for interpreting data gathered within and outside the healthcare facility; for understanding the associations between risk factors and infection in different settings; and for appreciating how these findings can be used to reduce infection risks.
4. Endemic refers to the usual incidence of a given disease within a geographical area during a specified time period.
5. Epidemic refers to a greater incidence of disease over the expected incidence of the disease within a given geographical area during a specified time period.
6. Pandemic refers to an epidemic spread over a wide geographical area, across countries or continents.
7. Reservoir refers to a place in where an infectious agent can survive but may or may not multiply.
8. Infection refers to the entry into and multiplication of an infectious agent in the tissues of the host and the tissue damage resulting in apparent or unapparent changes in the host.
9. Healthcare-associated infections (HAIs) are infections that were not present or incubating at the time of admission to the hospital but are temporally associated with admission to or a procedure performed in a healthcare facility.
10. Colonization refers to the presence of microorganisms in or on a host with growth and multiplication but without tissue invasion or damage.

PROCEDURE

Understanding the Chain of Infection must precede the breaking of its links, which leads to the prevention of infection.

A. Chain of Infection

Each of the 6 components (or links) in this chain is required to cause colonization or infection:

1. The causative agent is a biological, physical, or chemical entity capable of causing disease.

2. The reservoir is a place in which an infectious agent can survive but may or may not multiply.
   a. The source of the infectious agent may be patients, personnel, or visitors and may include persons with active infection, persons in the incubation period of the disease, or persons who are colonized by the infectious agent but have no apparent disease.
   b. Other sources of infection include inanimate objects in the environment, such as equipment and medications that have become contaminated.
3. The portal of exit is the path by which an infectious agent leaves the reservoir.
4. The mode of transmission is the method by which the organism reaches a susceptible host; three modes of transmission are of particular importance in the healthcare setting:
   a. Contact Transmission is the most important and frequent mode of transmission in nosocomial infections. This transmission type is further divided into two sub-groups:
      i. Direct Contact: Involves direct physical contact between a susceptible host and an infected or colonized person, e.g., nurse-patient contact during routine care, patient-patient contact or patient-visitor contact. Such contact can cause direct transfer of microorganisms from one person to another.
      ii. Indirect Contact: Involves the physical contact of a susceptible host with a contaminated intermediate object such as bed linen, instruments, dressings, shared equipment or healthcare environmental surfaces.
   b. Droplet Contact involves the transmission of microorganisms in droplets generated from an infected or colonized person during talking, sneezing or coughing or generated during certain procedures such as suctioning and bronchoscopy. Microorganisms are aerosolized and deposited on the host's conjunctiva, nasal mucosa and/or mouth.
   c. Airborne Transmission involves the dissemination of droplet nuclei or dust particles containing the infectious agent in the air. Organisms carried in this manner can be widely dispersed by air currents before being inhaled.
5. The portal of entry is the means by which an infectious agent enters the susceptible host.
6. Although everyone is a susceptible host at some level, the elderly, the young, and those with decreased stomach acid are especially vulnerable. A patient's resistance to pathogenic agents varies greatly. Systemic disease, age (especially extremely young or old age), trauma, surgical and radiological procedures, drug treatments, and indwelling devices can decrease resistance and make patients more susceptible to infection.

B. Prevention of Disease Transmission

Prevention of the transmission of an infectious agent is the responsibility of all staff:

1. Treat all bodily fluids as potentially infectious.
2. Dispose waste according to hospital policy. (Refer to **ICM-IX-02** Management of Infectious Waste).
3. Adhere to aseptic technique when required. (Refer to **ICM-II-05** Aseptic Technique).
4. Adhere to hand hygiene practices. (Refer to **ICM-II-04** Hand Hygiene).
5. Maintain good personal hygiene.
6. Adhere to the hospital policy for managing isolated patients. (Refer to **ICM-III-02** Isolation (Expanded) Precautions).
7. Observe effective housekeeping practices. (Refer to **ICM-X-07** Housekeeping).
8. Adhere to STANDARD PRECAUTIONS. (Refer to **ICM-II-03** Standard Precautions)
9. Store food and personal belongings appropriately in the workplace.

TITLE/DESCRIPTION:	INDEX NUMBER
ISOLATION (EXPANDED) PRECAUTIONS	**ICM - III - 02**

EFFECTIVE DATE:	APPLIES TO:	ISSUING AUTHORITY:
01/01/2009 **01/01/2013** **01/01/2018**	**All GCC Countries**	**GULF COOPERATION COUNCIL – CENTRE FOR INFECTION CONTROL (GCC-CIC)**

DEFINITION

To describe the principles of isolation precautions (also known as expanded precautions) needed to further reduce or prevent the spread of epidemiologically significant or highly transmissible pathogens when standard precautions alone are insufficient.

REFERENCES

1. Association for Professionals in Infection Control (APIC) and Epidemiology, Inc. (2014). Chapter 29: Isolation precautions – recommendation for isolation precautions in hospitals. In APIC Text of infection control and epidemiology (4th ed.).
2. HICPAC Guidelines for isolation precautions: preventing transmission of infectious agents in healthcare settings, 2007.

COMMENTS

1. Isolation precautions contain two tiers: Standard Precautions and Transmission-based Precautions.

STANDARD PRECAUTIONS	TRANSMISSION-BASED PRECAUTIONS
Apply to all patients in all situations.	Apply in addition to Standard Precautions to patients known or suspected of being infected or colonized with an epidemiologically important or highly transmissible pathogen.

   a. Standard precautions are designed to reduce the risk of transmission of microorganisms from both recognized and unrecognized sources of infection in hospitals. Standard precautions apply to blood, all body fluids (secretions and excretions except sweat regardless of whether they contain blood), non-intact skin and mucous membranes. Refer to **ICM-II-03** Standard Precautions.
   b. Transmission-based precaution is designed for patients documented to be or suspected to be infected or colonized with highly transmissible or epidemiologically important pathogens for which additional precautions beyond Standard Precautions are required.
      i. There are three types of isolation precautions: Airborne, Droplet and Contact Precautions.
      ii. These precautions may be combined for diseases that have multiple routes of transmission. When used either singularly or in combination, they are to be used in addition to Standard Precautions.
      iii. Refer to **ICM-III-06** Isolation System: A Quick Reference Guide to Pathogen/Isolation Requirements.
      iv. Protective environment guidelines refer to policy **ICM-VII-05** Immunocompromised Patients.

ISOLATION (EXPANDED) PRECAUTIONS	ICM - III - 02

PROCEDURE

Nurses will take the following steps:

1. Initiate isolation precautions as specified and/or based on clinical assessment of the patient in consultation with the attending physician and/or Infection Preventionist (IP). (Microbiology reports may or may not support the clinical assessment).
2. Arrange for the required isolation supplies for the room. Place the appropriate isolation precautions sign on the room door and on the patient's Kardex.
3. Give the necessary instructions to patients and visitors.

TITLE/DESCRIPTION:	INDEX NUMBER
CONTACT ISOLATION PRECAUTIONS	**ICM - III - 03**

EFFECTIVE DATE:	APPLIES TO:	ISSUING AUTHORITY:
01/01/2009 01/01/2013 01/01/2018	**All GCC Countries**	**GULF COOPERATION COUNCIL – CENTRE FOR INFECTION CONTROL (GCC-CIC)**

DEFINITION

In addition to standard precautions, Contact Isolation Precautions is intended to reduce the risk of transmission of epidemiologically important microorganisms thru direct or indirect contact with the patients or the patients' environment.

REFERENCES

1. Association for Professionals in Infection Control (APIC) and Epidemiology, Inc. (2014). Chapter 29: Isolation precautions – recommendations for isolation precautions in hospitals. In APIC Text of infection control and epidemiology (4th ed.).
2. HICPAC Guidelines for isolation precautions: preventing transmission of infectious agents in healthcare settings, 2007.

COMMENTS

1. Contact isolation precautions must be used together with Standard Precautions **(ICM-II-03).**
2. Contact precautions also apply when the presence of excessive wound drainage, fecal incontinence or other discharges from the body suggest an increased potential for extensive environmental contaminations and risk of transmission.
3. Patients diagnosed with the same disease can be placed in the same room (cohorted), assuming that no other infection is present.

PROCEDURE

1. Contact isolation should be initiated and maintained when there is a suspected or confirmed diagnosis of an infectious disease that is transmitted by the contact route. Refer to **ICM-III-06** Isolation System: A Quick Reference Guide.
2. The patient should be in a single room. A neutral pressure room is indicated. If no single room is available
   a. Put a contact isolation sign on the door and the patient's curtain. Contact isolation signage must be color coded (e.g., green) and must be available in both English and Arabic languages.
   b. Keep the door closed.
   c. If no single room is available cohorting same patients with similar infections may be done in consultation with the Infection Preventionist (IP).
3. All healthcare workers must wear the appropriate PPE (gown and gloves) when anticipating contact with patient or the patient's environment.
   a. Change the gown and gloves between patients even if both patients share a room and both are under Contact Precautions.

b. Sequence of donning PPEs before entering the room:
   i. Perform hand hygiene
   ii. Don gown. Gown should cover torso from neck to knees and should be secured at neck and waist.
   iii. Don gloves. Extend gloves over isolation gown cuffs.
c. Sequence of doffing PPEs before leaving the room:
   i. Remove gloves.
   ii. Remove gown. Unfasten ties, peel gown away from neck and shoulder, turn inside out, fold into a bundle and discard.
   iii. Perform hand hygiene. Use soap and water when dealing with a patient with spore-forming bacteria (e.g., Clostridium difficile) or if hands are visibly soiled. Refer to **ICM-II-04** Hand Hygiene

4. Notify IP that the patient is in contact isolation.
5. The"5 Moments of Hand Hygiene" must be followed by all personnel entering and leaving the patient care area. Refer to **ICM-II-04** Hand Hygiene.
6. Explain the purpose of precautions to the patient and visitors to encourage their cooperation with hand hygiene.
7. Limit patient transport outside the room to medically necessary purposes. If the patient is to be transported, refer to **ICM-III-09** Transporting Patients on Isolation Precautions.
   a. Inform the destination department/facility of the patient's isolation status prior to transport.
8. Environmental measures: Housekeepers should wear gowns and gloves before room entry to clean the patient's room, and gowns and gloves should be discarded when leaving. Refer to **ICM-X-07** Housekeeping.
9. Discontinue isolation precautions in consultation with the IP.

TITLE/DESCRIPTION:	INDEX NUMBER
DROPLET ISOLATION PRECAUTIONS	**ICM - III - 04**

EFFECTIVE DATE:	APPLIES TO:	ISSUING AUTHORITY:
01/01/2009 01/01/2013 01/01/2018	All GCC Countries	GULF COOPERATION COUNCIL – CENTRE FOR INFECTION CONTROL (GCC-CIC)

DEFINITION

In addition to standard precautions, Droplet Isolation Precautions prevents the transmission of infectious agents that are spread through close respiratory or mucous membrane contact with respiratory secretions.

REFERENCES

1. Association for Professionals in Infection Control (APIC) and Epidemiology, Inc. (2014). Chapter 29: Isolation precautions – recommendations for isolation precautions in hospitals. In APIC Text of infection control and epidemiology (4th ed.)

2. HICPAC Guidelines for isolation precautions: preventing transmission of infectious agent in healthcare settings, 2007.

COMMENTS

1. Droplet Isolation Precautions must be used together with Standard Precautions **(ICM-II-03).**

2. Droplet Precautions are intended to reduce the risk of droplet transmission of infectious agents from close contact (exposure to eyes, nose and mouth) with large-particle droplets (larger than 5 µm) generated by coughing, sneezing, talking or aerosol-generating procedures.

3. Patients diagnosed with the same disease can be placed in the same room (cohorted) in consultation with Infection Preventionist (IP), assuming that no other infection is present.

PROCEDURE

1. Initiate and maintain droplet precautions when there is suspected or confirmed diagnosis of an infectious disease that is transmitted by the droplet route.

2. Use a single room. A negative air pressure room is not indicated.
   a. Place a droplet sign on the door.
   b. Droplet isolation signage must be color coded (e.g., orange) and must be available in both English and Arabic languages.

3. Notify the IP that the patient is placed under precautions.

4. Wear appropriate PPE (surgical mask, gloves, and gown) as needed. A surgical mask is required within three (3) feet of the patient.
   a. Sequence of donning PPEs before entering the room:
      i. Perform hand hygiene.
      ii. Don gown. Gown should cover torso from neck to knees and should be secure at neck and waist.

iii. Don surgical mask. Place surgical mask over nose, mouth and chin then fit flexible nosepiece over nose bridge and secure head with ties or elastic.
iv. Don gloves. Extend gloves over isolation gown cuffs.

b. Sequence of doffing PPEs before leaving the room:
i. Remove gloves.
ii. Remove gown. Unfasten ties, peel gown away from neck and shoulder, turn it inside out, fold into a bundle and discard.
iii. Perform hand hygiene.
iv. Remove surgical mask.
v. Perform hand hygiene.

NB: If goggles/face shield are worn:

- Don PPEs in this order: Hand hygiene, gown, surgical mask, goggles/face shield and gloves.
- Remove PPEs in this order: Gloves, hand hygiene, goggles/face shield, gown, hand hygiene, surgical mask and hand hygiene.

5. The "5 Moments of Hand Hygiene" must be followed by all personnel entering and leaving the patient care area. Refer to **ICM-II-04** Hand Hygiene.

6. Encourage the patient to observe basic personal hygiene (hand hygiene, care with secretions).

7. Keep the patient in the room for the duration of the infectious period if possible. Limit patient transport to essential medical purposes (if patient is to be transported, refer to **ICM-III-09** Transporting Patients on Isolation Precautions).
   a. Place a surgical mask on the patient if he/she must leave the room.
   b. Inform the destination department/facility regarding droplet precautions when the patient is being transported.

8. Explain the purpose of the precautions to the patient and visitors to encourage their cooperation.

9. Environmental Measures: Daily cleaning of the high touch surfaces with hospital-approved disinfectant is appropriate. Housekeeping staff should wear a surgical mask before entering the room. Refer to **ICM-X-07** Housekeeping.

10. Discontinue isolation precautions in consultation with the IP. Refer to **ICM–III-06** Isolation System: A Quick Reference Guide.

TITLE/DESCRIPTION:	INDEX NUMBER
AIRBORNE ISOLATION PRECAUTIONS	**ICM - III - 05**

EFFECTIVE DATE:	APPLIES TO:	ISSUING AUTHORITY:
01/01/2009 01/01/2013 01/01/2018	**All GCC Countries**	**GULF COOPERATION COUNCIL – CENTRE FOR INFECTION CONTROL (GCC-CIC)**

DEFINITION

In addition to standard precautions, Airborne Isolation Precautions prevents the transmission of infectious agents that remain infectious over long distances when suspended in the air (e.g., measles, varicella, pulmonary tuberculosis, avian influenza, severe acute respiratory syndrome (SARS)).

REFERENCES

1. American Thoracic Society. (1992). Control of tuberculosis in the United States. 146; 1623-1633.
2. Association for Professionals in Infection Control (APIC) and Epidemiology, Inc. (2014). Chapter 29: Isolation Precautions. In APIC Text of infection control and epidemiology (4th ed.).
3. Association for Professionals in Infection Control (APIC) and Epidemiology, Inc. (2014). Chapter 95: Tuberculosis and other Mycobacteria. In APIC Text of infection control and epidemiology (4th ed.).
4. Centers for Disease Control and Prevention (CDC). Guidelines for preventing the transmission of mycobacterium tuberculosis in healthcare settings MMWR. 2005.
5. HICPAC/CDC Guidelines for isolation precautions: preventing transmission of infectious agents in healthcare setting, 2007.

COMMENTS

1. Airborne isolation precautions must be used together with Standard Precautions **(ICM-II-03).**
2. Airborne isolation is used when a patient is suspected or confirmed to have any of the diseases that are spread via the airborne route.
3. Healthcare workers (HCWs) are expected to be immune to vaccine-preventable diseases such as measles and varicella that are transmitted via the airborne route.
4. Non-immune HCWs shall adhere to proper PPE for self-protection and be immunized as soon as possible.
5. Rooms with negative air pressure system (also called airborne infectious isolation rooms (AIIRs) are vital to prevent the risk of infectious particles escaping and potential exposure/transmission of disease.
6. A fit-tested respirator particulate mask (N95 or higher) is required for all HCWs who will potentially care for patients in respiratory isolation. The renewal of fit testing for HCWs should follow a hospital-based policy. This will ensure the prevention of disease transmission to HCWs through the airborne route.
7. A fit check or user seal check is a quick check performed by the wearer each time the respirator is put on. It determines if the respirator is properly sealed to the face or needs to be readjusted.
8. A fit test, tests the seal between the respirator's face piece and your face. It takes about 15 to 20 minutes to complete. After passing a fit test with a respirator, you must use the exact same make, model, style, and size respirator on the workplace.

PROCEDURE

1. Initiate and maintain isolation when there is suspicion or confirmed diagnosis of an infectious disease that is transmitted by the airborne route.

2. Use a single room with a negative air pressure system (AIIR)
   a. Place the Airborne Isolation sign on the door. Airborne isolation signage must be color coded (e.g., blue) and must be available in both English and Arabic languages.
   b. Keep door closed at all times except when entering or leaving the room.
3. When a patient is on airborne isolation, HCWs must wear an N95 mask/respirator before entering the room. An N-95 is single-use and disposed after each patient encounter. In the event of a shortage, such as during an outbreak, reuse may be allowed. Refer to **ICM-III-12** Management of Influx of Airborne Infectious Diseases for guidelines on the reuse of N-95 respirators.
   a. Sequence of donning PPEs before entering the room (preferably done in the anteroom, if available):
      i. Perform hand hygiene.
      ii. Don N95 mask or respirator. Place over nose, mouth and chin then fit flexible nosepiece over nose bridge, secure on the head with ties or elastic. Perform fit check.
   b. Sequence of doffing PPEs before leaving the room:
      i. Perform hand hygiene.
      ii. Outside the room, remove your N95 mask (in the anteroom if available)
      iii. Perform hand hygiene.
   c. In case of combination of Contact and Airborne precautions with eye protection (goggles/ace shield):
      i. Put PPEs in this order: Hand hygiene, gown, N95 mask, goggles/face shield and gloves.
      ii. Remove PPEs in this order: Gloves, hand hygiene, goggles/face shield, gown, hand hygiene (inside the room), and remove N95 mask (outside the room) and perform hand hygiene.
4. Notify the IP that the patient is in isolation.
5. The "5 Moments of Hand Hygiene" must be followed by all personnel entering and leaving the patient care area. Refer to **ICM-II-04** Hand Hygiene.
6. Keep the patient in the room during the infectious period (if patient is to be transported, refer to **ICM-III-09** Transporting Patients on Isolation Precautions).
   a. Place a surgical mask on the patient if he/she must leave the room.
   b. Instruct patient on respiratory hygiene and cough etiquette.
   c. Cover all lesions.
   d. Limit the transport of patients to essential medical purposes.
7. Instruct patients on respiratory hygiene and cough etiquette.
8. Check with visitors and staff for their immune status to the disease and instruct them regarding the use of protective apparel and proper behavior while in the isolation room.
   a. Emphasize proper personal hygiene and hand hygiene.
9. Notify other departments that will be receiving the patient of his/her isolation status.
10. Environmental measures: Routine cleaning of high touch surfaces is standard. Housekeeping personnel should wear the N95 mask before room entry. Refer to **ICM-X-07** Housekeeping.
11. In settings where airborne precautions cannot be implemented immediately, do the following:
    a. Place a surgical mask on the patient.
    b. Place the patient in a single room with a door. Keep the door closed.
    c. Provide N95 masks for HCWs entering the patient's room.
    d. Arrange for the patient to be transferred to an airborne isolation room and/or to be discharged as soon as possible.
12. Discontinue isolation precautions in consultation with infection control. Refer to **ICM– III-06** Isolation System: A Quick Reference Guide.
13. In case of negative pressure system failure, refer to **ICM-III-11** Negative Pressure Room Monitoring.

TITLE/DESCRIPTION:	INDEX NUMBER
ISOLATION SYSTEM: A QUICK REFERENCE GUIDE	**ICM - III - 06**

EFFECTIVE DATE:	APPLIES TO:	ISSUING AUTHORITY:
01/01/2009 **01/01/2013** **01/01/2018**	**All GCC Countries**	**GULF COOPERATION COUNCIL – CENTRE FOR INFECTION CONTROL (GCC-CIC)**

DEFINITION

This policy provides a quick reference guide for the selection of the appropriate isolation precaution(s). Each disease and condition in considered individually; only those precautions that are indicated to interrupt transmission for the disease/condition in question are recommended.

REFERENCE

1. Interim Guidance on Infection Control Measures for 2009: H1N1 Influenza in Healthcare Settings, Including Protection of Healthcare Personnel. July 2010.
2. Siegel JD, Rhinehart E, Jackson M, Chiarello L. The Healthcare Infection Control Practices Advisory Committee (HICPAC) 2007 Guideline for Isolation Precautions: Preventing Transmission of Infectious Agents in Healthcare Settings.

COMMENTS

1. Standard Precautions are those designed for the care of all patients in the hospital regardless of their diagnosis or presumed infection status. Implementation of Standard Precautions is the primary strategy for successful nosocomial prevention and control.
2. Isolation (transmission based) Precautions are designed for patients who are known or suspected to be infected with epidemiologically important pathogens that can be spread by the airborne, droplet, or contact routes.

Key	
1. C	Contact isolation
2. CN	Culture negative (with specified amount)
3. D	Droplet precautions
4. DE	Decontamination of environment
5. DH	Duration of hospitalization
6. DI	Duration of illness
7. LC	Lesions crusted
8. A	Airborne precautions
9. S	Standard precautions
10. SAPP	Special Administrative Policy and Procedure
11. U	Time (in hours or days) after the initiation of effective antimicrobial therapy
12. U^R	Time (in days) after onset of rash
13. U^s	Time (in days) after onset of swelling

PROCEDURE

Refer to **Appendix 1 – III-06** Isolation Systems: A Quick Reference Guide

Appendix 1
TYPE AND DURATION OF PRECAUTIONS NEEDED FOR SELECTED INFECTIONS AND CONDITIONS

INFECTION / CONDITION	PRECAUTIONS	
	TYPE	DURATION
Abscess		
• Draining, major	S, C	DI
• Draining, minor or limited	S	
Acquired immunodeficiency syndrome (AIDS)	S	
Actinomycosis	S	
Adenovirus infection		
• Conjunctivitis	S, C	DI
• Disseminated (2 or more sites) infection in immuno-compromised host	S, C	DI
• Gastroenteritis	S, C	DI
• Respiratory infection	S, D,C	DI
Amoebiasis	S	
Anthrax	S	
• Environmental aerosolizable spore-containing powder	S, C	DE*
• Cutaneous**	S, C	
• Pulmonary	S	
Antibiotic-associated colitis (see *Clostridium difficile*)	–	–
Arthropod-borne viral encephalitidis (Eastern, Western and Venezuelan equine encephalomyelitis; St. Louis or California encephalitis, West Nile Virus, dengue, yellow fever)	S	
Ascariasis	S	
Aspergillosis	S	
Avian influenza A (H5N1 virus and any new emerging pathogens)	S, A, C	14 days after onset of symptoms
Seasonal influenza A or B (H1N1 Virus)	S, D	
Babesiosis	S	

* Until decontamination of environment complete. Persons decontaminating the area must wear N95 mask and protective clothing

** CP if contact with non-intact skin and with draining lesions.

Appendix 1
TYPE AND DURATION OF PRECAUTIONS NEEDED FOR SELECTED INFECTIONS AND CONDITIONS

INFECTION / CONDITION	PRECAUTIONS	
	TYPE	DURATION
Blastomycosis (North American - cutaneous or pulmonary)	S	
Botulism	S	
Bronchiolitis (see respiratory infection in infants and young children)	S,C	DI
Brucellosis (undulant, Malta, Mediterranean fever)	S	
Cat-scratch fever (benign inoculation lymphoreticulosis)	S	
Cellulitis (uncontrolled drainage)	S, C	DI
Chancroid (soft chancre)	S	
Chickenpox (see Varicella)		
Chlamydia trachomatis		
• Conjunctivitis	S	
• Genital (lymphogranuloma venerum)	S	
• Pneumonia (infants ≤3 months old)	S	
Cholera (see gastroenteritis)		
Closed-cavity infection		
• Draining (limited or minor) and not draining	S	
• Copious, uncontrolled drainage	S, C	
Clostridium		
• *C. botulinum*	S	
• *C. difficile*	S, C	U[48 hours] after diarrhea stops
• *C. perfringens*		
▪ Food poisoning	S	
▪ Gas gangrene	S	
Coccidioidomycosis (valley fever)		
• Draining lesions	S	
• Pneumonia	S	

Appendix 1
TYPE AND DURATION OF PRECAUTIONS NEEDED FOR SELECTED INFECTIONS AND CONDITIONS

INFECTION / CONDITION	PRECAUTIONS	
	TYPE	DURATION
Colorado tick fever	S	
Congenital rubella	S, C	Until 1 yr of age
Conjunctivitis		
• Acute bacterial	S	
• Chlamydia	S	
• Gonococcal	S	
• Acute viral (acute hemorrhagic)	S, C	DI
Corona virus associated with SARS (see SARS) • Human corona virus (229E, NL63, OC43) • Middle East Respiratory Syndrome Corona virus (MERS-CoV)	 S,D S,A,C	
Coxsackie virus disease (see enteroviral infection)		
Creutzfeldt-Jakob disease (CJD, VCJD) refer to policy	S	
Crimean-Congo fever virus	S, C, D	DI
Croup (see respiratory infections in infants and young children)		
Cryptococcosis	S	
Cryptosporidiosis (see gastroenteritis)		
Cysticercosis	S	
Cytomegalovirus infection (neonatal or immuno-suppressed)	S	
Decubitus ulcer (infected)		
• Major	S, C	DI
• Minor or limited	S	
Dengue fever	S	
Diarrhea (acute infective etiology suspected; see gastroenteritis)		
Diptheria		
• Cutaneous	S, C	CNx[2]*

* Until 2 cultures taken 24 hours apart negative

Appendix 1
TYPE AND DURATION OF PRECAUTIONS NEEDED FOR SELECTED INFECTIONS AND CONDITIONS

INFECTION / CONDITION	PRECAUTIONS	
	TYPE	DURATION
• Pharyngeal	S, D	CNx2*
Ebola viral hemorrhagic fever	S, C, D	DI/SAPP
Echinococcosis (hydatidosis)	S	
Echovirus (see enteroviral infection)		
Encephalitis or encephalomyelitis (see specific etiologic agents)		
Endometritis	S	
Enterobiasis (pinworm disease, oxyuriasis)	S	
***Enterococcus* spp.** (see multidrug-resistant organisms if epidemiologically significant or vancomycin resistant)		
Enterocolitis: *Clostridium difficile*	S, C	DI
Enteroviral infections (group A & B coxackie and echo viruses-excluding polio virus)		
• Adults	S	
• Infants and young children	S, C	DI
Epiglottitis, due to *Haemophilus influenzae type b*	S, D	U^{24Hrs}
Epstein-Barr virus infection, including infectious mononucleosis	S	
Erythema infectiosum (also see parvovirus B19)		
***Escherichia coli* gastroenteritis** (see gastroenteritis)		
Food poisoning		
• Botulism	S	
• *Clostridium perfringens* or *Clostridium welchii*	S	
• Staphylococcal	S	
Furunculosis, staphylococcal	S	
• Infants and young children	S, C	DI

* Until 2 cultures taken 24 hours apart negative

Appendix 1
TYPE AND DURATION OF PRECAUTIONS NEEDED FOR SELECTED INFECTIONS AND CONDITIONS

INFECTION / CONDITION	PRECAUTIONS	
	TYPE	DURATION
Gangrene (gas gangrene)	S	
Gastroenteritis *Diapered or incontinent*	S, C	DI
• Adenovirus *Diapered or incontinent*	S S,C	DI
• *Campylobacter* spp. *Diapered or incontinent*	S S,C	DI
• Cholera *Diapered or incontinent*	S S,C	DI
• *Clostridium difficile* (see *C. difficile*) * refer to policy	S, C	U ^{48hrs} after diarrhea stops
• *Cryptosporidium* spp. *Diapered or incontinent*	S S,C	
• *Escherichia coli*		
▪ Enterohemorrhagic 0157:H7 *E. coli* *Diapered or incontinent*	S S,C	
▪ Other species *Diapered or incontinent*	S S,C	
• *Giardia lamblia* *Diapered or incontinent*	S S,C	DI
• Noroviruses *Diapered or incontinent*	S S,C	
• Rotavirus	S, C	DI
• *Salmonella* spp. (including *S. typhi*) *Diapered or incontinent*	S S,C	
• *Shigella* spp. Diapered or incontinent	S S, C	DI
• *Vibrio parahaemolyticus* *Diapered or incontinent*	S S,C	

* Discontinue antibiotics if appropriate. Do not share electronic thermometers, ensure consistent environmental cleaning and disinfection using a Hypochlorite solution. Hand washing with soap and water preferred.

Appendix 1
TYPE AND DURATION OF PRECAUTIONS NEEDED FOR SELECTED INFECTIONS AND CONDITIONS

INFECTION / CONDITION	PRECAUTIONS	
	TYPE	DURATION
• Viral (if not covered elsewhere) *Diapered or incontinent*	S S,C	
• *Yersinia enterocolitica* *Diapered or incontinent*	S S,C	
German measles (see rubella)		
Giardiasis (see gastroenteritis)		
Gonococcal ophthalmia neonatorum (gonorrheal ophthalmia, acute conjunctivitis of newborns)	S	
Gonorrhea	S	
Granuloma inguinale (donovanosis granuloma)	S	
Guillian-Barre syndrome	S	
Hand, foot, and mouth disease (see enteroviral infection)		
Hantavirus pulmonary syndrome	S	
Helicobacter pylori	S	
Hepatitis, viral		
• Type A *Diapered or incontinent patients*	S S, C	
• Type B, HBsAg positive, acute or chronic	S	
• Type C and other unspecified non-A, non-B	S	
• Type D (seen only with hepatitis B)	S	
• Type E *Diapered or incontinent*	S S,C	
• Type G	S	
Herpangina (see enteroviral infection)		
Herpes simplex (Herpesvirus hominis)		
• Encephalitis	S	
• Neonatal*	S, C	DI/LC

* For asymptomatic, exposed infants delivered vaginally or by C-section and if mother has active infection and membranes have been ruptured for more than 4 to 6 hours until infant surface cultures obtained at 24-36 hours of age negative after 48 hrs incubation

Appendix 1
TYPE AND DURATION OF PRECAUTIONS NEEDED FOR SELECTED INFECTIONS AND CONDITIONS

INFECTION / CONDITION	PRECAUTIONS	
	TYPE	DURATION
• Mucocutaneous, disseminated, severe primary or recurrent	S, C	DI/LC
• Mucocutaneous, localized non disseminated recurrent (skin, oral, genital)	S	
Herpes zoster (varicella-zoster)**		
• Disseminated in any patient	S, A, C	DI
• Localized in immuno-compromised patient	S, A, C	DI
• Localized in normal patient	S	DI
Histoplasmosis	S	
Hookworm disease (ancylostomiasis, uncinariasis)	S	
Human Bocavirus	S, D	
Human immunodeficiency virus (HIV) infection	S	
Human Metapneumovirus	S,C	DI
Impetigo	S, C	U^{24Hrs}
Infectious mononucleosis	S	
Influenza	S, D	DI
• **seasonal**	S,D	DI
• **emerging influenza viruses including Avian and others**	S,A,C	DI
• **immunocompromised**	S,D	DI
Kawasaki syndrome	S	
Lassa fever (see Viral hemorrhagic fever)		
Legionnaires' disease	S	DI
Leprosy	S	
Leptospirosis	S	
Lice (pediculosis)	S, C	U^{24Hrs}
Listeriosis	S	

** Non-immune staff should not enter room if immune caregivers are available.

Appendix 1
TYPE AND DURATION OF PRECAUTIONS NEEDED FOR SELECTED INFECTIONS AND CONDITIONS

INFECTION / CONDITION	PRECAUTIONS	
	TYPE	DURATION
Lyme disease	S	
Lymphocytic choriomeningitis	S	
Lymphogranuloma venereum	S	
Malaria	S	
Marburg virus disease (see Viral hemorrhagic fever)		
Measles (rubeola), all presentations refer to policy*	S, A	$U^{R\ 4\ days}$
Melioidosis, all forms	S	
Meningitis		
• Aseptic (nonbacterial or viral meningitis) (also see enteroviral infections)	S	
• Infants and young children	S, C	
• Bacterial, gram-negative enteric, in neonates	S	
• Fungal	S	
• *Haemophilus influenzae* type B, known or suspected	S, D	U^{24Hrs}
• *Listeria monocytogenes*	S	
• *Neisseria meningitidis* (meningococcal), known or suspected	S, D	U^{24Hrs}
• *Streptococcus pneumoniae*	S	
• Tuberculosis (See M. tuberculosis)	S	
• Other diagnosed bacterial infection	S	
Meningococcal disease (sepsis, pneumonia, meningitis)	S, D	U^{24Hrs}
Meningococcemia (meningococcal sepsis)	S, D	U^{24Hrs}
Methichillin-resistant *Staphylococcus aureus* (MRSA)	S, C	
Middle East Respiratory Syndrome (MERS-CoV)	S, A, C	
Molluscum contagiosum	S	
Monkeypox	S, A, C	LC

* Non-immune caregivers should not enter room if immune caregivers are available.

Appendix 1
TYPE AND DURATION OF PRECAUTIONS NEEDED FOR SELECTED INFECTIONS AND CONDITIONS

INFECTION / CONDITION	PRECAUTIONS	
	TYPE	DURATION
Mucormycosis	S	
Multidrug-resistant organism, infection or colonization* (e.g., MRSA, VRE, GNR, resistant Strept pneumoniae)	S,C	
• Gastrointestinal	S, C	
• Respiratory	S, C	
• Skin, wound, or burn	S, C	
Mumps (infectious parotitis) refer to policy	S, D	U^{S9days}
Mycobacteria, nontuberculosis (atypical)		
• Pulmonary	S	
• Wound	S	
Mycoplasmal pneumonia	S, D	DI
Necrotizing enterocolitis	S	
Nocardiosis (draining lesions or other presentations)	S	
Orf virus disease	S	
Parainfluenza virus (respiratory infection in infants and young children)	S, C	DI
Parvovirus B19	S, D	DH
Pediculosis (lice)	S, C	U^{24Hrs}
Pertussis (whooping cough)*	S, D	U^{5DAYS}
Pharyngitis (Streptococcus group A)	S, D	U^{24Hrs}
Pinworm infection	S	
Plague (*Yersinia pestis*)		
• Bubonic (without cough and chest x-ray negative)	S	
• Pneumonic	S, D	U^{48Hrs}
Pleurodynia (see enteroviral infection)		

* Discontinue CP after consultation with the IP

Appendix 1
TYPE AND DURATION OF PRECAUTIONS NEEDED FOR SELECTED INFECTIONS AND CONDITIONS

INFECTION / CONDITION	PRECAUTIONS	
	TYPE	DURATION
Pneumonia		
• Adenovirus	S, D, C	DI
• Bacterial case not listed elsewhere (including gram-negative bacterial cases)	S	
• *Burkholderia cepacia* * with cystic fibrosis patients, including respiratory tract colonization	S,C	
• *Chlamydia*	S	
• *Fungal*	S	
• *Haemophilus influenzae*, Type B		
▪ Adults	S	
▪ Infants and children (any age)	S, D	U^{24Hrs}
• *Legionella spp.*	S	
• Meningococcal	S, D	U^{24Hrs}
• *Mycoplasma* (primary atypical pneumonia)	S, D	DI
• *Pneumocystis jiroveci (carinii)***	S	
• *Streptococcus*, group A		
▪ Adults	S, D	U^{24Hrs}
▪ Infants and small children	S, D	U^{24Hrs}
• Varicella zoster see Varicella-zoster	S,A	DI
Viral		
▪ Adults	S	
▪ Infants and young children (see respiratory infectious disease, acute)		
Poliomyelitis (acute)	S, C	DI
Pressure ulcer (see decubitus ulcer)		
Psittacosis (ornithosis) (Chlamydia psittaci)	S	

* Avoid placement in the same room with CF patients without B. cepacia
** Avoid placement in the same room with immunocompromised patient

Appendix 1
TYPE AND DURATION OF PRECAUTIONS NEEDED FOR SELECTED INFECTIONS AND CONDITIONS

INFECTION / CONDITION	PRECAUTIONS	
	TYPE	DURATION
Q fever	S	
Rabies see policy	S	
Rat-bite fever (*Streptobacillus moniliformis* disease, *Spirillum minus* disease)	S	
Relapsing fever	S	
Respiratory infectious disease, acute (if not covered elsewhere)		
• Adults	S	
• Infants and young children	S, C	DI
Respiratory syncytial virus infection* (in infants and young children and immunocompromised adults)	S, C	DI
Reye's syndrome	S	
Rheumatic fever	S	
Rhinovirus	S, D	DI
Rickettsial fever, tickborne (Rocky Mountain spotted fever, tickborne typhus fever)	S	
Rickettsialpox (vesicular rickettsiosis)	S	
Ringworm (dermatophytosis, dermatomycosis, tinea)	S	
Ritter's disease (staphylococcal scalded skin syndrome)	S, C	DI
Rocky Mountain spotted fever	S	
Roseola infantum (exanthem subitum)	S	
Rotavirus infection (see gastroenteritis)		
Rubella (German measles) (also see congenital rubella)	S, D	U^R7 days
Rubeola (see Measles)		
Salmonellosis (typhoidal or not typhoidal, diapered or incontinent)	S, C	DI
SARS (Severe Acute Respiratory Syndrome)**	S, A, D,C	DI

* In immunocompromised patients, extend the duration of contact precaution due to prolonged shedding.

** Airborne precautions, preferred; D if AIIR not available. N95 or higher respiratory protection; surgical mask if N95 unavailable; eye protection (goggles, face shield); aerosol-generating procedures highest risk for transmission via small droplet nuclei and large droplets; vigilant disinfection.

Appendix 1
TYPE AND DURATION OF PRECAUTIONS NEEDED FOR SELECTED INFECTIONS AND CONDITIONS

INFECTION / CONDITION	PRECAUTIONS	
	TYPE	DURATION
Scabies	S, C	U[24Hrs]
Scalded skin syndrome, staphylococcal (Ritter's disease)	S, C	DI
Scarlet fever	S, C	U[24Hrs]
Schistosomiasis (bilharziasis)	S	
Shigellosis (see gastroenteritis)		
Smallpox* (variola)	S, C, A	DI/LC
Sporotrichosis	S	
***Spirillum minus* disease** (rat-bite fever)	S	
Staphylococcal disease (*S. aureus*)		
• Pneumonia	S	
• Skin, wound, or burn		
▪ Major	S, C	DI
▪ Minor or limited	S	
▪ MRSA (see MRSA)		
***Streptobacillus moniliformis* disease** (rat-bite fever)	S	
Streptococcal disease (group A *Streptococcus*)		
• Skin, wound, or burn		
▪ Major	S,C	U[24Hrs]
▪ Minor or limited	S	
• Endometritis (puerperal sepsis)	S	
• Pharyngitis in infants and young children	S, D	U[24Hrs]
• Pneumonia in infants and young children	S, D	U[24Hrs]
• Scarlet fever in infants and young children	S, D	U[24Hrs]
• Severe invasive disease (necrotizing fasciitis, toxic shock syndrome)	S, D	U[24Hrs]

* Non immune HCWs should not care when immune caregivers are available. N95 or higher respiratory protection for susceptible and successfully vaccinated individuals; post exposure vaccine within 4 days of exposure for protection.

Appendix 1
TYPE AND DURATION OF PRECAUTIONS NEEDED FOR SELECTED INFECTIONS AND CONDITIONS

INFECTION / CONDITION	PRECAUTIONS	
	TYPE	DURATION
Streptococcal disease (group B *Streptococcus* neonatal)	S	
Streptococcal disease (not group A or B) unless covered elsewhere	S	
Strongyloidiasis	S	
Syphilis		
• Skin and mucous membrane, including congenital, primary, and secondary	S	
• Latent (tertiary) and seropositivity without lesions	S	
Tapeworm disease		
• *Hymenolepis nana* (fish)	S	
• *Taenia solium* (pork)	S	
• *Taenia saginata* (beef)	S	
Tetanus	S	
Tinea (fungal infection, dermatophytosis, dermatomycosis, ringworm)	S	
Toxoplasmosis	S	
Toxic shock syndrome (staphylococcal disease, streptococcal disease)	S	
Trachoma, acute	S	
Trench mouth (Vincent's angina)	S	
Trichinosis	S	
Trichomoniasis	S	
Trichuriasis (whipworm disease)	S	
Tuberculosis (*Mycobacterium tuberculosis*)		
• Extra-pulmonary (no draining lesions, meningitis)	S	
• Extra-pulmonary (draining lesions)*	S, A, C	
• Pulmonary or laryngeal (confirmed or suspected)*	S, A	
• Skin-test positive with no evidence of current pulmonary disease	S	

* Discontinue isolation (confirmed cases) when 14 days anti-TB therapy; 3 sputum smears negative for AFB; and, clinical improvement. Discontinue isolation (suspected cases) if patient has 3 sputum smears negative for AFB.

Appendix 1
TYPE AND DURATION OF PRECAUTIONS NEEDED FOR SELECTED INFECTIONS AND CONDITIONS

INFECTION / CONDITION	PRECAUTIONS	
	TYPE	DURATION
Tularemia		
• Draining lesion	S	
• Pulmonary	S	
Typhoid (*Salmonella typhi*) fever (see gastroenteritis)		
Typhus (endemic and epidemic) • Rickettsia prowazekii • Rickettsia Typhi	S S	
Urinary tract infection (including pyelonephritis, with or without urinary catheter), except MDRO	S	
Varicella zoster (see chickenpox) refer to policy		
Vibrio parahaemolyticus (see gastroenteritis)		
Vincent's angina (see trench mouth)	S	
Viral hemorrhagic fever refer to policy (Lassa, Ebola, Marburg, Crimean-Congo fever viruses)	S, C, D	DI
Viral respiratory disease		
▪ Adults	S	
▪ Infants and young children (see respiratory infectious disease, acute)		
Whooping cough (see pertussis)	D	
Wound infections		
• Major	S, C	DI
• Minor or limited	S	
***Yersinia enterocolitica* gastroenteritis** (see gastroenteritis)		
Zoster (varicella zoster), shingles (see chicken pox)		
• Disseminated in any patient	S, A, C	DI/LC
• Localized in immunocompromised patient	S, A, C	DI/LC
• Localized in normal patient	S	
Zygomycosis (phycomycosis, mucormycosis)	S	

TITLE/DESCRIPTION:	INDEX NUMBER
INITIATING AND DISCONTINUING ISOLATION	**ICM -III - 07**

EFFECTIVE DATE:	APPLIES TO:	ISSUING AUTHORITY:
01/01/2009 **01/01/2013** **01/01/2018**	**All GCC Countries**	**GULF COOPERATION COUNCIL – CENTRE FOR INFECTION CONTROL (GCC-CIC)**

DEFINITION

To provide guidelines on the process of initiating and discontinuing isolation precautions for patients with a confirmed or suspected infectious diseases that carries the risk of nosocomial transmission.

COMMENTS

1. Standard precautions must always be observed while delivering direct patient care.
2. Appropriate isolation signs must be placed on the doors as needed.
3. Patients requiring isolation precaution can be identified by laboratory results, physician diagnosis, or any existing flagging system.

PROCEDURE

A. Physician

1. Identify patients with either a suspected or confirmed infectious diseases.
2. Where possible, this information should be available on the patient's chart upon admission or as soon as the infection becomes apparent.

B. Nurses

1. Confer with physician(s) regarding suspected/diagnosed infections.
2. Notify Infection Preventionist (IP) for assistance regarding the type of isolation to be used.
3. Request the appropriate single room from the Admissions Office Bed Coordinator.
4. Place the patient in an appropriate room (some patients with the same type of infection can be cohorted upon IP's advice).
5. Place the appropriate isolation sign on the outside of the door of the patient's room.
6. Ensure that the appropriate isolation precautions are maintained for the duration of the infectivity of the patient.
7. Fill out a Report of Communicable Diseases Form for all diagnosed cases of reportable diseases for the MOH; refer to **ICM–I-05** Reporting Communicable Diseases to the Ministry of Health.
8. Discontinue isolation in consultation with IP.
9. Notify the Admissions Office when isolation is discontinued.
10. Request housekeeping staff to carry out a terminal cleaning of the isolation room. Refer to **ICM-X-07** Housekeeping.
11. Return reusable instruments to the department responsible for reprocessing used medical instruments and supplies.
12. Ensure cleaning and storage of other patient care items/equipment, as necessary.

C. Infection Preventionist

1. Provide proper advice to nursing staff regarding the type of isolation.
2. Confer with the attending physician regarding the patient's clinical assessment.
3. Monitor the patient's infectious status and make recommendations on rescreening, maintaining, or discontinuing isolation.
4. Monitor HCWs' compliance with standard and isolation precautions and give consultations where necessary. For exposed unprotected HCWs refer to **ICM-VI-04** Work Restrictions for Infected Healthcare Workers.

TITLE/DESCRIPTION:	INDEX NUMBER
SINGLE ROOM USE FOR ISOLATION PRECAUTIONS	**ICM - III - 08**

EFFECTIVE DATE:	APPLIES TO:	ISSUING AUTHORITY:
01/01/2009 **01/01/2013** **01/01/2018**	**All GCC Countries**	**GULF COOPERATION COUNCIL – CENTRE FOR INFECTION CONTROL (GCC-CIC)**

DEFINITION

To provide guidelines on the appropriate use of single rooms for isolating patient suspected or confirmed with communicable diseases.

REFERENCE

Association for Professionals in Infection Control (APIC) and Epidemiology, Inc. (2014). Chapter 29: Isolation precautions. In APIC Text of infection control and epidemiology (4th ed.).

COMMENTS

1. Appropriate patient placement is an important component of isolation precautions, which are designed to do the following:
   a. Provide a physical barrier around the patient infected or colonized with epidemiologically significant microorganisms.
   b. Remind personnel and visitors to observe infection control measures.
2. Consult with the Infection Preventionist (IP) to verify proper patient placement as necessary.

PROCEDURE

A. Single Rooms

1. Use a single room with hand hygiene and toilet facilities for isolation purposes.
2. Use a single room with negative pressure (airborne infectious isolation room (AIIR)) for airborne isolation precautions.
3. Post the appropriate isolation sign on the door to indicate the isolation precaution(s) required.
4. Place isolation carts with the necessary supplies outside the single room.
5. Consult with IP to cohort patients with identical organisms/disease when there is a shortage of single rooms.

B. Indication for Single Room

1. Refer to policy **ICM–III-06** Isolation Systems: A Quick Reference Guide to initiate isolation based on the type of suspected/diagnosed infection or infectious disease.
2. Place the patient in a single room for the duration of infectivity of the patient.
3. When a patient has poor hygienic habits and cannot comply with infection control practices, consult with IP.

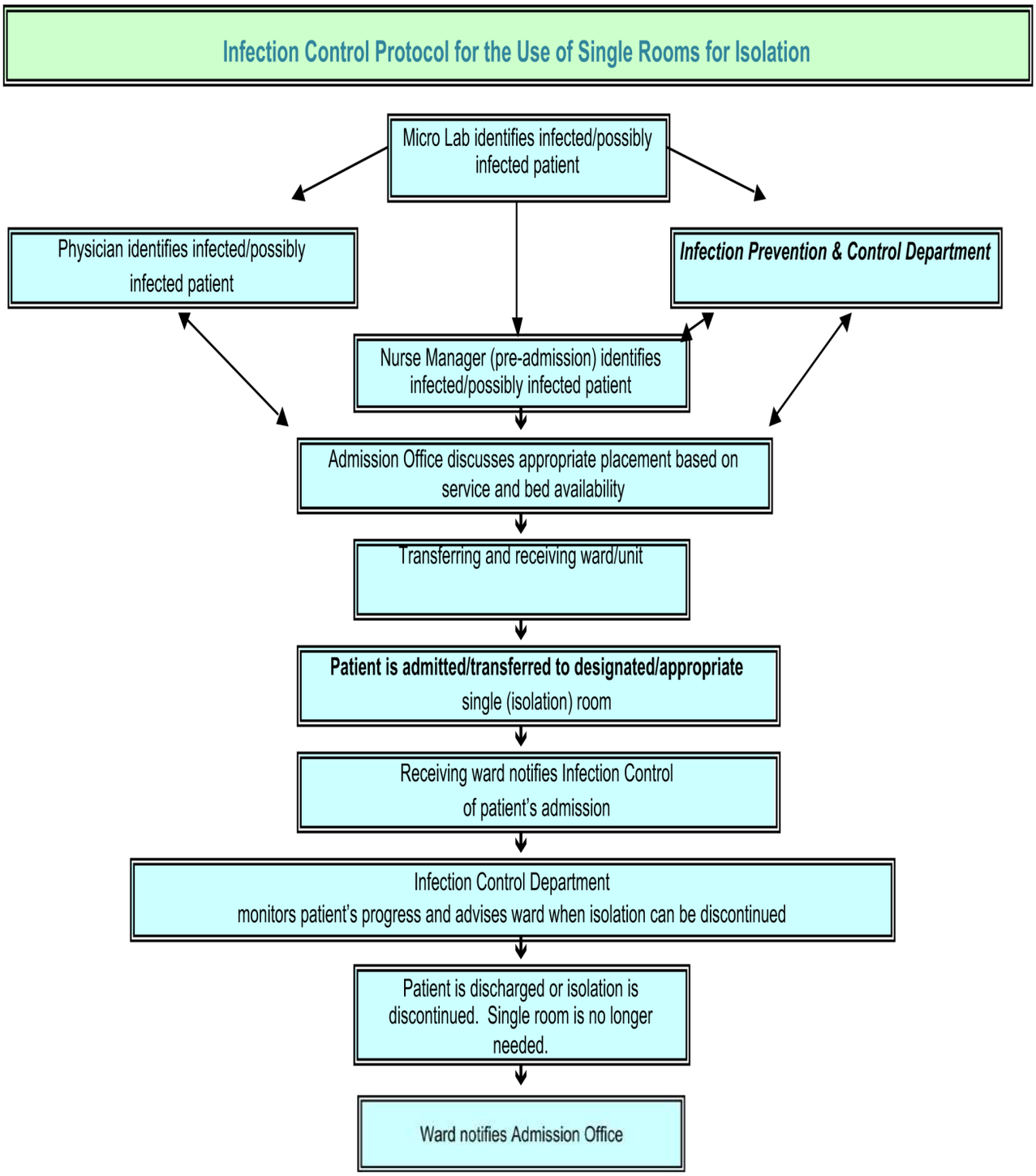
C. Admission Process

1. The attending physician documents confirmed or suspected infectious status of patients that require isolation.
2. Admitting wards (OPD, ER) notify Infection Prevention & Control.
3. IP and the Admissions Department will confer to determine the need for a single room.
4. The receiving ward and admission office shall notify IP when a patient is placed in single-room isolation.

5. If a single room in an OFF-SERVICE ward is utilized, the Admissions Department shall transfer the patient to the appropriate service ward as soon as the required room becomes available.
6. The IP shall monitor the patient's progress and advise on rescreening and discontinuation of isolation.
7. The ward staff shall notify the Admissions Office when isolation is discontinued.

Refer to **Flowchart 1 – III-08** Infection Control Protocol for Use of Single Room for Isolation.

Flowchart 1-III-08:



TITLE/DESCRIPTION:	INDEX NUMBER
TRANSPORTING PATIENTS ON ISOLATION PRECAUTIONS	**ICM - III - 09**

EFFECTIVE DATE:	APPLIES TO:	ISSUING AUTHORITY:
01/01/2009 01/01/2013 01/01/2018	**All GCC Countries**	**GULF COOPERATION COUNCIL – CENTRE FOR INFECTION CONTROL (GCC-CIC)**

DEFINITION

To provide clear guidelines to safely transporting isolated patients within the facility while preventing or minimizing infection transmission.

COMMENT

1. Transport of isolated patients should be limited to essential purposes only, such as diagnostic and therapeutic procedures that cannot be performed in the patient's room.
2. When patient transport is necessary, appropriate barriers (e.g., masks, leak-proof dressing) should be worn to reduce potential contamination of the environment and the spread of infection.
3. Refer to **ICM-III-02** Isolation (Expanded) Precautions for specific isolation precautions.
4. All staff must observe Standard Precautions at all times with a multi-drug-resistant organism (MDRO) case.
5. Transporting patients colonized or infected within facility or between facilities within a country or between countries allow risks for spreading MDROs.
6. MDROs, including Vancomycin Resistant Enterococcus (VRE) and Clostridium difficile, are pathogens resistant to more than one antimicrobial agent from at least three different classes.

PROCEDURE

A. Ward

1. Notify the receiving department to which the patient is being transported of the isolation precautions in effect.
2. Instruct the patient on the ways that he/she can assist in maintaining appropriate precautions to prevent transmission of the infection.
3. Healthcare workers transporting patients who are in isolation are not required to wear PPEs unless there is a risk of exposure to blood and body fluids.
4. Isolation instructions must highlight the transmission-based precaution card (isolation signs) needed while transporting patients under transmission-based precautions to other department (e.g radiology).
5. Dress wounds with impervious dressings as required.
6. Dress the patient in a clean gown.
7. For patients with skin lesions associated with varicella or smallpox or with draining lesions caused by Mycobacterium Tuberculosis (MTB), cover the affected areas to prevent aerosolization and to avoid contact with the infectious agent.
8. Explain to the patient the need for the protective apparel that he/she is required to wear.
   a. Put a mask on any patient who is in airborne isolation.
9. Cover the wheelchair/stretcher with a sheet before moving the patient.
10. Cover the patient with a clean sheet.
11. Transport the patient to the area as required.
12. Return the patient to the isolation room as soon as circumstances allow.
13. Clean and disinfect the wheelchair or stretcher with the hospital-approved disinfectant.

B. Receiving Department

1. Use appropriate personal protective equipment (PPE) when managing the patient.
2. Observe the specified isolation techniques. Adhere to the Hand Hygiene policy.
3. Arrange for the patient's return to his/her ward as soon as possible.
4. Change linens and clean equipment and environmental surfaces as indicated before receiving the next patient.

C. Transferring the Patient to Another Facility

1. Inform the receiving facility and the emergency vehicle personnel in advance about the type of isolation and standard precautions (PPE) required.
2. Provide complete information on the infectious status of the patient to the receiving facility.
3. Inform receiving hospital and document the presence of a MDRO and specify whether it is a colonization or an infection.

TITLE/DESCRIPTION:	INDEX NUMBER
PATIENTS AND SITTERS IN ISOLATION: INFECTION CONTROL EDUCATION AND COMPLIANCE	**ICM - III - 10**

EFFECTIVE DATE:	APPLIES TO:	ISSUING AUTHORITY:
01/01/2009 **01/01/2013** **01/01/2018**	**All GCC Countries**	**GULF COOPERATION COUNCIL – CENTRE FOR INFECTION CONTROL (GCC-CIC)**

DEFINITION

To give guidelines on how to manage and achieve compliance from approved sitters of patients in isolation as per the institution's policy and procedures.

REFERENCES

1. Association for Professionals in Infection Control (APIC) and Epidemiology, Inc. (2014). Chapter 29: Isolation precautions. In APIC Text of infection control and epidemiology (4th ed.).
2. HICPAC/CDC Guidelines for isolation precautions: preventing transmission of infectious agents in healthcare setting, 2007.

COMMENTS

1. Apply hospital administrative policies where applicable.
2. In general, sitters are not allowed to accompany patients who are placed in isolation precaution without proper education, counseling, and monitoring.
3. Every patient and approved sitter in isolation will follow standard and isolation precautions.
4. Compliance with all infection control practices is mandatory (e.g., those regarding hand hygiene, standard precautions, medical and nursing instructions, PPE).
5. Non-compliance with isolation policies will lead to removal of sitters from the isolation room.
6. It is the responsibility of the hospital staff to educate the isolated patient and provide the sitter with information on infection control rules and recommendations.

PROCEDURE

A. Healthcare Workers

1. The Most Responsible Physician (MRP) or his/her designee is responsible for ensuring that the necessary education is given to the patient and sitter.
2. Each patient and sitter will be provided with specific information and will be given positive educational reinforcement in their language.
   a. Evidence that this education has taken place will be documented in the patient's medical record by the physician.
   b. The approved sitter will be informed at this time that sitter authorization will be withdrawn if isolation regulations are not followed.
   c. The patient, sitter, and physician will sign the education consent form, and this form will be kept in the medical record as evidence that they agree to the isolation conditions.

3. Physicians, infection preventionist (IP), nurses, and health educators will share the responsibility of monitoring the compliance of the patient in isolation and his/her approved sitter
4. The Infection Prevention and Control department (IP&C) should be informed immediately of any breaches of compliance. The IP&C will recommend that further patient education should be given.
5. Any repeated breach of compliance should be referred to the IP&C, and the sitter's authorization can be withdrawn.
6. The Security Department will take whatever actions necessary to ensure that the patient in isolation and his/her approved sitter comply with infection control isolation precautions (if necessary).

B. Patients and Sitters

1. It is the responsibility of every patient and his/her approved sitter to comply with all infection control rules and regulations (listed on the sign on the door or conveyed through medical/ nursing instructions).
2. It is the responsibility of the hospital staff to monitor the compliance of the patient in isolation and his/her allowed sitter with infection control isolation recommendations.
3. Patients and their sitters who receive education from the staff regarding infection control isolation recommendations and still do not comply with these recommendations will be subject to measures to enforce the standards and ensure their compliance.

TITLE/DESCRIPTION:	INDEX NUMBER
NEGATIVE PRESSURE ROOM MONITORING	**ICM - III - 11**

EFFECTIVE DATE:	APPLIES TO:	ISSUING AUTHORITY:
01/01/2009 01/01/2013 01/01/2018	**All GCC Countries**	**GULF COOPERATION COUNCIL – CENTRE FOR INFECTION CONTROL (GCC-CIC)**

DEFINITION

To provide instructions on the monitoring and maintenance of the negative pressure rooms or airborne infection isolation room (AIIR) to the Nursing Services, Utilities and Maintenance (U&M) Department, and Infection Preventionist (IP).

REFERENCES

1. Association for Professionals in Infection Control (APIC) and Epidemiology, Inc. (2014). Chapter 29: Isolation precautions. In APIC Text of infection control and epidemiology (4th ed.).
2. Infection Prevention and Control Manual, **ICM-III-02** Isolation Precautions.
3. Infection Prevention and Control Manual, **ICM-III-09** Transporting Patients on Isolation Precautions.
4. Guideline for Design and Construction of Healthcare Facilities. The Facility Guidelines Institute 2010 edition.
5. Center for Diseases Prevention and Control; National Center for Preparedness, Detection and Control of Infectious Diseases; and Division of Healthcare Quality Promotion, uploaded on 29 December 2009. Healthcare Infection Control Practices Advisory Committee Glossary. http://www.cdc.gov/hicpac/2007IP/2007ip_glossary.html

COMMENTS

1. Negative pressure room or AIIR is defined as a single-occupancy patient-care room used to isolate persons with a suspected or confirmed airborne infectious disease. AIIRs provide negative pressure in the room (so that air flows under the gap into the room) with a pressure differential of ≥-2.5 Pa (Pascal) or ≥- 0.01" water gauge; an air flow rate of ≥12 air changes per hour (ACH) for renovation or new construction; and direct exhaust air from the room to the outside of the building; or recirculation of air through a HEPA filter before returning to circulation.
2. High-efficiency particulate air (HEPA) filter is an air filter that removes >99.97% of particles >0.3um at a specified flow rate of air. HEPA filters may be integrated into the central air handling systems, installed at the point of use above the ceiling of a room, or used as portable units.
3. Maintenance Log: Used for keeping records of all malfunctions of negative pressure room monitors. The log should be kept in the ward and be accessible to all staff. Forms must be completed whenever the alarm system is activated (See **Form 1-III-11** Negative Pressure Room or *(AIIR) Maintenance Log*).
4. Activation of the alarm system when negative pressure ventilation fails: Visible red flashing lights and/or audible sound comes from the monitor.
5. For the safety of healthcare workers, patients, and visitors, negative pressure rooms occupied by patients requiring airborne isolation must be checked daily (refer to step A.2.a).

PROCEDURE

A. Routine Monitoring of Negative Pressure Rooms

1. Negative pressure room and ventilation requirements. Facility Management's utilities and maintenance (U&M) section must:

a. Conduct and document monthly checks on all negative pressure rooms for air pressure and air changes.
b. Conduct daily check of all negative pressure room when patient needing airborne isolation occupy this room.
c. Use a manual device to monitor pressure differentials in rooms where no monitor is installed.
d. Follow the procedure of this policy if any room fails inspection.
e. All documentation must be forwarded to an environmental health section of the Infection & Prevention Control (IP&C) Department.

2. Negative pressure rooms in use:
Nursing staff must:
a. Conduct visual checks for the direction of air flow (using flutter strips) on all rooms where patients are in airborne isolation for query and confirmed airborne transmissible diseases (e.g., Pulmonary Mycobacterium tuberculosis, measles, chicken pox) when patients are in this room.
b. Prior to admitting patients needing airborne isolation, check and ensure that negative pressure rooms are functioning well. For those designated isolation rooms without monitor, call U&M to check if the room is maintaining its negative pressure.
c. Follow the procedure of this policy in any room that fails inspection.
d. All documentation must be sent to the IP&C Department.

B. Negative Pressure Ventilation Failure

1. Unit staff must respond to negative pressure failure.
2. Nursing staff will:
a. Place a surgical mask on the patient in airborne isolation.
b. Keep the door closed at all times.
c. Notify the Utilities & Maintenance (U&M) Department of the location and problem.
d. Notify IP&C during the regular work week by paging the IP that is covering the unit/area.
i. If an event occurs at night or on weekend, IP&C will be notified on the next working day.
ii. Follow steps listed in item #3 below.
e. Document all information on the Negative pressure room or AIIR Maintenance Log form.
f. Notify IP&C regarding the findings and required follow-up.
3. U&M staff must respond immediately to the area and
a. Assess whether the room(s) is/are maintaining negative pressure.
b. Communicate their findings to the Nurse Manager or designee.
c. Document their findings on the Negative Pressure Room Maintenance Log form.
4. Nursing staff
If U&M declares the occupied room is no longer maintaining negative pressure, follow these steps:
a. For patients who are in airborne isolation (for pulmonary MTB, chicken pox, measles or hemorrhagic fever), contact IP&C immediately.
i. The patient must be transferred to another negative pressure room immediately.
ii. Put a surgical mask on the patient before transporting. Refer to policy **ICM- III-09** Transporting Patients on Isolation Precautions.
iii. U&M can then proceed with repairs.
b. If the patient is not in isolation:
i. The patient can be moved to another room.
ii. U&M can proceed with repairs.
c. If the room is unoccupied, then U&M can proceed with repairs immediately.

5. The IP&C Department will:
   a. Assess the patient/situation with regard to infectious risk.
   b. Provide infection control recommendations based on the risk assessment to minimize transmission of the disease.
   c. Document all information on the Negative Pressure Room Maintenance Log form and patient chart (as required).
   d. Complete any follow-up with the unit staff and the maintenance log form is kept in the Infection Prevention and Control Department.

GCC Centre for Infection Control
Infection Prevention & Control Department

Form 1-III-11:
Negative Pressure Room Maintenance Log

DEPARTMENT: _____

DATE	TIME	ROOM	DESCRIBE PROBLEM	ACTION TAKEN	
				UTILITIES AND MAINTENANCE	INFECTION CONTROL

INSTRUCTIONS:

1. The initiating department must document all information clearly, including initials and badge number.
    a. Notify U&M of the problem.
    b. Notify the Infection Prevention and Control Department.
2. U&M staff must respond and troubleshoot the problem.
    a. Assess whether the room is maintaining negative pressure.
    b. Findings must be explained to department staff and documented on this form, including initials and badge number.
3. Department staff must notify Infection Prevention and Control.
    a. IP&C will assess any infectious risk.
    b. Findings (i.e., whether there is a transmission risk) must be explained to department staff and documented, including initials and badge number

TITLE/DESCRIPTION:	INDEX NUMBER
MANAGEMENT OF INFLUX OF AIRBORNE INFECTION DISEASES	**ICM - III - 12**

EFFECTIVE DATE:	APPLIES TO:	ISSUING AUTHORITY:
01/01/2018	**All GCC Countries**	**GULF COOPERATION COUNCIL – CENTRE FOR INFECTION CONTROL (GCC-CIC)**

DEFINITION

To provide clear guidelines for managing an influx of airborne infections in a setting where there is shortage of negative pressure rooms. A separate bioterrorism plan is to be utilized, if there is suspected bioterrorism incident, and is part of the disaster plan.

REFERENCE

1. American Institute of Architects. Guidelines for Design and Construction of Hospital and Health Care Facilities, 2010.
2. Rebmann T, Carrico R, and English JF. Hospital Infectious disease emergency preparedness: a survey of infection control professionals. American Journal of Infection Control. February 2007:35(1);25–32.
3. Recommended guidance for extended use and limited reuse of N95 filtering face piece respirators in healthcare settings. Downloaded on 13 March 2014 from http://www.cdc.gov/niosh/topics/hcwcontrols/recommendedguidanceextuse.htm

COMMENTS

Hospitals will face the challenges of caring for large influx of patients following an outbreak of an emerging infection which can pose a threat to the safety and health of our patients and health care workers. Thus, having an adequate supply of resources for managing a sudden, unexpected increase in patients requiring Airborne precautions and immediate treatment must be addressed.

Preparedness for emerging infectious emergencies is imperative for local, regional and national response planning.

Secondly, patient management issues which include rapid identification, transport and isolation of potentially infectious patients are important factors in the prevention of the spread of infection.

TERMINOLOGIES

1. **Airborne Infection Isolation Room (AIIR)** - is defined as a patient room meeting the following criteria:
   a. Private room;
   b. Provide a negative pressure in the room;
   c. An air flow rate of 12 changes per hour (supplement with high efficiency particulate air (HEPA) filtration system if insufficient dilutional ventilation; and
   d. Direct exhaust to the outside of the building from an air intake or exhaust through a HEPA filtration system before returning to circulation.

e. Influx of infectious patients - presentation of a large number of probable or confirmed infectious patients at the hospital that is in excess of the hospital's ability to provide patient care during a specified time period.

2. **Epidemic** - an excess over the expected incidence of disease within a geographical area during a specified time period.
3. **Surge capacity** - having adequate resources for managing a sudden, unexpected increase in patients requiring acute medical care.
4. **Surge capability** - having adequate specialized resources to treat specific patient groups such as highly contagious patients.
5. **Extended use of N95 respirator**- refers to the practice of wearing the same N-95 respirator for repeated close encounters with several patients, without removing the respirator between patient encounter.
6. **Reuse of N95 respirator**- refers to the practice of using the same N95 respirator for multiple encounters with patients but removing it after each encounter. The respirator is stored in between patients to be put again prior to the next encounter with the same patient.

PROCEDURE

In order for the hospital to be better prepared in managing an influx of airborne infectious diseases or emerging new pathogens the following steps are necessary to take:

A. Facility Assessment

1. Assess the current ventilation system in the facility.
   a. Maintain a record of the number and location of the different HVAC (heating, ventilation, air conditioning) zones and air handling units.
   b. Ensure all systems are functioning as designed.
2. Identify and maintain a current list of all AIIRs and isolation rooms throughout the whole hospital and ensuring that they are all functioning well.
3. Utility & Maintenance staff:
   a. Document optimal HVAC control settings for normal use and take the necessary steps to modify the system as per IP&C advice in the event of an emergency.
   b. Ensure that there is effective communication plan between IP&C, clinical staff and Engineering Department to initiate system modifications, if needed.
   c. Implement immediate environmental controls as per IP&C advice, or as deemed necessary.
   d. HEPA filter is made available in the event of lack of negative pressure rooms.

B. Infectious Disease Epidemic Plan (IDEP)

1. IP&C will monitor potential epidemics or influx of airborne infectious disease through routine surveillance of admission provided by Emergency Department (ED), syndrome surveillance, and surveillance of microbiology results.
2. IP&C will coordinate with Microbiology Department to identify the infectious agent and establish the likely mode of transmission. This must be a priority in order to implement the appropriate control measures at the point of entry into the hospital facility. These measures will include droplet, contact, and airborne precautions, as indicated.
3. An IDEP of a specific emerging pathogen will be developed by IP&C as the need arises. The IDEP will be made available and accessible to all healthcare workers through the intranet website.

C. Patient Management

1. Emergency Department (ED) Responsibilities:
   a. In the event of an increase in the number of suspected and confirmed airborne infectious diseases cases, ED Unit Manager will immediately notify the responsible persons as indicated in Section "H" Notification.
   b. Place signage in English and Arabic that would direct sick patients to a designated isolation room or waiting area, thereby, minimizing exposures among patients in the waiting area.
   c. If possible, have a separate waiting area for patients with respiratory symptoms.
   d. Provide direction for patients with respiratory symptoms to wear a surgical mask and use alcohol-based hand rubs (ABHR).
   e. Ensure surgical masks, ABHRs and waste containers are readily available for patients with respiratory symptoms to prevent aerosolization of infectious particles.
   f. Have enough supply of N95 masks, surgical masks, and ABHRs for healthcare providers.
   g. An N95 mask/respirator is single use and is to be disposed after a patient encounter. In the event of a shortage such as in an outbreak, reuse of N95 mask/respirator is allowed as long as it remains functional. Refer to below recommendations:
      i. Follow manufacturer's specific guidance on the use of their product.
      ii. If no guidance is available, limit the number of reuse to no more than five uses per device per shift.
      iii. Discard any respirator that is damaged or became hard to breathe through.
      iv. Instruct HCW to perform hand hygiene after putting the respirator on and following removal/placement in a storage location.
      v. Pack or store respirator in a breathable container such as a paper bag in between uses.
      vi. Label containers used for storing respirators or label the respirator itself (e.g., on the straps) with the user's name to prevent accidental usage of another person's respirator.
      vii. The container bag is a single use item because the inner part can become contaminated due to storing used respirator. Therefore, the container bag should be discarded after the respirator is redonned.
   h. Prioritize placement of patients in AIIRs or isolation rooms based on the risk of transmission, suspected diagnosis, and severity of symptoms.
   i. Limit patients' movement to medically essential procedure.
   j. Notify receiving units prior to transport of patients and observe appropriate precautions during the transfer.
   k. Elective admissions will be cancelled until epidemic of influx of infections is determined to be under control, in order to utilize the beds to house these patients.
   l. ED staff will be asked to consider alternate levels of care for patients presenting to triage ED.

2. Infection Prevention & Control Responsibilities:
   a. Notify U&M and Engineering Departments to prepare a back-up site for non-infectious patients if the ED capacity is exceeded with infectious patients.
   b. Notify U&M to convert designated wards/rooms to negative pressure rooms in the event of an emergency and build barriers if deemed necessary.
   c. All AIIRs rooms will be under the control of IP&C. Security officers will be placed to provide traffic and crowd control.
   d. Determine where to house the infectious patients depending on the infectious agent and needs of the patients.
   e. Provide consultation on the cohorting of patients with similar symptoms or diagnosis as appropriate to allow for increase in bed capacity.

f. Advise the medical staff to review inpatients to assess patients that can be discharged to the next level of care.
g. Coordinate with Unit Managers and Bed Coordinators in the discharge planning process.
h. Ensure appropriate cleaning and disinfection of medical equipment and environmental surfaces are strictly followed as per hospital policy.
i. Ensure proper management of infected waste.
j. Ensure proper management of soiled linens.
k. To conduct contact tracing and risk assessment for exposed healthcare workers and families.

D. Patient Transport

When a patient needs to be transferred, appropriate barriers should be used, such as placing a surgical mask on the patient and leak proof dressings to reduce potential contamination of the environment and the spread of infection. Please refer to **ICM-III-09** Transporting Patients on Isolation Precautions.

E. Employee Health Services

To provide exposed HCWs with the recommended post exposure prophylaxis specific to the suspected or confirmed pathogen.

F. Nursing Services Responsibilities

1. Implement staffing plans to provide adequate patient care.
2. Ensure appropriate staff have the authority to place suspected and confirmed cases on appropriate isolation precautions.
3. Initiate possible transfer of inpatients or initiating discharge of patients to offsite facilities.

G. Visitor's Management and Exclusion

Visitors should be strictly limited. Exemptions may be considered on a case to case basis.

H. Notification

The following notifications are mandatory if there is an increase in the number of airborne infectious diseases are admitted in the ED:

1. The Admitting ED Physician notifies the:
   a. Infectious Disease Consultant
   b. Nurse-in-Charge of Emergency Department and ward where patient is to be admitted.
2. The Infectious Disease Consultant notifies the:
   a. Chairman of the Infection Control Committee who will then notify the:
      i. Medical Services Director
      ii. Executive on Duty
      iii. Hospital Director
      iv. Infection Control Coordinator or Infection Preventionist (IP)
      v. Laboratory and Radiology Departments
      vi. Family Medicine Department / Employee Health Clinic

3. The Nurse-in-Charge in ER notifies the:
   a. Nursing Supervisor or Duty Administrator
   b. ICU Head Nurse or Nurse-in-Charge if to be admitted to the ICU
4. The Nursing Supervisor notifies the:
   a. Director of Nursing
   b. Nurse Manager to consult on staffing
   c. Materials department for equipment for strict isolation.
5. Infection Control Coordinator or IP notifies the:
   a. Housekeeping Manager
   b. CSSD Manager
   c. Ministry of Health
   d. Utilities and Maintenance for ventilation modification in patient rooms, if needed.

I. Education

1. Contents of patient education on specific pathogens translated in both English and Arabic will be developed by IP&C and provided to the patients and families.
2. IP&C to provide the necessary training and education to all HCWs on the proper management of the specific pathogen.

J. Resources

A list of supplies will be provided by Nursing Services and Logistics to IP&C on a daily basis to monitor surge capacity.

Section 4: INFECTION CONTROL POLICIES RELATED TO SPECIFIC DISEASES

TITLE/DESCRIPTION:	INDEX NUMBER
MULTI DRUG RESISTANT ORGANISMS (MDRO) MANAGEMENT	**ICM - IV - 01**

EFFECTIVE DATE:	APPLIES TO:	ISSUING AUTHORITY:
01/01/2009 **01/01/2013** **01/01/2018**	**All GCC Countries**	**GULF COOPERATION COUNCIL – CENTRE FOR INFECTION CONTROL (GCC-CIC)**

DEFINITION

This policy outlines the required steps needed to prevent the transmission of multidrug-resistant microorganisms (MDROs) within and between hospitals.

REFERENCES

1. Association for Professionals in Infection Control (APIC) and Epidemiology, Inc. (2014). Chapter 29: Isolation precautions. In APIC Text of infection control and epidemiology (4th ed.)
2. HICPAC/CDC Guidelines for isolation precautions: preventing transmission of infectious agents in healthcare setting, 2007.

COMMENTS

1. MDROs are bacteria that are resistant to many or all available antibiotics.
2. Methicillin-Resistant Staphylococcus Aureus (MRSA) and Vancomycin-Resistant Enterococci (VRE) are important resistant microorganisms encountered in the hospital; refer to **ICM–IV-02** Methicillin-Resistant Staphylococcus Aureus Management and **ICM–IV-03** Vancomycin-Resistant Enterococcus Management.
3. Extended Spectrum Beta-lactamases (ESBLs) and Carbapenem-Resistant Enterobacteraceae (CRE) are among primary resistant microorganisms of significant concern in the healthcare setting and are endemic in many hospitals of the GCC countries. Proper attention to these pathogens is critical to curtail further emergence of these highly resistant organisms.
4. STANDARD PRECAUTIONS MUST BE OBSERVED FOR ALL PATIENT CARE.

PROCEDURE

A. Notification of the MDRO

1. The microbiology lab will notify the ward and Infection Prevention and Control (IP&C) Department of the MDROs.
2. Patients previously discharged MDRO positive are flagged and documented by IPs.
3. Only IPs can deflag / remove MDRO alerts.

B. Management of MDRO-Positive Patients

1. Initiate contact precautions in addition to standard precautions.
2. Patient must be in a single room or can be cohorted with another patient with the same organism.
3. MDRO-positive patients who are in multi-bed rooms can be managed temporarily while waiting to be transferred to a single room or an appropriate cohort.
   a. Place a sign on the cubicle or curtain of the patient's bed.
   b. Ensure easy access to PPE and alcohol-based hand rub.
   c. Practice strict standard precautions between interactions with patients in the room.
   d. Transfer to a single room or cohort with another patient with the same organism as soon as possible.

4. Place a contact isolation sign on the outside of the isolation room door.
5. Practice strict hand hygiene.
6. Cohort non-critical items such as stethoscopes and pressure cuffs with the patient.
7. Store the minimum amount of supplies in the patient's room.
8. Use an isolation cart for extra supplies (kept outside the room).
9. Ensure that all staff understand and comply with the isolation precautions and hand hygiene protocol.
10. Limit the patient's activity outside the room to treatments or tests.
11. Notify receiving departments/wards (e.g., Radiology, Endoscopy, Clinics, OR) of the patient's isolation status when the patient must be transported for treatment/tests. Refer to **ICM–III-09** Transporting Patients on Isolation Precautions.
12. Ensure concurrent and terminal cleaning of the isolation room and equipment as per house keeping procedure.
13. Handle/discard contaminated items as per Standard Precautions. Refer to **ICM–II-03** Standard Precautions.

C. Medical

1. Request Infectious Diseases consultation as needed.
2. Discharge the patient from the hospital once his/her medical condition allows.
3. If the patient is being transferred to another hospital or healthcare facility while still colonized or infected with an MDRO, the transferring hospital is obliged to inform the receiving hospital of the details of the MDRO in order to ensure proper isolation. EMS and other healthcare providers involved in transferring such a patient need to be made aware of the status of the patient and advise on proper PPE, as well as, disinfection of the ambulance, as deemed necessary.

D. Clearance/Discontinuation of Isolation

1. Discontinue isolation of MDRO-positive patient after consultation with the IPs.

E. Screening of Healthcare Workers (HCWs) and the Environment

1. Do not screen HCWs or the environment because it is not typically indicated and incurs unnecessary costs.
2. IP&C may initiate such measures when indicated.

F. Outbreak Management

1. Management of outbreaks will be coordinated by the IPs and will require the cooperation of medical, nursing, laboratory and other departments.

G. Cleaning of the Patient's Room

1. Perform regular or terminal cleaning based on **ICM-X-07** Housekeeping.

H. Linen

1. Keep a linen hamper in the isolation area.

TITLE/DESCRIPTION:	INDEX NUMBER
METHICILLIN-RESISTANT *STAPHYLOCOCCUS AUREUS* (MRSA) MANAGEMENT	**ICM - IV - 02**

EFFECTIVE DATE:	APPLIES TO:	ISSUING AUTHORITY:
01/01/2009 01/01/2013 01/01/2018	**All GCC Countries**	**GULF COOPERATION COUNCIL – CENTRE FOR INFECTION CONTROL (GCC-CIC)**

DEFINITION

This policy describes the steps needed to prevent the spread of Methicillin-Resistant Staphylococcus Aureus (MRSA) to patients, staff, and visitors.

REFERENCES

1. Association for Professionals in Infection Control (APIC) and Epidemiology, Inc. (2014). Chapter 93: Staphylococcus. In APIC Text of infection control and epidemiology (4th ed.).
2. APIC Guide to the elimination of methicillin-resistant staphylococcus aureus (MRSA) transmission in hospital settings, March 2007.
3. Infection Prevention and Control Manual, **ICM-IV-10** Rapid MRSA surveillance.

COMMENTS

1. MRSA refers to strains of Staphylococcus aureus that are resistant to synthetic penicillin (oxacillin, nofloxacin, and methicillin). It is also resistant to cephalosporins, other betalactam antibiotics and sometime to other antibiotics (erythromycin, clindamycin, aminoglycoside, and quinolones).
2. Concerns about MRSA are related to the potential for healthcare-associated infections (HAIs) transmission and the limited number of antibiotics available to treat infections caused by this microorganism.
3. Screening can be initiated in the Emergency Department (ER).
4. Patients being admitted from the ER who qualify for screening should not be held in the ER awaiting screening results, as this will unnecessarily delay admission.
5. Initiate empiric contact isolation precautions during the screening procedure.
6. STANDARD PRECAUTIONS MUST BE OBSERVED FOR ALL PATIENT CARE.

PROCEDURE

A. Management of Patients with Suspected MRSA Infection or Colonization

1. Initiate empiric contact isolation precautions during the screening procedure, if possible.
   a. Screen all patients who are:
      i. Admitted to the intensive care units (ICU).
      ii. Transferred from other hospitals or have been treated in another hospital/clinic within the past six months.
      iii. Undergoing liver or cardiac, orthopedic (including spine) surgery (pre-operatively).
      iv. Hemodialysis patients admitted for their first dialysis treatment and for placement of any type of vascular access (i.e., AV-fistula, permanent catheter, graft or port access device).
      v. Known to be previously MRSA positive.
      vi. Roommates of positive patients not on isolation precautions.
   b. Sites to screen include:
      i. Anterior nares.
      ii. Non intact skin areas (e.g., tracheostomy, pressure sores or surgical wounds).
      iii. Neonates and pediatric patients awaiting liver or cardiac surgery should also have both the groin and axilla screened.

c. Specimen collection for nares only:
   i. Use sterile red-top tube with double-tip dry culture swab for rapid testing. Refer to **ICM-IV-10** Rapid MRSA Surveillance.

d. Specimen collection for other sites:
   i. Use the packet with a sterile swab stick with transport medium.
   ii. Clean the site with normal saline to remove debris before swabbing.
   iii. Use the same swab for identical sites: one swab for both axilla and one swab for both inguinal areas.
   iv. Use separate swabs to screen other sites.
   NB: The accompanying requisition should request "MRSA screen."

e. Patient placement upon admission:
   i. Request a single room for contact isolation from the Admission Office. If a single room is not available then two or more patients receiving MRSA screening may be cohorted after consultation with infection control.
   ii. Observe contact isolation precautions in addition to standard precautions.
      - Place a contact isolation sign on the outside of the isolation room door or on the bed if the patient is sharing a room.
      - Ensure that all staff understand and comply with the isolation precautions and hand hygiene policy.
      - Change all PPE and perform hand hygiene between patients in the same room (barrier precautions).
      - Cohort non-critical items such as stethoscopes and pressure cuffs along with each patient.
      - Store the minimum amount of supplies in the patient room.
   iii. Limit the patient's activities outside of the ward.
   iv. Notify receiving departments/wards (e.g., Radiology, Endoscopy, Clinics, OR) of the patient's isolation status when the patient must be transported for treatment/tests. Refer to **ICM–III-09** Transporting Patients on Isolation Precautions.
   v. If the patient is MRSA positive, refer to "Management of MRSA-positive patients" below.

B. Management of MRSA-Positive Patients

1. Patients determined to be MRSA positive from surveillance screening (rapid test) or clinical specimens upon or after admission.
2. Readmitted patients that were MRSA positive on discharge (flag/alert).
3. Microbiology Laboratory:
   a. Notify the ward of MRSA-positive patients.
   b. Notify the Infection Preventionist (IP) of all new positive MRSA cultures.
4. Nursing:
   a. Request a single room for contact isolation from Admission Office. If a single room is not readily available, two or more MRSA-positive patients can be cohorted after consultation with infection control.
   b. MRSA-positive patients who are in multi-bed rooms can be managed temporarily while waiting to be transferred to a single room or an appropriate cohort.
      i. Place a sign on the cubicle or curtains of the patient's bed.
      ii. Ensure easy access to PPE and alcohol-based hand rub.
      iii. Practice strict standard precautions between interactions with patients in the room.
      iv. Transfer to a single room or cohort with another patient with the same organism as soon as possible.

c. Observe contact isolation precautions in addition to standard precautions with all patient care activities.
   i. Place a contact isolation sign on the outside of the isolation room door.
   ii. Ensure that staff understand and comply with the isolation precautions and hand hygiene protocol.
   iii. Cohort non-critical items such as stethoscopes and pressure cuffs along with the patient.
   iv. Store the minimum amount of supplies in the patient's room.
   v. Use an isolation cart for extra supplies (kept outside the room).
d. Rescreening of MRSA-positive patients must occur in consultation with the IP.
e. Screen exposed patients who shared a room with a known MRSA-positive patient for more than 48 hours .
f. Limit the patient's activities outside of the ward.
g. Notify receiving departments/wards (e.g., Radiology, Endoscopy, Clinics, OR) of the patient's isolation status when the patient must be transported for treatment/tests. Refer to **ICM–III-09** Transporting Patients on Isolation Precaution.
h. Maintain contact isolation during decolonization process.
i. Ensure concurrent and terminal cleaning of the isolation room and equipment as per house keeping procedure.
j. Handle/discard contaminated items as per standard precautions. Refer to **ICM–II-03** Standard Precautions.
k. Cohorting nursing staff providing direct patient care is recommended.

5. Medical:
   a. Restrict antibiotic use (especially broad-spectrum antibiotics) and invasive devices when possible.
   b. Discharge the patient when his/her medical condition allows.
   c. Seek the advice of Infectious Diseases Consultants or IP regarding possible decolonization.

C. Discontinuation of Contact Isolation

1. Discontinuation of isolation precautions for a MRSA-positive patient must occur in consultation with the IP and MRP.
2. Criteria for discontinuing isolation:
   a. Antibiotic therapy is completed at least three days prior to rescreening.
   b. Vancomycin levels should be zero prior to rescreening.
   c. Three consecutive negative culture from all previously positive sites. If the first set of sample which was taken 3 days off antibiotics is negative, repeat cultures 48 hours later.
   d. The patient should not be receiving antibiotic therapy at any time during the screening process.

D. Rescreening MRSA-positive Patients for the Purpose of Discontinuing Contact Isolation

1. Sites to screen are:
   a. Anterior nares
   b. Previously positive sites
   c. Any indwelling catheter sites
   d. Non intact skin areas (e.g., tracheostomy, pressure sores or surgical wounds).
2. Specimen Collection:
   a. Refer to **ICM-IV-10** Rapid MRSA Surveillance for nares only.

b. For other sites, use the packet with blue-top sterile swab stick with gel.
   i. Use the same swab for identical sites (e.g., axilla and groin).
   ii. Use separate swabs to screen other sites.

NB: The accompanying requisition should request "MRSA screen." If your hospital is processing MRSA from other sites for rapid testing/PCR molecular, then use the red top-swab stick.

E. Screening of Healthcare Workers (HCWs) and the Environment

1. Do not screen HCWs or the environment because it is not normally indicated and incurs unnecessary costs.
2. IP&C may initiate such measures when indicated.

F. Outbreak Management

1. Management of outbreaks will be coordinated by the IP and will require the cooperation of medical, nursing, laboratory and other departments.

G. Cleaning of the Patient's Room

1. Regular cleaning as per housekeeping protocol.
2. Terminal cleaning upon patient discharge.
3. The room can be used as soon as all cleaned surfaces are dry.

H. Linen

1. Keep a linen hamper in the isolation area.

I. Ambulation

1. Patients with infected body fluids:
   a. If they are able to contain their body fluids (secretions, urine, stool), patients may walk in the corridors but cannot enter the visitor/patient area.
   b. If unable to contain their body fluids, patients must be encouraged to stay in their rooms and be reassessed frequently.

J. Sitters/Visitors

1. Provide information about MRSA as required.
2. Hand hygiene must be emphasized after patient contact.
3. Sitters and visitors must be instructed to wear appropriate PPE if assisting with direct patient care.

K. Decolonization Protocol (refer to Form 1– IV-01 MRSA Decolonization Procedure)

1. Treat nares topically for periods not exceeding seven days with Bactroban (Mupirocin) cream (only if the organism is Mupirocin-sensitive); restrict use, as resistance to this agent is well documented.
2. IP will assess patients on an individual basis to determine the need for decolonization with chlorhexidine wash (suppressive therapy) to reduce/inhibit MRSA skin colonization.
3. Apply this protocol to patients awaiting liver transplants or cardiac, or orthopedic surgery, or hemodialysis patients requiring AV/fistula creation.

Form 1 – IV-02:
MRSA Decolonization Procedure

Assessment for decolonization will be performed by the Infection Preventionist (IP) in consultation with the attending physician and an Infectious Disease Consultant.

Maintain Contact Isolation during decolonization treatment.

SUPPLIES: Chlorhexidine gluconate (CHG) 4%
Mupirocin/Bactroban, per MD order
Clean linens for the bed and patient
Personal protective equipment (PPE)

1. Spread full-strength Chlorhexidine gluconate 4% solution from neck to toes, ensuring coverage of underarms, groin, and between fingers and toes.
   - Rinse with warm water and dry your skin from neck to toes with a clean towel.
   - Change the bed linens and the patient's clothing completely after each bath/shower.
   - Repeat this process twice a day.
   - Shampoo hair with the Chlorhexidine solution for 3 days

2. Apply Mupirocin/Bactroban ointment to anterior nares (inside nose) after Chlorhexidine treatment, when the patient is dry and dressed as ordered by the MD.

   NB: Mupirocin should not be applied to open wounds.

3. These treatments must be given for 7 consecutive days.

4. Take a complete set of cultures from nares and previously positive sites 72 hrs after decolonization
   - If first set of samples is negative repeat cultures 48 hrs later

5. Three negative cultures are required before the patient is cleared of MRSA and can be taken out of isolation.

   NB: These results will be assessed by the IP.

NOTES:
- The patient must not be on antibiotics at the time of screening.
- If any swab is positive, stop the screening process until further assessment.
- Please complete all documentation on this form.

Form 1 – IV-02... con't:
MRSA Decolonization Record

START TIME: _____

TREATMENT TIME		CHLORHEXIDINE 4% WASH & SHAMPOO	MUPIROCIN/BACTROBAN OINTMENT	INITIALS
Day 1	AM			
	PM			
Day 2	AM			
	PM			
Day 3	AM			
	PM			
Day 4	AM			
	PM			
Day 5	AM			
	PM			
Day 6	AM			
	PM			
Day 7	AM			
	PM			

SCREENING 1: Day 11 DATE DUE: _____ DONE: _____

SCREENING 2: Day 14 DATE DUE: _____ DONE: _____

SCREENING 3: Day 17 DATE DUE: _____ DONE: _____

COMMENTS:

_____

_____

_____

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TITLE/DESCRIPTION:	INDEX NUMBER
VANCOMYCIN-RESISTANT ENTEROCOCCI (VRE) MANAGEMENT	**ICM - IV - 03**

EFFECTIVE DATE:	APPLIES TO:	ISSUING AUTHORITY:
01/01/2009 **01/01/2013** **01/01/2018**	**All GCC Countries**	**GULF COOPERATION COUNCIL – CENTRE FOR INFECTION CONTROL (GCC-CIC)**

DEFINITION

To describe the steps needed to prevent the spread of Vancomycin-Resistant Enterococci (VRE).

REFERENCES

1. Association for Professionals in Infection Control (APIC) and Epidemiology, Inc. (2014). Chapter 29: Isolation precautions. In APIC Text of infection control and epidemiology (4th ed.).
2. HICPAC/CDC Guidelines for isolation precautions: preventing transmission of infectious agents in healthcare setting, 2007.

COMMENTS

1. VRE are inherently resistant to most antibiotics and can easily acquire resistance to the remaining antibiotics. In addition, they are capable of transferring this resistance to other bacteria such as staphylococci.
2. VRE are dispersed easily into the environment and are easily spread by the intermittent colonization of the hands of healthcare workers (HCWs). Items such as bedrails, stethoscopes, blood pressure cuffs are reservoirs for VRE.
3. STANDARD PRECAUTIONS MUST BE OBSERVED FOR ALL PATIENT CARE.

PROCEDURE

A. Screening for VRE

1. Screen all patients who are:
   a. Known to be previously VRE positive within the past 6 months or more.
   b. Roommates exposed to VRE-positive patients for more than 48 hours.

   NB: The accompanying requisition should request "VRE screen."
2. Sites to screen:
   a. Peri-anal area.
   b. Wounds and catheter exit sites.

B. Microbiology Laboratory must

1. Notify the ward of positive VRE cultures.
2. Notify the Infection Preventionist (IP) of all positive VRE cultures.

C. Management of Patients who are Undergoing a VRE Screen

1. A single room is not needed.
2. Maintain standard precautions and strict hand hygiene practices.
3. If patient is VRE positive, follow the management protocol outlined below.

D. Management of VRE-Positive Patients

1. Nursing
   a. Request a single room with a bathroom from the Admission Office.
   b. Initiate contact isolation precautions in addition to standard precautions.
      i. Place a contact precautions sign on the outside of the room door.
      ii. Maintain strict hand hygiene technique.
      iii. Wear a gown and gloves when entering the patient's room.
      iv. Cohort non-critical items such as thermometers and pressure cuffs with the patient.
      v. Store a minimum amount of supplies in the patient's room.
      vi. Use an isolation cart for extra supplies (outside the room).
   c. Screen all patients who have shared a room with the VRE-positive patient for more than 48 hours for VRE.
   d. Limit the patient's activities outside of the room/ward; refer to **ICM–III-09** Transporting Patients on Isolation Precautions.
   e. Ensure concurrent and terminal cleaning of isolation room and equipment as **ICM-X-07** on Housekeeping.
   f. Handle/discard contaminated items as per Standard Precautions; refer to **ICM–II-03** Standard Precautions.
   g. Cohort nursing staff providing direct patient care.
   h. Notify receiving departments/wards (e.g., Radiology, Endoscopy, Clinics, OR) of the patient's isolation status when the patient must be transported for treatment/tests. Refer to **ICM–III-09** Transporting Patients on Isolation Precautions.
   i. Maintain contact isolation until infection control has been consulted regarding the discontinuation of isolation.
2. Medical
   a. Seek Infectious Diseases Consultants as needed.
   b. Be judicious with antibiotic use, especially that of vancomycin.
   c. Discharge the patient if his/her medical condition allows.

E. Discontinuation of Contact Isolation

1. Discontinue isolation of VRE-positive patient after consultation with the IP and the attending physician.
2. Criteria for discontinuing isolation
   a. Three consecutive negative cultures from all previously positive sites and stool/peri-rectal swabs. If the first set of sample which was taken 3 days off antibiotics is negative, repeat cultures 48 hours later
   b. Patients should be off antibiotic therapy for a minimum of 72 hours prior to screening.

F. Screening of HCWs and the Environment

1. Do not screen HCWs or the environment because it is not typically indicated and incurs unnecessary costs.
2. Consult the Infection Preventionist (IP) before such measures are taken.

G. Outbreak Management

Active surveillance will be coordinated by Infection Prevention & Control as needed and will require cooperation from Medical, Nursing, Laboratory, and other departments.

TITLE/DESCRIPTION:	INDEX NUMBER
HEPATITIS A VIRUS EXPOSURE MANAGEMENT	**ICM - IV- 04**

EFFECTIVE DATE:	APPLIES TO:	ISSUING AUTHORITY:
01/01/2009 01/01/2013 01/01/2018	**All GCC Countries**	**GULF COOPERATION COUNCIL – CENTRE FOR INFECTION CONTROL (GCC-CIC)**

DEFINITION

To describe the need for and the recommended prophylaxis for persons exposed to a confirmed case of Hepatitis A Virus (HAV).

REFERENCES

1. Association for Professionals in Infection Control (APIC) and Epidemiology, Inc. (2014). Chapter 97: Viral hepatitis. In APIC Text of infection control and epidemiology (4th ed.).
2. Prevention of hepatitis A through active or passive immunization: recommendations of the Advisory Committee on Immunization Practices (ACIP), May 2006:55(RR07);1-23
3. Red Book (2012). Report of the Committee on Infectious Diseases. The American Academy of Pediatrics.
4. Update: Prevention of hepatitis A after exposure to hepatitis A virus and in international travelers. Updated recommendations of the Advisory Committee on Immunization Practices (ACIP), October 2007:56(41);1080-1084.

COMMENT

A single Intramuscular (IM) dose of immunoglobulin (IG) or the Hepatitis A vaccine series is the post exposure prophylaxis for HAV exposure.

PROCEDURE

A. Indications for post-exposure prophylaxis with immunoglobulin (IG) or Hepatitis A vaccine for a non-immune person

1. Close personal contact
   IG or Hepatitis A vaccines should be administered to all household and sexual contacts of persons who have serologically confirmed Hepatitis A.
2. Daycare centers
   Immunoglobulin (IG) or Hepatitis A vaccines should be administered to all staff and attendees of daycare centers or homes if:
   a. One or more cases of Hepatitis A are recognized in children or employees.
   b. Cases are recognized in two or more households of center attendees.
3. Common-source exposure
   If a food handler is diagnosed with Hepatitis A, immunoglobulin or Hepatitis A vaccine should be administered to other food handlers at the same location. Since common-source transmission to patrons is unlikely, immunoglobulin or Hepatitis A vaccine administration to patrons is usually not recommended but may be considered if:
   a. During the time the food handler was likely to be infectious, the food handler both directly handled uncooked foods or foods after cooking and had diarrhea or poor hygienic practices.

b. Patrons can be identified and treated within two weeks of the exposure.
In settings where repeated exposures to HAV may have occurred (e.g., institutional cafeterias), stronger consideration of immunoglobulin (IG) or Hepatitis A vaccine use may be warranted. In the event of a common-source outbreak, immunoglobulin (IG) should not be administered exposed persons after cases have begun to occur because the two-week period during which the IG is effective will have been exceeded.

4. Schools, hospitals, and work settings
IG or Hepatitis A vaccination is not routinely indicated when a single case occurs in an elementary or secondary school, an office, or in other work settings and the source of infection is outside the school or work setting. Similarly, when a person who has Hepatitis A is admitted to a hospital, staff should not be routinely administered IG or Hepatitis A vaccines; instead, careful hygienic practices should be emphasized. Immunoglobulin (IG) or Hepatitis A vaccines should be administered to persons who have had close contact with index patients if an epidemiologic investigation indicates that HAV transmission has occurred among students in a school or between patients and staff in a hospital.

B. Recommendations for Post-exposure Prophylaxis with Immunoglobulin (IG) or Hepatitis A Vaccine

1. Persons who have recently been exposed to HAV and who previously have not received Hepatitis A vaccination should be administered a single dose of the single-antigen vaccine or IG (0.02 ml/kg) as soon as possible.
2. For healthy persons aged 12 months to 40 years, the single-antigen Hepatitis A vaccine is preferred to IG because of the advantages inherent to the vaccine.
3. For persons aged greater than 40 years, immunoglobulin (IG) is preferred because of the absence of information regarding vaccine performance and the more serious manifestations of Hepatitis A in this age group. The vaccine can be used if immunoglobulin (IG) is not available.
4. Immunoglobulin (IG) should be used for children less than 12 months of age, immuno-com promised persons, persons diagnosed with chronic liver disease and persons for whom the vaccine is contraindicated.
5. Persons administered immunoglobulin (IG) for whom the Hepatitis A vaccine is also recommended for other reasons should receive a dose of the vaccine simultaneously with the immunoglobulin (IG) treatment.
6. The efficacy of immunoglobulin (IG) or vaccine when administered more than two weeks after exposure has not been established.

C. Immunoglobulin Dose and Administration

1. The index case must be serologically confirmed (i.e., positive for anti-HAV IgM).
2. Immunoglobulin (IG) at a 0.02 ml/kg single intramuscular (IM) dose should be administered as soon as possible, but no later than two weeks after the last exposure.

D. Isolation Precautions

1. Practice standard precautions at all times.
2. Follow strict hand washing before and after entering the patient's room.
3. Place patients with HAV-related diarrhea on standard and contact precautions for the duration of the illness.

TITLE/DESCRIPTION:	INDEX NUMBER
VIRAL HEMMORRHAGIC FEVER (VHF) MANAGEMENT	**ICM - IV - 05**

EFFECTIVE DATE:	APPLIES TO:	ISSUING AUTHORITY:
01/01/2009 01/01/2013 01/01/2018	**All GCC Countries**	**GULF COOPERATION COUNCIL – CENTRE FOR INFECTION CONTROL (GCC-CIC)**

DEFINITION

The purpose of this policy is to provide clear guidelines for managing patients with suspected and confirmed Viral Hemorrhagic Fever (VHF) in healthcare facilities whether sporadic or in an outbreak situation. This policy can be applied to the following agents that cause syndromes of VHF: Lassa, Marburg, Ebola, Congo-Crimean and Rift Valley hemorrhagic fever viruses.

REFERENCE

1. Association for Professionals in Infection Control (APIC) and Epidemiology, Inc. (2014). Chapter 29: Isolation precautions. In APIC Text of infection control and epidemiology (4th ed.).
2. Association for Professionals in Infection Control (APIC) and Epidemiology, Inc. (2014). Chapter 96: Viral hemorrhagic fevers. In APIC Text of infection control and epidemiology (4th ed.).
3. Center for Disease Prevention and Control (CDC), Infection of patients with suspected viral hemorrhagic fever. MMWR 44(25);475-479, June 1995.
4. Center for Disease Prevention and Control (CDC), Infection prevention and control recommen dations for hospitalized patients with known or suspected ebola hemorrhagic fever in US hospitals, July 2014.
5. Center for Disease Prevention and Control (CDC), Interim guidance for specimen collection, transport, testing, and submission for patients with Ebola Virus Disease. August 2014.
6. Center for Disease Prevention and Control (CDC), Interim guidance on personal protective equipment to be used by healthcare workers during management of patients with Ebola Virus Disease in U.S Hospitals, including procedures for putting on (donning) and removing (doffing). October 2014.
7. Center for Disease Prevention and Control (CDC), Interim Guidance for Environmental Infection Control in Hospitals for Ebola Virus. August 2014
8. Center for Disease Prevention and Control (CDC), Interim Guidance for Safe Handling of Human Remains of Ebola Patients in U.S Hospitals and Mortuaries. October 2014.

COMMENTS

Viral Hemorrhagic Fevers (VHFs) refer to a group of illnesses that are caused by several distinct families of viruses. In general, the term "viral hemorrhagic fever" is used to describe a severe multisystem syndrome (multisystem in that multiple organ systems in the body are affected).
Characteristically, the overall vascular system is damaged and the body's ability to regulate itself is impaired. These symptoms are often accompanied by hemorrhage (bleeding). While some types of hemorrhagic fever viruses can cause relatively mild illnesses, many of these viruses cause severe, life-threatening disease.
Transmission can occur though the following:

1. During unprotected contact with a VHF patient or a deceased VHF patient.
2. During unprotected contact with VHF infectious body fluids, blood, secretions or excretions.
3. Contact with contaminated medical equipment and supplies.
4. As a result of an accidental needle stick exposure to infectious body fluids.
5. Laboratory processing of body fluids of infected VHF patients without appropriate personal protective equipment PPE or standard biosafety precautions.

Thus, early recognition and prompt effective use of infection control measures must be implemented to prevent and contain the spread of the disease. The following recommendations apply to patients who within the three weeks period before the onset of the disease have either:

1. Traveled within the specific local area of a country where VHF has recently occurred;
2. Had direct contact with the blood, body fluids, secretions, and excretions of a person or animal with VHF; and
3. Worked in the laboratory or animal facility that handles hemorrhagic fever viruses.

PROCEDURE

A. Notification

The following notifications are mandatory if suspected cases of VHF are admitted:

1. The Admitting Consultant notifies the:
   a. Infectious Disease Consultant
   b. Nurse-in-Charge of Emergency Department and ward where patient is to be admitted.
2. The Infectious Disease Consultant notifies the:
   a. Chairman of the Infection Control Committee who will then notify the:
      i. Medical Director
      ii. Executive on duty
      iii. Hospital Director
      iv. Infection Control Coordinator or Infection Preventionist (IP)
      v. Laboratory and Radiology Departments
      vi. Family Medicine Department / Employee Health Clinic
3. The Nurse-in-Charge in ER notifies the:
   a. Nursing Supervisor or Duty Administrator
   b. ICU Head Nurse or Nurse-in-Charge if to be admitted to the ICU
4. The Nursing Supervisor notifies the:
   a. Director of Nursing
   b. Nurse Manager to consult on staffing
   c. Materials department for equipment for strict isolation.
5. Infection Control Coordinator or IP notifies the:
   a. Housekeeping Manager
   b. Central Sterilization Services Department (CSSD) Manager
   c. Ministry of Health
   d. Utilities and Maintenance for ventilation modification in patient rooms, if needed.

B. Identifying an Isolation Unit

Each institution should select an area, which can be utilized as an Isolation Unit.

The Isolation Unit should be able to function as a self-contained closed unit with no movement of patients in or out. This should be done with the guidance of the IP&C Department who will coordinate in:

1. Admitting the patient to an isolation room in an appropriate ward if a designated Isolation Unit is not yet available.
2. Admitting seriously ill unstable patients preferably with a private bathroom in a single room in the ICU with an anteroom.
3. Identifying an isolation ward in anticipation of more cases.
4. Activating the pathogen specific Infectious Disease Epidemic Plan (IDEP).

C. Emergency Department

Although most exposed or ill persons undergoing evaluation and transportation are in the early stages of disease and would not be expected to have symptoms that increase the likelihood of

contact with infectious body fluids (e.g., vomiting, diarrhea, or hemorrhage); for extra precaution, droplet and contact precaution must be implemented, in addition to standard precautions.
If a patient has any of the above symptoms consult Infection Preventionist in addition to:

1. Containing and isolating any body fluid exposure or splashes by securing surroundings and minimizing movement.
2. Admitting patient to the nearest single room or isolation room, if available.

D. Isolation Precautions

Use VHF isolation precautions for suspected and confirmed cases of VHF.

1. Patient placement
   a. Place patient in standard, contact, and droplet precautions.
   b. Require a single room with a private bathroom and with a separate entry and exit door. May admit in a negative pressure, if available.
   c. Post the appropriate isolation signage outside the anteroom.
2. Access to the room
   a. A VHF certified trained security officer will be assigned at the entrance of the isolation room to ensure that access to the room is restricted.
   b. Only VHF certified personnel will be allowed to care for such patients. Certificates will be issued after training by the IP&C Department.
   c. A log book shall be available to document all persons entering the patient's room. Refer to **Appendix 1-IV-05**: Monitoring log.
   d. VHF certified trained observers will be stationed at the entry to monitor proper donning of PPE and at the exit to monitor and assist in proper doffing of PPE.
3. Principles of Personal Protective Equipment (PPE)
   a. All healthcare workers assigned to care for VHF patient must have received training and must have demonstrated competency in performing all VHF-related infection control practices, especially, on the proper donning and doffing of PPE.
   b. Trained observers should be certified by IP&C to monitor the proper PPE use and adherence to protocols for donning and doffing PPE, and to guide HCWs at each point of use based on a competency checklist (Refer to **Appendix 2-IV-05:** HCWs Competency Checklist for Managing VHF/EVD patients and **Appendix 3-IV-05:** Trained observer's performance checklist for donning and doffing PPE).
   c. IP&C shall conduct training for observers and healthcare workers for proficiency and competency in the use of PPE.
   d. In the PPE removal area, provide supplies for disinfection of PPE and for performing hand hygiene; and, a place for sitting that can be easily cleaned and disinfected where HCWs can remove boot covers.
   e. HCWs must remove personal clothing and items and change into surgical scrubs and dedicated washable footwear prior to donning the required PPE for VHF.
   f. HCWs will use the recommended VHF PPE including: double gloves, fluid resistant or impermeable gown, eye protection (goggles or face shield), and a facemask. Detailed PPE donning and doffing are available and updated regularly on the intranet.
   g. Additional PPE will be required in certain situations (e.g., copious amount of blood, other body fluids, vomit, or feces present in the environment), including but not limited to double gloving, disposable shoe covers, head cover, leg coverings, and a coverall, if available.
4. Aerosol generating procedures (AGPs)
   Avoid aerosol-generating procedures (AGPs). If performing these procedures, PPE should include respiratory protection N95 or high filtering face piece respirator and the procedure should be performed in an airborne infection isolation room.

a. Although there are limited data available to definitely define a list of AGPs, those included are Bilevel Positive Airway Pressure (BIPAP), bronchoscopy, sputum induction, intubation and extubation, and open suctioning of airways. Disposable filtering facepiece respirators are preferred.
b. Limit the number of healthcare workers present during the procedure to those essential only to patient care.
c. Conduct environmental surface cleaning using a hospital approved disinfectant after performing AGPs.

5. Patient care equipment
   a. Utilize isolation cart to keep all routine supplies for the patient outside of the isolatio room.
   b. Patient care equipment should be dedicated (preferably disposable) to be used for provision of care.
   c. All non-dedicated and non-disposable medical equipment used for patient care should be cleaned and disinfected according to manufacturer's instruction and hospital policy.
   d. Contact CSSD regarding reusable instruments for cleaning and sterilization.
6. Patient care consideration
   a. Practice Standard, Contact, and Droplet precautions with all patients to prevent unprotected contact and exposure with blood and body fluids. HCWs should perform hand hygiene frequently.
   b. Limit the use of needles and sharps. Phlebotomy procedures and laboratory testing should be limited to the minimum necessary for essential diagnostic evaluation and medical care.
   c. All needles and sharps should be handled with extreme care and disposed in puncture-proof, sealed containers.
   d. Based on the Ministry of Health (MOH) circulars at the time, patient transfer to a designated VHF facility will be identified in the IDEP and updated on the website by the IP&C Department.
7. Restriction of visitors:
   a. Visitors are restricted entry to the patient's room.
   b. Exceptions may be considered on a case-to-case basis with due notification from IP&C Department.
8. Duration of Infection Control Precautions
   a. Duration of infection control precautions should be determined on a case-to-case basis in conjunction with IP&C Department.

E. Nursing / Medical

1. Prior to caring for a VHF patient, healthcare workers must be trained and certified, a necessary process which requires training and skills assessment necessary for the safety of the HCWs.
2. In addition, HCWs must complete the healthcare worker's preparedness checklist and competency checklists for specific VHF viral disease provided by IP&C, which are available on the intranet.
3. Staff caring for patient with suspected or confirmed VHF SHOULD NOT have other assignments.
4. Staff working in that unit will be monitored by IP&C Department twice daily for development of symptoms.
5. HCWS are accountable for their continuous update by visiting the intranet frequently.

F. Monitoring and Management of Potentially Exposed Personnel

1. HCWs with percutaneous or mucocutaneous exposures to blood, body fluids, secretions, or excretions from a patient with suspected VHF should:

a. Stop working and immediately wash the affected skin surfaces with soap and water.
b. Irrigate mucous membrane (e.g., conjunctiva) with copious amount of water or eyewash solution.
c. Contact Surveillance Clinic/Employee Health Clinic/Supervisor for assessment and access to post-exposure management services for all appropriate pathogens.
d. HCWs who develop sudden onset of fever, intense weakness or muscle pains, vomiting, diarrhea, or any signs of hemorrhage after an unprotected exposure to a patient with VHF should:
   i. Not report to work or should immediately stop working if on duty.
   ii. Notify supervisor who will then notify IP&C Department to arrange for prompt medical evaluation.

2. Asymptomatic HCWs who had unprotected exposure to a patient with VHF should:
   a. Receive medical evaluation promptly and follow-up care including fever monitoring twice daily for the incubation period of the specific VHF virus (e.g., 21 days) after the last known exposure.
   b. A protocol shall be developed to ensure twice daily contact with exposed personnel to discuss potential symptoms and document fever checks.
   c. Comply with work exclusion/home isolation for the duration of the incubation period of the specific VHF virus or until they are deemed no longer infectious to others.
   d. All HCWs in contact with the pathogen of VHF will be tested by an acute and convalescent sera for exposure if the test is available.
   e. IP&C Department will authorize approval of leave based on the specific pathogen.

G. Handling/Transporting Specimens within the Hospital

It is expected that all laboratory technicians and other healthcare personnel collecting or handling specimens follow CDC Interim Guidelines on specimen collection, transport, and submission for patients with Ebola. These include wearing the appropriate PPEs as described above and adhering to engineered safeguards for all specimens, regardless of whether they are identified as infectious.

1. In compliance with the recommended guidelines, specimens should be placed in a durable, leak proof secondary container for transport within a facility.
2. To reduce the risk of breakage or leaks, DO NOT use any pneumatic tube system for transporting suspect VHF specimens. All specimens must be hand delivered to the Pathology Department.
3. Specimens collected for VHF testing should be packaged and shipped without attempting to open the collection tube specimens, in accordance with existing hospital and Ministry of Health guidelines.
4. Specimen for shipment should be packaged following the basic triple packaging system which consist of a primary receptacle (a sealable specimen bag) wrapped with absorbent material; secondary receptacle (water tight, leak proof); and, an outer shipping package.
5. HCWs should limit unnecessary testing.

H. Environmental Cleaning

1. Use a hospital-approved disinfectant to disinfect hard non-porous surfaces such as Hypochlo rites (household bleach) by housekeeping and nursing staff. A solution of 1:10 for blood spills or 1:100 bleach solution for general cleaning can be used. Or use a Hypochlorite based disinfec tant tablets and follow instructions as per manufacturer's recommendation for contact time and dilution.
2. Housekeepers performing environmental cleaning should wear the recommended PPE described above and consider using additional barriers such as shoe covers and leg coverings if needed.
3. Face protection should be worn when performing task such as liquid waste disposal that can generate splashes.

4. Use designated cleaning equipment (e.g., mop, buckets, etc.) and disposable cleaning materials in the isolation room/unit.
5. Clean and disinfect equipment and furniture upon patient discharge and keep the room vacantfor 24 hours.
6. All materials used for the patients and disposable items worn by staff should be double-bagged in airtight yellow bags for immediate transport outside the unit for incineration.
7. Treat sewage and other fluids with household bleach (i.e., for 5 minutes or longer) before flushing.
8. Use only yellow bags in the isolation room.

I. Laundry

1. Soiled linens are considered contaminated.
2. Soiled linens should be placed in leak-proof bags at the site of use and transported directly to the decontamination area for incineration.
3. Linen used by patients suspected and confirmed with VHF should not be mixed with other linens.

J. Management of the Deceased

1. VHF pathogens are classified as Category II pathogens.
2. Follow the proper identification of body, transportation, & documentation in the morgue.
3. The nurse-in-charge or dedicated personnel will inform and notify the Morgue Supervisor of the deceased infection status. This should be documented in writing on the identification tag. Refer to **ICM- VIII-10** Mortuary Care.
4. Preparation of the body
   a. At the site, the body should be wrapped in a plastic shroud, in a way that prevents contamination of the outside of the shroud. Change PPE if they are heavily contaminated with blood or body fluids.
   b. Leave any intravenous lines or endotracheal tubes that maybe present.
   c. Avoid washing the body.
   d. Place immediately in a leak-proof body bag not less than 150 um thick and zip close. Apply surface disinfection on the outer surface of the bag. The bagged bag should be placed in another leak-proof body bag not less than 150 um thick and zip closed. Perform surface disinfection on the outer surface of the body bag prior to transfer for immediate burial.
   e. Place proper label on the outer surface of the body bag where it is clearly visible.
5. Disposition of Remains:
   a. Immediate burial in a a hermetically sealed casket is highly recommended.

K. Referrals

Note: If concerns of suspected VHF are raised on a referred patient these steps should be followed:

1. Comply with standard precautions at all times.
2. Implement the measures described above in the wearing of the appropriate PPE in handling the patient.
3. Prepare the patient for transport in an appropriate manner as to avoid contamination of HCW and surrounding with body fluids (e.g., mask and diapers).
4. Manage any soiled equipment or linen appropriately as detailed above.
5. Inform the receiving ward by phone regarding the clinical condition of the patient being transferred.
6. The MRP, nurse-in-charge, and registration clerk in the receiving hospital should be aware of the arrival of such patient/s in order to expedite and appropriately isolate the patient upon arrival.

Appendix 1-IV-05:
24-Hour Monitoring Log for Healthcare Workers

MRN: _____ **Ward:** _____
Date of Admission: _____ **Date:** _____ /00:01-23:59H

NAME	BADGE	SERVICE / PURPOSE	TIME IN	TIME OUT

Note: Please submit daily a copy of this monitoring log form to the Infection Prevention & Control Department.

Appendix 2-IV-05:
Healthcare Workers' Competency Checklist for Managing Viral Hemorrhagic Fever / Ebola Virus Disease Patients

Name: _____ Badge No: Date:

Competency Statement
Prior to working with an EVD patient, HCWs need to be prepared and be able to describe and demonstrate the necessary knowledge and skills in taking care of an Ebola patient.

Performance Indicators		K	S	Comment
1. Able to describe the signs, symptoms, and risk factors of an EVD patients	1. Fever >100.4°F or 38.0 °C with headache, weakness, muscle pain, vomiting, diarrhea, abdominal pain or hemorrhage			
	2. History of travel to EVD outbreak countries within the last 21 days			
	3. History of contact with an EVD patient within the last 21 days			
2. Able to demonstrate the proper donning of PPE under the supervision of a Trained observer NB. HCW must remove personal clothing and items Change into surgical scrubs and wear dedicated washable shoes	1. **Inspect PPE** to ensure that it is in serviceable condition, and that all required PPEs are available with appropriate sizes.			
	2. **Perform hand hygiene.**			
	3. **Put on inner gloves**			
	4. **Put on Coverall or Jumpsuit. Do not cover your head at this point.** Ensure gown or coverall is large enough to allow unrestricted freedom of movement. Ensure cuffs of inner gloves are tucked under the sleeve of the gown or coverall.			
	5. **Put on boots or shoe covers.**			
	6. **Put on unsterile blue surgical gown.**			
	7. **Put on N95 respirator.** Complete a user seal check.			
	8. **Put on face shield/hood.** Put on face shield or hood over the N95 to provide additional protection to the front sides of the face. The hood should cover all of the hair and the ears, and ensure that it extends past the neck to the shoulders. Be sure that the hood completely covers the ears and the neck.			
	9. **Put on outer gloves.** Put on second pair of gloves (with extended cuffs. Ensure the cuffs are pulled over the sleeves of the gown or coverall/jumpsuit. a. Verify if the HCW is able to go though a range of motions to ensure there is sufficient range of movement while all areas of the body remain covered. b. Disinfect the outer glove hands. Allow to dry prior to patient contact.			

Appendix 2-IV-05…con't.

Performance Indicators		K	S	Comment
3. Able to demonstrate the proper doffing of PPE following the recommended sequence	1. **Inspect the PPE** ensemble to assess for visible contamination, cuts, or tears. If visibly contaminated, then disinfect affected PPE using a hospital approved disinfectant.			
	2. **Disinfect the outer gloves.**			
	3. **Remove boots or shoe covers.** While sitting down, remove and discard boots or shoe covers.			
	4. **Disinfect and remove outer gloves.**			
	5. **Disinfect inner gloves.**			
	6. **Remove the face shield/hood:** Avoid touching the front surface of the hood.			
	7. **Disinfect inner gloves.**			
	8. **Remove the outer unsterile blue surgical gown.** The HCW can either untie fasteners or the trained observer can assist to unfasten the gown. Avoid contact with the scrubs or disposable garments with outer surface of gown during removal. Pull gown away from body, rolling inside out and touching only the inside of the gown.			
	9. **Disinfect inner gloves.**			
	10. Remove coverall or jumpsuit. To remove the coverall, tilt head back to reach zipper or fasteners. Unzip or unfasten coverall completely before rolling down and turning inside out. Avoid contact of scrubs with outer surface of coverall during removal, touching only the inside of the overall.			
	11. **Disinfect gloves and remove.**			
	12. **Perform hand hygiene and don a new pair of gloves.**			
	13. **Remove N95 Respirator.** Remove N95 by tilting the head slightly forward, grasping first the bottom tie, then the top tie, remove without touching the front of the N95 then discard.			
	14. **Disinfect gloves.**			
	15. **Disinfect washable shoes.** Sitting on a new clean surface (e.g. second clean chair) use a hospital approved disinfectant wipe to clean out every external surface of the washable shoes.			
	16. **Disinfect and remove gloves. Perform hand hygiene.**			
	17. **Perform the final inspection** for any indication of contamination of the surgical scrubs or disposable garments. If contamination is identified inform immediately the ICP or their designee before exiting PPE removal area.			
	18. **Scrubs:** HCW can leave PPE removal area with their dedicated washable footwear and surgical scrubs.			

Appendix 2-IV-05…con't.

Performance Indicators		K	S	Comment
4. Familiar with the important components of the VHF Management ICM-IV-05 policy such as on the following:	1. Patient placement			
	2. Isolation Precaution			
	3. Staff allocation			
	4. Patient care equipment			
	5. Patient care consideration (limit use of sharps)			
	6. Specimen handling and transport			
	7. Environmental cleaning			
	8. Management of laundry			
	9. Management of the deceased			
	10. Access to the room and restriction of visitors			
5. Know who to notify in the hospital in case of an unprotected exposure				
6. Aware that he should stop working and wash affected parts with soap and water in case of an unprotected exposure to blood and body fluids of a suspected Ebola patient. He should notify IPC and his Manager.				
7. Know how to monitor himself for any development of symptoms after taking care of an EVD patient				
8. Familiar with the Intranet Homepage "NGHA Alert & response to Local/Globa l outbreak (MersCoV-Ebola)" link.				
9. Have completed the Ministry of National Guard-Health affairs (MNG-HA) HCWs preparedness checklist for EVD.				

Legends: *K-Knowledge S-Skills* *Use NA where appropriate*

Preceptor's Name:_____ Badge No.:_____
Health Worker's Signature:_____ Professional
Category:_____

Appendix 2-IV-05…con't.

Trained Observer's Performance Checklist for Donning & Doffing Personal Protective Equipment (PPE)

Donning PPE

Required PPE for trained observers to be used during the doffing of PPEs: Fluid resistant gown: full face shield: 1 pair of nitrile gloves with extended cuffs and fluid-resistant impermeable shoe covers. Trained observers will monitor and document successful donning and doffing of PPE. If the trained observer assist in the PPE doffing, then trained observer should disinfect outer-gloved hands with a hospital approved disinfectant wipes or *ABHR immediately after contact with the HCW's PPE.
Required PPE for the HCWs: Fluid resistant coverall: outer gown: full face shield or hood, 2 pairs of nitrile gloves with extended cuffs, fluid-resistant boots or shoe covers and N95 or PAPR
Note: HCWs must remove personal clothing and personal items. Change into surgical scrubs and wear dedicated washable shoes.

Steps	Performance Checklist	C	N/A	Comment
1	**Engage Trained Observer:** The donning process is conducted under the guidance and supervision of a trained observer who confirms visually that all PPE is serviceable and has been donned successfully. The trained observer will use a written checklist to confirm each step in donning PPE and can assist with ensuring and verifying the integrity of the ensemble. No exposed skin or hair of the healthcare worker should be visible at the conclusion of the donning process.			
2	**Remove Personal Clothing and Items:** Change into surgical scrubs (or disposable garments) and dedicated washable (plastic or rubber) footwear in a suitable, clean area. No personal item (e.g. jewelry, watches, cell phones, pagers, pens) should be brought into patient room.			
3	**Inspect PPE prior to Donning**: Visually inspect the PPE ensemble to be worn to ensure it is in serviceable condition, all required PPE and supplies are available, and that the sizes selected are correct for the healthcare worker. The trained observer reviews the donning sequence with the healthcare worker before the healthcare worker begins and reads it to the healthcare worker in a step-by-step fashion.			
4	**Perform Hand Hygiene**: with ABHR. When using ABHR, allow hands to dry before moving to next step.			
5	**Put on Inner Gloves**: Put on first pair of gloves.			
6	**Put on Coverall or Jumpsuit and do not cover your head at this point**: Ensure gown or coverall is large enough to allow unrestricted freedom of movement. Ensure cuffs of inner gloves are tucked under the sleeve of the gown or coverall.			
7	**Put on boots or shoe covers.**			
8	**Put on unsterile blue Surgical gown.**			
9	**Put on N95 Respirator**: complete a user seal check. **Put on head cover of the coverall or jumpsuit.**			
10	**Put on Face shield/Hood**: the surgical hood should cover all of the hair and the ears, and ensure that it extends past the neck to the shoulders. Be certain that hood completely covers the ears and neck.			
11	**Put on Outer Gloves**: Put on second pair of gloves(with extended cuffs). Ensure the cuffs are pulled over the sleeves of the gown or coverall..			
12	**Verify**: After completing the donning process, the integrity of the ensemble is verified by the trained observer. The healthcare worker should be comfortable and able to extend the arms, bend at the waist and go through a range of motions to ensure there is sufficient range of movement while all areas of the body remain covered.			
13	**Disinfect Outer Gloves**: Allow to dry prior to contact with patient.			

Legend: C: Complete N/A: Not Applicable

Appendix 3-IV-05....cont.

Doffing PPE				
Steps	**Performance Checklist**	**C**	**N/A**	**Comment**
1	**Inspect:** Inspect the PPE to assess for visible contamination, cuts, or tears before starting to remove. If any PPE is visibly contaminated, then disinfect using a hospital approved disinfectant wipe.			
2	**Disinfect outer Gloves.**			
3	**Remove the boots or shoe covers.**			
4	**Disinfect and remove the outer gloves.**			
5	**Disinfect inner gloves.**			
6	**Remove the Face shield/Hood:** Avoid touching the front surface of the hood.			
7	**Disinfect inner gloves.**			
8	**Remove the Outer unsterile Surgical gown:** The HCW can either untie fasteners or the trained observer can assist to unfasten the gown. Avoid contact with the scrubs or disposable garments with outer surface of gown during removal. Pull gown away from the body, rolling inside out and touching only the inside of the gown.			
9	**Disinfect inner gloves.**			
10	**Remove Coverall/Jumpsuit** To remove coverall, tilt head back to reach the zipper or fasteners. Unzip or unfasten coverall completely before rolling down and turning inside out. Avoid contact of scrubs with outer surface of coverall during removal, touching only the inside of the coverall.			
11	**Disinfect Gloves and Remove.**			
12	**Perform HH and don a new pair of gloves.**			
13	**Remove N95 Respirator:** by tilting the head slightly forward, grasping first the bottom tie, then the top tie, remove without touching the front of the N95 then discard.			
14	**Disinfect gloves.**			
15	**Disinfect Washable Shoes:** Sitting on a new clean surface (e.g. second clean chair, clean side of a bench) use a hospital approved disinfectant wipe to wipe down every external surface of the washable shoes.			
16	**Disinfect and Remove gloves.**			
17	**Perform Hand Hygiene.**			
18	**Inspect:** Perform a final inspection of healthcare worker for any indication of contamination of the surgical scrubs or disposable garments. If contamination is identified, immediately inform infection preventionist or occupational safety and health coordinator or their designee before exiting PPE removal area.			
19	**Scrubs:** Healthcare worker can leave PPE removal area wearing dedicated washable footwear and surgical scrubs or disposable garments.			

**ABHR –alcohol based hand rub/gel*

Name of HCW:_____ BN:_____ Signature:_____
Trained Observer:_____ BN:_____ Signature:_____
HCW Professional Category:_____ Date:_____

TITLE/DESCRIPTION:	INDEX NUMBER
PEDICULOSIS / SCABIES MANAGEMENT	**ICM - IV - 06**

EFFECTIVE DATE:	APPLIES TO:	ISSUING AUTHORITY:
01/01/2009 **01/01/2013** **01/01/2018**	**All GCC Countries**	**GULF COOPERATION COUNCIL – CENTRE FOR INFECTION CONTROL (GCC-CIC)**

DEFINITION

To provide guidelines on the management of patients admitted with pediculosis or scabies.

REFERENCE

1. Association for Professionals in Infection Control (APIC) and Epidemiology, Inc. (2014). Chapter 29: Isolation precautions. In APIC Text of infection control and epidemiology (4th ed.).
2. Association for Professionals in Infection Control (APIC) and Epidemiology, Inc. (2014). Chapter 99: Parasites. In APIC Text of infection control and epidemiology (4th ed.).

COMMENTS

1. Pediculosis is defined as any type of louse infestation. There are three types:
   a. Pediculosis capitis – head lice
      i. Head lice infestation of the hair, eyebrows and eyelashes is caused by Pediculus humanus capitis.
      ii. Transmission is facilitated by direct contact with an infested person and/or objects used by them. Also, may be spread by indirect contact with the personal belongings of infested persons, especially shared clothing and headgear.
   b. Pediculosis pubis – crab lice
      i. Infestation is usually of the pubic area but in heavy cases may also be present in facial hair and eyelashes. Infestation of any type may result in severe itching, fever and excoriation of the scalp or body.
   c. Pediculosis corporis – body lice
      i. Infestation by body lice, Pediculus humanus corporis, is rarely found on the body, rather on the clothing of an infested person, especially along seams of the clothing's inner surfaces.
      ii. Transmission is facilitated by direct contact with an infested person and/or objects used by them. Also, may be spread by indirect contact with the personal belongings of infested persons, especially shared clothing and headgear.

2. Scabies is a parasitic disease described as an infestation of the skin by the mite Sarcoptes scabiei.
   a. Clinical manifestations of the disease include visible papules, vesicles, or tiny linear burrows that contain the mites and their eggs.
   b. Lesions are prominent at the following sites: finger webs, flexor surfaces of the wrists and elbows, anterior axillary folds, thighs, external genitalia (men), nipples and abdomen (women). Affected areas also include the head, neck, palms and soles.
   c. Transmission is primarily through direct, prolonged, skin-to-skin contact with an infected person, and it can occur even in the presence of high levels of personal hygiene.

3. Norwegian scabies syndrome is highly contagious.

PEDICULOSIS / SCABIES MANAGEMENT	ICM - IV - 06

PROCEDURE

If a patient is suspected to be infested with any form of pediculosis/scabies, examination of the patient will be conducted without delay by medical/nursing staff. The medical staff must verify the infestation before treatment can be initiated.

A. Nursing

1. Isolate the patient in a single room with Contact Isolation precautions when suspicion or confirmation of scabies or lice infestation.
2. Obtain physician's confirmation and prescription for appropriate treatment.
3. Notify Infection Preventionist (IP) of patient's diagnosis.
4. Give patient clear instructions on proper use of the medication. Patient should be supervised to ensure correct application.
5. If assisting patient with treatment:
   a. Put on the necessary (gown, gloves, and cap) protective personal equipment (PPE).
   b. Prepare the patient for treatment.
   c. Apply scabicide/pedulocide as per instructions (treatment details vary based upon the drug used).
   d. Encourage the patient to leave the medication on for the time required for the specific product used.

   NB: Pediculocides will not destroy all nits. Following application of the pediculocide, manual removal of the nits with a fine tooth comb, is crucial to preventing recurrence and pesticide resistance.
   e. Give the patient (or encourage patient to take) a cleansing bath or shower to ensure proper rinsing of the scabicide.
6. Clothing and linen used by the infected patient from 3 days prior and 24 hours after treatment must be placed in a hot water soluble bag or double bagged, tied securely, labeled and sent to laundry.
7. All clothing and linen must be changed after the room has been thoroughly cleaned. See housekeeping instructions below.
8. All PPEs must be discarded in black bag and tied securely, immediately after use.
9. Continue isolation for 24 hours after effective treatment.

B. Physician

1. A physician should assess the patient to determine the effectiveness of the treatment.
2. A single, proper application of treatment is curative in most cases and eliminates the risk of transmission.

C. Housekeeping

Concurrent and terminal disinfection with hospital-approved disinfectant is recommended.

D. Laundry

Isolate the laundry bag for special handling by the laundry facility.

1. Linen and clothing should be placed in water-soluble laundry bags or labeled and transported to the laundry department.
2. Linen and clothing should be washed at a temperature of 160°F (71°C) for at least 5 to 10 minutes.

E. Household contact

Consult with the Public Health Nurse Coordinator in Infection Prevention and Control department for follow-up.

TITLE/DESCRIPTION:	INDEX NUMBER
RABIES EXPOSURE MANAGEMENT	**ICM - IV - 07**

EFFECTIVE DATE:	APPLIES TO:	ISSUING AUTHORITY:
01/01/2009 **01/01/2013** **01/01/2018**	**All GCC Countries**	**GULF COOPERATION COUNCIL – CENTRE FOR INFECTION CONTROL (GCC-CIC)**

DEFINITION

To provide guidelines on pre-exposure prophylaxis for employees who work in the animal facility as well as guidelines on management of patients with exposure to possibly rabid animals.

REFERENCES

1. Recommendations of the Immunization Practice Advisory Committee (ACIP). Human Rabies Prevention, United States (1999). MMWR, 8 January 1999:48;RR-1.
2. Redbook (2012). Report of the Committee on Infectious Diseases. American Academy of Pediatrics (28th ed.).
3. Association for Professionals in Infection Control (APIC) and Epidemiology, Inc. (2014). Chapter 89: Rabies. In APIC Text of infection control and epidemiology (4th ed.).
4. Rupprecht C.E., Briggs D., Brown C.M., et.al. Use of a Reduced (4-Dose) Vaccine Schedule for Postexposure Prophylaxis to Prevent Human Rabies: Recommendations of the Advisory Committee on Immunization Practices. March 19, 2010 / 59(RR02);1-9
   Downloaded from https://www.cdc.gov/mmwr/preview/mmwrhtml/rr5902a1.htm.

COMMENTS

1. The likelihood of rabies infection varies with the nature and extent of exposure, which may fall into one of two categories: bite and non-bite. Human-to-human transmission is rare. The virus is introduced into bite wounds, open cuts in the skin, or onto mucous membranes. Once it enters the central nervous system of the human, it causes encephalomyelitis, which is 100% fatal.
2. Types of exposure include:
   a. Bite
      i. Any penetration of the skin by teeth constitutes a bite exposure. All bites, regardless of location, represent a potential risk for rabies transmission. Bites by some animals such as bats can inflict minor injury and thus be undetected.
   b. Non-bite
      i. Non-bite exposures from terrestrial animals cause rabies and rarely require post-exposure prophylaxis.
      ii. The non-bite exposure of highest risk appears to be among persons exposed to large amounts of aerosolized rabies virus.
      iii. The contamination of open wounds, abrasions, mucous membranes, or (theoretically) scratches with saliva or other potentially infectious material (such as neural tissue) from a rabid animal also constitutes a non-bite exposure.
      iv. Other contact, by itself, such as petting a rabid animal and contact with blood, urine, or feces (e.g., guano) of a rabid animal does not constitute an exposure and is NOT an indication for prophylaxis.
3. Human-to-human transmission
   a. Human-to-human transmission has occurred among eight recipients of transplanted corneas. Stringent guidelines for acceptance of donor corneas have been implemented to reduce the risk.

PROCEDURE

A. Pre-exposure Prophylaxis

Pre-exposure prophylaxis is administered for several reasons:

1. It simplifies therapy by eliminating the need for rabies immunoglobulin (RIG).
2. It decreases the number of doses of vaccine needed post exposure.
3. It may protect persons whose post-exposure therapy is delayed.
4. It may provide protection to persons at risk for unapparent exposure to rabies.

Pre-exposure vaccination should be offered to:

1. Persons in high-risk groups, such as veterinarians, animal handlers, and certain laborator workers.
2. Persons whose activities bring them into frequent contact with the rabies virus or potentially rabid bats, raccoons, skunks, cats, dogs, or other species at risk for having rabies.
3. International travelers to areas where dog rabies is enzootic and immediate access to appropriate medical care, including biologics, may be limited.
4. Pre-exposure vaccine and dosage (see **Table 1-IV-07**).

Table 1-IV-07: Rabies pre-exposure prophylaxis schedule

Type of Vaccination	Route	Regimen
Primary cell culture rabies vaccine	Intramuscular (IM)	1 ml on days 0, 7,21 or 28
Booster	Intramuscular	1 ml every 2 years

NB: 1. For those travelers receiving anti-malaria prophylaxis, only the IM route should be used.
2. Dosage may vary depending on the manufacturer; see package insert.

B. Serological testing follow pre-exposure prophylaxis

Routine serologic testing to confirm seroconversion is not necessary except for persons suspected of being immunosuppressed or being in a high risk group.

C. Post exposure therapy for previously vaccinated persons

Previously vaccinated persons should receive rabies vaccine as a booster. RIG is unnecessary and should not be administered to these persons.

D. Post-exposure prophylaxis

The type of animal, circumstances of the biting incident and vaccination status of the animal affect the need for post-exposure prophylaxis

a. An unprovoked attack by an animal is more likely than a provoked attack to indicate that the animal is rabid.
b. Bites inflicted on a person attempting to feed or handle an apparently healthy animal should generally be regarded as provoked.
c. A currently vaccinated dog, cat, or ferret is unlikely to become infected with rabies.
d. A healthy domestic dog, cat, or ferret that bites a person may be confined and observed for 10 days. A veterinarian should evaluate any illness during confinement or before release. If signs suggestive of rabies develop during the observation period, the animal will be euthanized and its head removed and shipped under refrigeration for examination by the laboratory at the Regional Central Laboratory. Refer to **ICM–IV-08** Rabies Specimen Acquisition Handling and Shipment to Ministry of Agriculture Laboratory.

e. If the biting animal is stray or unwanted, it should either be observed for 10 days or be euthanized immediately and submitted for rabies examination (**Table 2-IV-07**).
f. For handling of the animal head, refer to **ICM–IV-08** Rabies Specimen Acquisition Handling and Shipment to Ministry of Agriculture Laboratory.

Table 2-IV-07: Rabies post-exposure prophylaxis guide

Animal Type	Evaluation and Disposition of Animal	Post-Exposure Prophylaxis Recommendations
Dogs, cats, and ferrets	Healthy and available for a 10-day observation Rabid or suspected to be rabid Unknown (e.g., escaped)	Persons should not begin prophylaxis unless animal develops clinical signs of rabies.* Immediately vaccinate. Consult Infectious Diseases for advice.
Skunks, raccoons, foxes and most other carnivores, and bats	Regarded as rabid unless animal proven negative by laboratory tests**	Consider immediate vaccination.
Livestock, small rodents, lagomorphs (rabbits and hares), large rodents (woodchucks and beavers), and other mammals	Consider individually	Consult Infectious Diseases for advice. Bites of squirrels, hamsters, guinea pigs, gerbils, chipmunks, rats, mice, other small rodents, rabbits, and hares almost never require anti-rabies post-exposure prophylaxis.
Camels, sheep, and other livestock	Consider individually	Consult Infectious Diseases for advice.

* During the 10-day observation period, begin post-exposure prophylaxis at the first sign of rabies in a dog, cat, or ferret that has bitten someone. If the animal exhibits clinical signs of rabies, it should be euthanized immediately and tested.
** The animal should be euthanized and tested as soon as possible. Holding for observation is not recommended. Discontinue vaccine if immunofluoresence test results of the animal are negative.

E. Wound Management and Vaccination

1. Wound management

a. Wash all bite wounds and scratches immediately and thoroughly with soap, water and a virucidal agent such as povidone-iodine solution.
b. Persons who have been bitten by animals suspected or proven to be rabid should begin post-exposure prophylaxis immediately (See Table 3). Incubation periods of greater than one year have been reported in humans.
c. When a documented or likely exposure has occurred, post-exposure prophylaxis is indicated REGARDLESS of the length of delay of the clinical signs of rabies.
d. Tetanus prophylaxis and measures to control bacterial infection should be administered as indicated. The decision to suture large wounds is case dependent.
e. Post-exposure anti-rabies vaccination should always include the administration of both passive antibodies and vaccine. THE EXCEPTION to this rule is persons who have previously received complete vaccination regimens (pre-exposure and post-exposure) with a cell culture vaccine or persons who have been vaccinated with other types of vaccines and have documented rabies antibody titers; these persons should receive the VACCINE ONLY (See **Table 3-IV-07**).

Table 3-IV-07: Rabies post-exposure prophylaxis schedule

Vaccination Status	Treatment	Regimen*
Not previously vaccinated	Wound cleansing	All post-exposure treatment should begin with immediate, thorough cleansing of all wounds with soap and water. If available, a virucidal agent such as a povidone-iodine solution should be used to irrigate the wound(s).
	RIG*	Administer 20 IU/kg body weight. If anatomically feasible, the *full dose* should be infiltrated around the wound(s) and any remaining volume should be administered IM at an anatomical site distant from the vaccination site. Also, RIG should not be administered in the same syringe as the vaccine. Because RIG may partially suppress the active production of antibodies, no more than the recommended dose should be given.
	Rabies vaccine	Administer 1.0 ml IM in the deltoid area on each days 0, 3, 7, and 14. For persons with immunosuppression, rabies PEP should be administered using all 5 doses of vaccine on days 0,3,7,14, and 28. Day 0 is the day of dose 1 of vaccine is administered.
Previously vaccinated**	Wound cleansing	All post-exposure treatment should begin with immediate, thorough cleansing of all wounds with soap and water. If available, a virucidal agent such as a povidone-iodine solution should be used to irrigate the wounds.
	RIG	RIG should not be administered.
	vaccine	HDCV or PCECV 1.0 ml, IM (deltoid) 1 each days 0 and 3. Deltoid area is the only acceptable site of vaccination for adults and older children. For younger children, the outer aspect of the thigh may be used. Vaccine should never be administered in the gluteal area. Day 0 is the day of dose 1 of vaccine is administered.

* These regimens are applicable for all age groups, including children.
** Any person with a history of pre-exposure vaccination with HDCV, RVA, or PCECV; prior post-exposure prophylaxis with HDCV, RVA, or PCE CV; or previous vaccination with any other type of rabies vaccine and a documented history of antibody response to the prior vaccination.

2. Management of adverse reactions
   a. Once initiated, rabies prophylaxis should not be interrupted or discontinued because oflocal or mild systemic adverse reactions to the rabies vaccine.
   b. When a person with a history of hypersensitivity to the rabies vaccine must be revaccinated, antihistamines can be administered. Epinephrine should be readily available to counteract anaphylactic reactions, and the person should be observed carefully immediately after vaccination.

3. Precautions and contraindications
   a. Immunosuppression:
      i. Corticosteroids, other immunosuppressive agents, anti-malarials, and immunosuppressive illnesses can interfere with the development of active immunity after vaccination. For such patients, pre-exposure prophylaxis should be administered with the awareness that the immune response might be inadequate.
      ii. Persons who are immunosuppressed due to disease or medication should postpone pre-exposure vaccination and consider avoiding activities for which rabies pre-exposure prophylaxis is indicated. When this is not possible, persons who are immunosuppressed and at risk for rabies should be vaccinated by the IM route, and their antibody titers should be checked. Failure to seroconvert after the third dose should be managed in consultation with an Infectious Diseases Consultant.

iii. Immunosuppressive agents should not be administered during post-exposure therapy unless they are essential for the treatment of other conditions.

b. Pregnancy:
Pregnancy is NOT considered a contraindication to post-exposure prophylaxis if the risk of rabies is substantial.

4. Investigation of contacts
Search for other persons who may have been exposed to the infected animal.

5. Isolation of hospitalized patients
Standard precautions are recommended for the duration of illness.

6. Confirmed rabies in patients is a reportable disease. Notify Infection Control.

7. Refer to **ICM–I-05** Reporting Communicable Diseases to the Ministry of Health.

TITLE/DESCRIPTION:	INDEX NUMBER
RABIES SPECIMEN ACQUISITION, HANDLING AND SHIPMENT TO MINISTRY OF AGRICULTURE LABORATORY	**ICM - IV - 08**

EFFECTIVE DATE:	APPLIES TO:	ISSUING AUTHORITY:
01/01/2009 01/01/2013 01/01/2018	**All GCC Countries**	**GULF COOPERATION COUNCIL – CENTRE FOR INFECTION CONTROL (GCC-CIC)**

DEFINITION

To provide guidelines on handling animal specimens involved in suspected rabies cases. These guidelines include instructions on acquiring, properly preserving, and shipping the specimens to the Ministry of Agriculture Laboratory for testing.

REFERENCE

1. Mandell G, Bennett J, and Dolin R. (2000). Rabies virus. Principles and practice of infectious disease. (5th ed., Chapter 51) Churchill Livingstone.
2. Ministry of Agriculture and Water in Saudi Arabia.

COMMENT

Use standard precautions (wear gloves, aprons/gowns and masks) when handling the rabid/ suspected animal/animal parts/animal specimens. Animal specimens should be double bagged for handling using the infectious waste bag.

PROCEDURE

A. Emergency Department
Notifies the Infection Prevention and Control Department

B. Infection Prevention and Control (IP&C) Department
Contacts and coordinates with Environmental Services

C. Pest Control

1. Captures and impounds the suspected rabid animal.
2. Decapitates the animal.
3. The animal's brain needs to be secured for testing by the Ministry of Agriculture Laboratory. The specimen should be packed and kept frozen in an appropriate insulated container.
4. The animal's body is to be double-bagged at all times. Take animal remains to the incinerator and make sure they are disposed of. Also, dispose of all PPE (gowns, gloves, mask, etc.).
5. Ship the specimen via overnight/same-day courier to the Ministry of Agriculture Laboratory.
6. Disinfect the area of the decapitation.

Note: Check the working hours of your country's Ministry of Agriculture Laboratory

TITLE/DESCRIPTION:	INDEX NUMBER
MANAGEMENT OF PATIENTS WITH SUSPECTED SEVERE ACUTE RESPIRATORY SYNDROME (SARS)	**ICM - IV - 09**

EFFECTIVE DATE:	APPLIES TO:	ISSUING AUTHORITY:
01/01/2009 01/01/2013 01/01/2018	**All GCC Countries**	**GULF COOPERATION COUNCIL – CENTRE FOR INFECTION CONTROL (GCC-CIC)**

DEFINITION

To describe the institution's policy for the management of patients with suspected Severe Acute Respiratory Syndrome (SARS).

REFERENCES

1. CDC (April 2003). Interim laboratory biosafety guidelines for handling and processing specimens associated with SARS.
2. Wenzel, R.P. and Edmond, M.B. Managing SARS amidst uncertainty. New Engl J Med. 2003;348:1947-48.
3. Specific country policies from the Ministry of Health (MOH).
4. World Health Organization (WHO) guidelines for the global surveillance of SARS. Updated recommendations October 2004. http://www.who.int/csr/resources/publications/WHO_CDS_CSR_ARO_2004_1/en/

COMMENTS

1. Severe Acute Respiratory Syndrome (SARS) is an emerging infectious disease associated with a novel corona virus that has caused worldwide outbreaks since 1st of November 2002.
2. The incubation period is 2 to 7 days and may extend to 10 days.
3. Case definition of SARS
   a. Suspected case
      i. A person presenting with a history of: high fever (>38°C) AND coughing or breathing difficulty AND one or more of the following exposures during the 10 days prior to onset of symptoms:
         - close contact with a person who is a suspected or probable SARS case
         - history of travel to an area with recent local transmission of SARS
         - residing in an area with recent local transmission of SARS

      ii. A person with an unexplained acute respiratory illness resulting in death during a SARS outbreak, but on whom no autopsy has been performed AND one or more of the following exposures during the 10 days prior to onset of symptoms:
         - close contact with a person who is a suspected or probable case of SARS
         - history of travel to an area with recent local transmission of SARS
         - residing in an area with recent local transmission of SARS

   b. Probable case
      i. A suspected case with radiographic evidence of infiltrates consistent with pneumonia or respiratory distress syndrome (RDS) on chest X-ray (CXR).
      ii. A suspected case with autopsy findings consistent with the pathology of RDS without an identifiable cause.

   c. Confirmed case
      i. A suspected case of SARS that is positive for SARS coronavirus by one or more assays. See Use of laboratory methods for SARS diagnosis.
4. Exclusion criteria
   A case should be excluded if an alternative diagnosis can fully explain the illness.

5. Reclassification of cases
   a. As SARS is currently a diagnosis of exclusion, the status of a reported case may changeover time.
   b. A case initially classified as suspected or probable, but for whom an alternative diagnosis can fully explain the illness, should be discarded.
   c. A suspected case that, after investigation, fulfills the probable case definition should be reclassified as "probable."
   d. A suspected case with a normal CXR should be treated as such and monitored for 7 days. Those cases for whom recovery is inadequate should be re-evaluated by CXR.
   e. Those suspected cases for whom recovery is adequate but whose illness cannot be fully explained by an alternative diagnosis should remain as "suspected."
   f. A suspect case who dies, but on whom no autopsy is conducted, should remain classified as "suspected." However, if this case is identified as being part of a transmission chain of SARS, the case should be reclassified as "probable."
   g. If an autopsy is conducted and no pathological evidence of RDS is found, the case should be "discarded."

PROCEDURE

A. Medical/Nurses

1. Notify the Infection Prevention and Control (IP&C) Department on weekdays and the designated personnel on call after office hours and on weekends.
2. Notify the Director of IP&C or designee in all cases.
3. Isolation of patients:
   a. Place the patient in a negative pressure room in airborne isolation precautions.
   b. Wear gloves, gown, N95 masks, and eye protection to enter the room and for contact with patient or any of his/her body fluids.
   c. Wash hands carefully after removing gloves and other protective gear.
   d. Limit the number of healthcare workers caring for the patient.
   e. Limit the number of visitors.
4. Transport of suspected SARS patients:
   a. Use the minimum number of Emergency Medical Staff (EMS). Wear appropriate PPE (the patient should wear a surgical mask; EMS should wear N95 masks).
   b. Notify the receiving facility prior to transfer of suspected SARS patients to facilitate preparation for appropriate Infection Control procedures and facilities.

B. Laboratory Testing

1. Send only critical samples for investigation. Discuss with the Infectious Diseases Consultants on call for any required tests needed.
2. Hand deliver all samples to the appropriate laboratory section.
3. Arrange for sample transport to specific healthcare laboratory and for subsequent transfer of other samples to be tested by the Ministry of Health.
4. Follow the guidelines for "Handling of Possible or Suspected SARS Specimens" in the microbiology laboratory.
5. Infectious Diseases Consultants in coordination with IP&C will review laboratory results and assess disposition of the patient.

TITLE/DESCRIPTION:	INDEX NUMBER
RAPID MRSA SURVEILLANCE	**ICM - IV - 10**

EFFECTIVE DATE:	APPLIES TO:	ISSUING AUTHORITY:
01/01/2009 **01/01/2013** **01/01/2018**	**All GCC Countries**	**GULF COOPERATION COUNCIL – CENTRE FOR INFECTION CONTROL (GCC-CIC)**

DEFINITION

This policy describes the procedure for rapid evaluation of initial Methicillin-Resistant Staphylococcus aureus (MRSA) screening (surveillance) of patients for admission, to identify those patients requiring isolation, thus reducing or preventing the spread of MRSA to HCWs, patients and visitors.

REFERENCES

1. Association for Professionals in Infection Control (APIC) and Epidemiology, Inc. (2014). Chapter 93: Staphylococcus. In APIC Text of infection control and epidemiology (4th ed.)
2. APIC Guide to the elimination of methicillin-resistant staphylococcus aureus (MRSA) transmission in hospital settings, March 2007.

COMMENTS

1. MRSA refers to strains of Staphylococcus aureus that are resistant to oxacillin and other ß-lactam antibiotics.
2. Concerns about MRSA are related to the potential for nosocomial transmission and the limited number of antibiotics available to treat infections caused by this organism.
3. Initiate empiric contact isolation precautions during the screening process.
4. STANDARD PRECAUTIONS MUST BE OBSERVED FOR ALL PATIENT CARE.
5. Patients admitted from the Emergency Department who meet the criteria for MRSA screening can be transferred to a ward in contact isolation.

PROCEDURE

A. Patients who Require MRSA Surveillance Screening may include:

1. Patients admitted to the intensive care unit.
2. Patients transferred from other hospitals or patients treated at another hospital/clinic within the past six months.
3. Exposed roommates of new MRSA-positive patients.
4. Patients undergoing liver or cardiac surgery, organ transplant, continuous ambulatory peritoneal dialysis, hemodialysis patients for creation of access, or orthopedic prosthesis placement surgery.

B. Nasal Swab for Rapid Screening

1. Use the red-top tube with double-tip dry culture swab for anterior nares.
2. Write "MRSA SURVEILLANCE SAMPLE" on requisition.
3. All swabs should be transported as soon as possible to the Microbiology Lab.

C. Microbiology Laboratory

1. The Microbiology Lab will run tests on specimen in batches.
2. All swabs will be tested using the rapid test system, and results will be reported in the following manner:
   a. All negative results will be released in 24 hours
   b. Positive results will be phoned to the Ward and the Infection Control Department

D. Management of MRSA-Positive Patients

Nursing – Refer to **ICM-IV-02** Methicillin-Resistant Staphylococcus Aureus Management.

TITLE/DESCRIPTION:	INDEX NUMBER
CLOSTRIDIUM DIFFICILE INFECTION MANAGEMENT	**ICM - IV -11**

EFFECTIVE DATE:	APPLIES TO:	ISSUING AUTHORITY:
01/01/2018	**All GCC Countries**	**GULF COOPERATION COUNCIL – CENTRE FOR INFECTION CONTROL (GCC-CIC)**

DEFINITION

The purpose of this policy is to provide staff with guidance to reduce transmission of clostridium difficile within healthcare facilities of the Ministry of Health.

REFERENCES

1. Society for Healthcare Epidemiology of America (SHEA) and the Infectious Diseases Society of America (IDSA). 2010. Clinical practice guidelines for Clostridium difficile infection in adults.
2. Guide to preventing Clostridium difficile Infections. APIC implementation guide.
3. Strategies to Prevent Clostridium difficile Infections in Acute Care Settings in Acute Care Hospital. 2014 Update.

COMMENT

Clostridium difficile infection (CDI) is caused by an anaerobic spore-forming gram positive bacillus. It accounts for 15% to 30% of all episodes of antibiotic-associated diarrhea, and is the most common cause of healthcare-associated infectious diarrhea.

These infections vary from mild gastrointestinal symptoms to severe life-threatening conditions. The organism is easily transmitted in healthcare environments and has the potential to cause outbreaks in hospitals, especially long-term care facilities. It has a significant burden on healthcare facilities.

Major risk factors contributing to CDI are: antimicrobial use; especially exposure to clindamycin, extended-spectrum cephalosporins, or fluoroquinolones, usage of proton pump inhibitors and long hospitalization.

TERMINOLOGIES

Bristol chart	A medical aid designed to classify the feces into seven groups
CDI	Clostridium difficile infection
Diarrhea	3 per 24 hours episodes of stool classified as types 5, 6, or 7 as per Bristol stool chart that takes the shape of the container
Spore	A dormant non-productive body formed by certain bacteria in response to adverse environmental conditions.
Toxin	A chemical compound produced by some pathogenic bacteria Highly poisonous to other living organisms.
Resolved	When patient has no diarrhea or passes well-formed stool for at least 48 hours.
IP&C	Infection Prevention and Control
IP	Infection Preventionist

CLOSTRIDIUM DIFFICILE INFECTION MANAGEMENT	ICM - IV - 11

PROCEDURE

A. Managing Patients with Suspected CDI Disease

1. Patients with diarrhea or other symptoms (e.g., nausea + vomiting, fever, abdominal pain/tenderness) suspected to be CDI should be assessed in a timely manner. A stool specimen should be taken for laboratory testing for Clostridium difficile.
2. Initiate empiric contact isolation precautions during the screening process.
3. Clinical assessment of symptomatic patients, and when necessary, promptly initiate antimicrobial therapy according to clinical practice guidelines.
4. Asymptomatic patients should not be tested for Clostridium difficile.
5. Routine environmental testing for Clostridium difficile is not useful and should not be done.

B. Managing Patients with Confirmed CDI disease

1. Patients determined to be CDI positive based on clinical suspicion plus a positive stool by PCR or Enzyme Immunoassay (EIA) toxins for Clostridium difficile.
2. Positive results will be reported by the microbiology laboratory to both the designated ward and infection control department.
3. Symptomatic positive patients should be placed on contact isolation precautions in a single room.
4. If no single room is available:
    a. Place sign on the cubicle or curtains of the patient's bed;
    b. Ensure easy access to PPEs and hand washing station;
    c. Practice strict standard precautions between interactions with patients in the same room;
    d. Transfer to a single room; and
    e. Patient should not share bathroom with other patients and a specific commode should be designated for the patient.
5. Cohort non-critical items such as stethoscopes and pressure cuffs along with the patient. If not, follow infection control guidelines in cleaning and disinfecting non-critical items between patients. Using disposable items is preferred.
6. Soap and water rather than alcohol-based hand rub should be used for the physical and mechanical removal of spores.
7. Hand hygiene should be performed using soap and water at the point of care and at a designated staff hand washing sink.
8. Make an accurate documentation of the patient's bowel movements following the description on the Bristol stool chart (see **Appendix A-IV-11**).
9. Limit the patient's activity outside his/her room.
10. Notify receiving department/wards (e.g., Radiology, Endoscopy, etc.) of the patient's isolation status when the patient must be transported for treatment/test. Refer to **ICM-III-09**: Transporting Patients on Isolation Precautions.
11. Ensure concurrent and terminal cleaning of the isolation room as per housekeeping procedure (using 1:10 hypochlorite solution)
12. Handle/discard contaminated items as per standard precautions. Refer to **ICM -II-03**: Standard Precautions.
13. Cohorting of nursing staff providing direct patient care is recommended.

C. Discontinuation of Contact Isolation

1. Discontinuation of isolation precautions for CDI patient must occur in consultation with the IP and Most Responsible Physician (MRP).

2. Contact isolation precautions can be discontinued when patient passes well-formed stool or no diarrhea for at least 48 hours.
3. Obtaining a stool test for Clostridium difficile is not recommended for discontinuation of isolation. Specificity and sensitivity of the test is not optimal and unreliable.

D. Environmental Cleaning

1. All horizontal and frequently touched surfaces in the room, cubicle, and designated bed spaces of the patient suspected or confirmed to have CDI should be cleaned at least twice daily; and when soiled, pay particular attention to "highly touched" areas/items (e.g., bathroom, bathing facilities, toilet/commode/bedpan, light switches, calling bell, door handle, etc.).
2. Measures should be taken to limit contamination of cleaning and disinfecting solutions by changing cleaning cloths and mop heads frequently.
3. Room and bed spaces should be cleaned and decontaminated by using 1:10 hypochlorite solution agent or other sporicidal hospital approved disinfectant.
4. When a suspected or confirmed CDI patient is moved to another room or discharged; at the onset of acute diarrhea, conduct terminal cleaning of the room, cubicle or designated bed spaces and bathroom; discarding the toilet bowl brush; and, obtaining optimal cleaning and disinfection of non-critical items.
5. Contact precautions should be maintained until terminal cleaning of the room, cubicle or designated bed space is completed.

E. Handling Linen, Dishes, and Cutlery

1. For dishes and cutlery, disposable items are preferred.
2. No special precautions are required for linen; routine practices are sufficient and include the following:
   a. Soiled linen should be handled in the same way for all patients without regard to their infectious status;
   b. Soiled linen should be placed in a no-touch receptacle at the point of use;
   c. Soiled linen should be handled with minimum agitation to avoid contamination of air, surfaces, and persons; and
   d. Heavily soiled linen should be rolled or folded to contain the heaviest soil in the center of the bundle.

F. Handling Deceased Body

Routine practices, properly and consistently applied, should be used in addition to contact precaution for handling deceased bodies; preparing them for autopsy; or transferring them to mortuary services.

DUTIES AND RESPONSIBILITIES

All staff has the responsibility to ensure that the principles outlined in this document are universally applied. This policy applies to all members and staff who are involved in any aspect of the development and use of hospital procedures.

A. Division Manager, Clinical Director, and Senior Nurse

1. Each division management team has the responsibility to actively encourage compliance on the policy by all staff.
2. Ensure that all healthcare staff undertake and complete infection control training and annual in-service updates.

3. Ensure that all suspected and confirmed cases of CDI are reported promptly to the infection control team.
4. Ensure adherence with contact precaution compliance and best practice, especially hand hygiene and surface cleaning and disinfection.

B. IP&C Team

1. Provide advice on appropriate placement of patients with suspected or confirmed CDI.
2. Ensure adherence with contact precaution compliance.
3. Ensure proper environmental cleaning and disinfection.
4. Produce timely feedback to designated services.
5. Identify CDI increased incidence, cluster or outbreak, and perform an investigation with proper reporting and action plan.
6. Support infection control leadership on the antibiotic stewardship program.
7. Coordinate the implementation of this policy and review contents regularly.

C. Microbiology Staff

1. Ensure that testing for CDI is available 7 days a week.
2. Ensure that all Clostridium difficile laboratory results are communicated promptly to clinical teams.

D. Clinical Ward Staff

1. Report any suspected or confirmed case of CDI.
2. Adhere to contact isolation precautions and prompt hand hygiene practice.
3. Responsible in educating patients of reason for isolation and the precautions to take. Visitors should also be informed of the precautions they need to take.
4. Ensure receiving areas and escort teams are informed of CDI diagnosis prior to transferring to the ward.
5. Dedicate equipment for patients use as possible.
6. Follow infection control manual for cleaning and disinfection of non-critical items.
7. Ensure cleaning and disinfection of rooms and equipment as per isolation policy is clearly communicated with housekeeping services.
8. Ensure proper documentation of stool and diarrhea using Bristol chart.

E. Housekeeping and Environmental Services

1. Ensure prompt cleaning and disinfection of rooms using sodium hypochlorite solution or hospital approved sporicidal surface disinfectant.
2. Adhere to housekeeping policy and procedure for cleaning and disinfecting.
3. Comply with hand hygiene best practices.

F. Medical Staff

1. Identify high risk patients who will likely develop CDI and direct conduct of laboratory tests when needed.
2. Inform the patient about their diagnosis and ensure correct antibiotic therapy is in place.
3. Follow CDI treatment guidelines.

APPENDIX A–IV-11

Bristol Stool Chart

Type 1		Separate hard lumps, like nuts (hard to pass)
Type 2		Sausage-shaped but lumpy
Type 3		Like a sausage but with cracks on the surface
Type 4		Like a sausage or snake, smooth and soft
Type 5		Soft blobs with clear-cut edges
Type 6		Fluffy pieces with ragged edges, a mushy stool
Type 7		Watery, no solid pieces. Entirely Liquid

TITLE/DESCRIPTION:	INDEX NUMBER
CARBAPENEM-RESISTANT ENTEROBACTERIACEAE (CRE) MANAGEMENT AND PATIENT TRANSFER	**ICM - IV - 12**

EFFECTIVE DATE:	APPLIES TO:	ISSUING AUTHORITY:
01/01/2018	**All GCC Countries**	**GULF COOPERATION COUNCIL – CENTRE FOR INFECTION CONTROL (GCC-CIC)**

DEFINITION

Invasive infection with CREs has been associated with high mortality (i.e., bloodstream infection). This policy outlines the guidelines on screening, isolation and transfer of patients with CRE.

REFERENCES

1. Association for Professionals in Infection Control (APIC) and Epidemiology, Inc. (2014). Chapter 75: Enterobactericeacea. In APIC Text of infection control and epidemiology (4th ed.).

2. HICPAC/CDC Guidelines for isolation precautions: preventing transmission of infectious agents in healthcare setting, 2007.

3. Center for Diseases Control and Prevention (CDC). CRE Toolkit-Guidance for Control of carbapen-em-resistant Enterobacteriaceae (CRE). November 2015 update.

COMMENTS

1. The emergence of CREs is a public health concern, carbapenemase enzymes have broad spectrum hydrolyzing activity, thereby rendering all penicillins, cephalosporins, and carbapenems ineffective. They are often located on mobile genetic elements with other resistant genes which results in multidrug or "pan"-resistant members with limited or no therapeutic options.

2. CRE are Enterobacteriaceae that are:

   a. Resistant to any carbapanem antimicrobial (i.e. minimum inhibitory concentrations of $\geq$ 4 mcg /ml for doripenem, meropenem, or imipenem OR $\geq$ 2mcg/ml for ertapenem).
   b. Documented to produce carbapenemase ; in addition for bacteria that have intrinsic imipenem nonsusceptibility (i.e., Morganella morganii, Proteus spp., Providencia spp.), resistance to carbapenems other than imipenem is required.

3. Strict adherence to evidence-based "best-practices" (hand hygiene, barrier protection, proper maintenance of equipment and the environment, healthcare personnel and consumer education) are required to prevent and control these infections.

4. Education on the prevention of transmission of Multi-Drug-Resistant Organisms (MDROs) including CRE for all healthcare workers (HCWs) and the proper use of Contact Precautions is a fundamental part of infection prevention practice in managing CREs.

PROCEDURE

A. Screening for CREs

1. Screen all patients who are:
   a. Known to be previously CRE positive for the last 6 months or more.
   b. Roommates exposed to CRE-positive patients who shared the room for more than 48 hours.
   c. Consider point prevalence screening of a particular unit if more than one CRE patient is identified.

2. Active surveillance screening in high risk areas (i.e., ICUs).Sites to screen:
   a. Peri-anal swabs or rectal.
   b. Skin sites, wounds or urine (if a urinary catheter is present).

B. Notification of the CRE

1. The microbiology laboratory will notify the ward and IP&C Department of the identified CRE positive patient.

2. Patients previously discharged as CRE are flagged in the MDRO documentation by IPs.

3. Only IPs can deflag/remove the MDRO alerts in the electronic medical system. Refer to **ICM-IV-01** Multidrug Resistant Organisms (MDRO) Management.

C. Management of CRE-Positive Patients

1. Initiate contact precautions in addition to standard precautions.

2. Patients must be in a single room or can be cohorted with another patient with the same organism.

3. CRE-positive patients who are in multi-bed rooms can be managed temporarily while waiting to be transferred to a single room or an appropriate cohort.
   a. Place a sign on the cubicle or curtain of the patient's bed.
   b. Ensure easy access to PPEs and alcohol-based hand rub
   c. Practice strict Standard Precautions between interactions with patients in the room.

4. Refer to **ICM-III-03** Contact Precautions and **ICM-II-03** Standard Precautions.

5. Notify receiving departments/wards (e.g. Radiology, Endoscopy, Clinics, OR) of the patient's solation status when the patient must be transported for treatment/tests. Refer to **ICM-III-09** Transporting Patients on Isolation Precautions.

6. Ensure concurrent and terminal cleaning of the isolation room and equipment as per house keeping procedure.

7. Handle/discard contaminated items as per Standard Precautions. Refer to **ICM-II-03** Standard Precautions.

D. Medical

1. Request infectious disease consultation as needed.

2. Discharge patient from the hospital once his/her medical condition allows.

E. Use of Devices

The use of devices (i.e., central venous catheters, endotracheal tubes, and urinary catheters) put patients at risk for device-associated infections. Minimizing device use is an important part of the effort to decrease the incidence of these infections.

1. Minimize the use of devices in all healthcare settings to decrease the prevalence of MDROs, including CRE.
2. Review regularly the use of devices if they are still required and discontinue promptly when no longer needed.

F. Clearance/Discontinuation of Isolation

Discontinue isolation of MDRO-positive patient after consultation with the IPs.

G. Outbreak Management

Management of outbreaks will be coordinated by the IP and will require the cooperation of medical, nursing, laboratory and other departments.

H. Environmental Cleaning

1. Perform daily cleaning in areas in close proximity of the patient (i.e., bedrails, patient tray) to decrease the burden of organisms.

2. Clean and disinfect surfaces around the sink regularly and do not store medical equipment in close proximity to sinks.

3. Perform terminal cleaning based on **ICM-X-07** Housekeeping.

I. Linen

Keep linen hamper in the isolation area.

J. Referring Hospital

1. Notify the receiving facility of the patient's CRE status so that appropriate infection prevention measures can be promptly implemented upon the patient's arrival.

2. EMS and other healthcare providers involved in transferring such as patient need to be made aware of the status of the patient and advise on proper PPE as well as disinfection of the ambulance as deemed necessary. Refer to **ICM-VIII-13** Emergency Medical Services/ Ambulance Services.

K. Receiving Hospital

Identify patients previously identified as colonized or infected with CRE at re-admission so that appropriate infection precautions can be maintained.

TITLE/DESCRIPTION:	INDEX NUMBER
MANAGEMENT OF PATIENTS IN ISOLATION PRECAUTIONS IN THE OPERATING ROOM	**ICM - IV - 13**

EFFECTIVE DATE:	APPLIES TO:	ISSUING AUTHORITY:
01/01/2018	**All GCC Countries**	**GULF COOPERATION COUNCIL – CENTRE FOR INFECTION CONTROL (GCC-CIC)**

DEFINITION

To describe the precautionary measures needed for staff to follow when dealing with isolated patients who will undergo surgical procedures in the operating room.

REFERENCE

1. Association for Professionals in Infection Control (APIC) and Epidemiology, Inc. (2014). Chapter 29: Isolation precautions. In APIC Text of infection control and epidemiology (4th ed.).
2. Association for Professionals in Infection Control (APIC) and Epidemiology, Inc. (2014). Chapter 68: Surgical Services. In APIC Text of infection control and epidemiology (4th ed.).
3. HICPAC /CDC Guidelines for Isolation precautions: Preventing Transmission of Infectious Agents in Healthcare Setting 2007.
4. The Sydney Children's Hospitals Network. Operating Suite Guidelines, Infection Control, Standard and Additional Precautions for the Operating Suite - CHW. Practice Guideline No: 0/C/09:8063-01:01. http://www.schn.health.nsw.gov.au_policies/pdf/2009-8063.pdf.

COMMENTS

Communication and screening systems should be in place so that Operating Room (OR) personnel are aware of or informed about the infectious status of the patient before arriving in the OR.

PROCEDURE

A. Precautions for Managing Patients on Airborne Precautions in the Operating Room

1. In patients with active MTB, only emergency procedures are recommended
2. Elective procedures on patients who have MTB should be postponed until the patient is no longer infectious.
3. If possible, perform procedures in operating rooms that have anterooms. For operating rooms without anterooms, the doors to the operating room should be closed, and traffic into and out of the room should be made to perform the procedure at a time when other patients are not present in theoperative suite and when the minimum number of personnel are present (e.g., at the end of the day).
4. OR personnel should wear the N95 masks throughout the procedure.
5. Let the patient recover in the operating room, if a negative pressure room is not available, or alternatively, in a private room with a portable HEPA filter. Refer to **ICM-V-04** Management of Patients with Infectious Mycobacterium Tuberculosis in the Operating Room.
6. Follow cleaning and disinfection process of the room and equipment based on **ICM-X-07** Housekeeping.
7. Refer to **ICM-III-09** Transporting Patients on Isolation Precautions.

B. Precautions for managing patients on Droplet Precautions

1. Elective procedures on patients who are under droplet precaution preferably to be delayed until no longer infectious or schedule the procedure at the end of the day.
2. Initiate and maintain droplet precautions when there is suspected or confirmed diagnosis of an infectious disease that is transmitted by the droplet route.
3. Wear a surgical mask within 3 feet of the patient. Refer to **ICM-III-04** Droplet Isolation Precautions for managing patients needing droplet precaution.
4. Clean and disinfect the operating room and equipment used after the surgical procedure based on **ICM-X-07** Housekeeping.
5. Utilize the operating room for the next procedure after the recommended housekeeping cleaning process has been completed.
6. Refer to **ICM-III-09** Transporting Patients on Isolation Precautions back to the wards.

C. Precautions for managing patients on Contact Precautions

1. Schedule elective procedure preferably at the end of the day.
2. Place patient in isolation in a single room in the recovery. Refer to **ICM-III-03** Contact Isolation Precautions.
3. Clean and disinfect the operating room and equipment used after the surgical procedure based on **ICM-X-07** Housekeeping.
4. Refer to **ICM-III-09** Transporting Patients on Isolation Precautions.

Section 5: POLICIES RELATED TO TUBERCULOSIS

TITLE/DESCRIPTION:	INDEX NUMBER
DIAGNOSING LATENT TUBERCULOSIS: TUBERCULIN SKIN TESTING OR INTERFERON-GAMMA RELEASE ASSAYS	**ICM - V - 01**

EFFECTIVE DATE:	APPLIES TO:	ISSUING AUTHORITY:
01/01/2009 **01/01/2013** **01/01/2018**	**All GCC Countries**	**GULF COOPERATION COUNCIL – CENTRE FOR INFECTION CONTROL (GCC-CIC)**

DEFINITION

To describe the procedure on how to administer and interpret the Mantoux tuberculin skin test (TST) and Interferon-gamma release assay (IGRAs) to diagnose latent tuberculosis infection (LTBI) in high risk areas including pre-employment assessment and as part of Mycobacterium Tuberculosis (MTB) post-exposure evaluation of employees.

REFERENCES

1. Association for Professionals in Infection Control (APIC) and Epidemiology, Inc. (2014). Chapter 100: Occupational health. In APIC Text of infection control and epidemiology (4th ed.).
2. Association for Professionals in Infection Control (APIC) and Epidemiology, Inc. (2014). Chapter 95: Mycobacteria. In APIC Text of infection control and epidemiology (4th ed.).
3. Association for Professionals in Infection Control (APIC) and Epidemiology, Inc. (2009). Chapter 104: The pregnant healthcare worker. In APIC Text of infection control and epidemiology (4th ed.).
4. Centers for Disease Control and Prevention (CDC). 6th edition U.S. Public Health Service guidelines for TB care guide highlights from core curriculum on tuberculosis: what the clinician should know. 2016.
5. Centers for Disease Control and Prevention (CDC). Targeted tuberculin testing and treatment of latent tuberculosis infection. MMWR, 2000; 49 (NO RR-6).
6. Centers for Disease Control and Prevention (CDC) Divisions of Tuberculosis Elimination. Targeted tuberculin testing and treatment of latent tuberculosis infection. 2005.
7. Testing for Tuberculosis (TB). National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention. CDC# CS228179. Downloaded from: http://www.cdc.gov/tb/publications /factsheets/testing/tb_factsheet.pdf.
8. Latent tuberculosis infection: A guide for primary health care providers. U.S. Department of Health and Human Services Centers for Disease Control and Prevention National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention Division of Tuberculosis Elimination Atlanta, Georgia Developed in partnership with Global Tuberculosis Institute at Rutgers, The State University of New Jersey. 2013.

COMMENTS

Indications for TST or IGRA:

1. Persons at high risk for MTB exposure or infection.
2. As part of post-exposure work-up for employees exposed to MTB.
3. Active surveillance for new employees.

NB: Limited data on the use of IGRAs for children younger than 5 years of age and immunocompromised persons.

PROCEDURE

I. Tuberculin Skin Test (TST) is a test that detects individuals infected with MTB.

A. Pretest Counseling

Counsel any employee or patient identified as needing a TST regarding:

1. The indication(s) for testing.
2. The importance of early detection of TB infection.
3. The risks of MTB infection and active disease.
4. The importance of returning for reading the TST within the specified time frame.
5. Indications for positive and negative test results.
6. How to care for the test site.

B. Pre-employment Screening

1. Question candidates regarding past positive test results.
2. Exclude persons who have previous documented positive TST.

C. TST Procedure

All new hires undergo a two-step TST. The procedure is as follows:

1. Equipment and materials

a. One (1) cc tuberculin syringe;
b. 26- or 27-gauge needle;
c. ½ inch (16 mm) long;
d. alcohol swabs; and
e. measurement tool marked in millimeters.

2. Administration

The Mantoux test is the recommended TST. It is administered intradermally by injecting 0.1 ml containing 5 TU of purified protein derivative (PPD) solution intradermally into the volar surface of the forearm using a 27-gauge needle with a tuberculin syringe.

a. Obtain results of all previous TSTs. Ask the patient to describe what the test area looked like 2 to 3 days after administration; obtain documentation.
b. Avoid areas of skin with veins, rashes, or excess hair.
c. Cleanse your hands with alcohol hand rub.
d. Cleanse the area with an alcohol swab, allowing the area to dry.
e. Clean the rubber top of vial before drawing up solution.
f. Inject all of the antigen just below the surface of the skin on the volar surface of the forearm, forming a 6-10 mm wheal (a pale, raised area with distinct edges; has orange peel-like appearance and does not disappear immediately).
g. Avoid covering the area with a bandage or applying pressure to the injection site.
h. If minor bleeding occurs, dab the injection site with a cotton swab.
i. If no wheal forms, or if a wheal forms that is less than 6 mm, the test should be repeated immediately, approximately 2 inches from the original site or on the other arm.
j. Record the date and time on the site of the skin tested.
k. Instruct the patient not to scratch the site but to use a cool compress to relieve any itching or swelling.
l. Give a written appointment card for TST reading. Inform the patient of the importance of returning for a reading of the TST after 48 to 72 hours (2 to 3 days).
m. Provide written information about the TST (a pamphlet or brochure).

3. Measurement

a. Measure the induration (hard bump) rather than the erythema.
b. Palpate the area with the fingertips, measuring the diameter of induration perpendicular to the long axis of the arm.
c. Use a ballpoint pen to mark the edges of the induration.
d. Use a tuberculin skin test ruler or a ruler with millimeter marks to measure the distance between the two points. Refer to Figure 1.

4. Interpretation of TST results (Tables 1-V-01 to 3-V)

Table 1-V-01: A TST reaction of ≥5 mm of induration is considered positive in -

1. **HIV-infected persons**
2. **Recent contacts of infectious TB cases**
3. **Persons with fibrotic changes on chest radiograph consistent with prior TB**
4. **Organ transplant recipients**
5. **Those who are immunosuppressed for other reasons (taking an equivalent of ≥ 15 mg/day of prednisone for1 month or more or taking TNF-α antagonists)**

Table 2-V-01: A TST reaction of ≥10 mm of induration is considered positive in -

1. **Recent immigrants (within last 5 years) from high-TB prevalence countries**
2. **Injection drug users**
3. **Residents or employees of high-risk congregated settings (prisons, jails, long-term care facilities for the elderly, hospitals and other healthcare facilities, residential facilities for patients with AIDS, and homeless shelters)**
4. **Mycobacteriology laboratory personnel**
5. **Persons with the clinical conditions previously mentioned**
6. **Children younger than 5 years of age**
7. **Infants, children, or adolescent exposed to adults at high risk for TB disease**

Table 3-V-01: A TST reaction of ≥15 mm of induration is considered positive in -

1. **Persons with no risk factors for TB**

5. Storage and handling

a. PPD solution must be kept refrigerated at 36–46°F or 2° to 8°C.
b. Avoid fluctuations in temperature; do not store in the refrigerator door.
c. Syringes must be filled immediately prior to administration.
d. Store and transport the tuberculin in the dark as much as possible and avoid exposure to light.

6. Key points

a. The TST should not be performed on a person who has a documented history of either a positive TST result or treatment for MTB disease or has taken MTB prophylaxis for LTBI.
b. TST results should only be read and interpreted by a trained healthcare professional. Patients or family members should not be relied upon to measure TST results.
c. TB disease must be ruled out before initiating treatment for LTBI to prevent inadequate treatment of TB disease.
d. Chest radiographs help differentiate between LTBI and pulmonary MTB disease in individuals with positive TST results.

II. Interferon Gamma Release Assays (IGRAs)

A. What are they?

1. An IGRA is a blood test that can determine if a person has been infected with TB bacteria.
2. An IGRA measures how strong a person's immunity reacts to TB bacteria by testing the person's blood in a laboratory.

B. Two IGRAs Approved by the United States Food and Drug Administration (FDA)

1. QuantiFeron-TB Gold In-Tube test (QFT-GIT)
2. T-spot TB test (T-Spot)

C. Procedure

1. A blood is collected into special tube using a needle. The blood is delivered to the laboratory as directed by the QFT instructions. The laboratory runs the test and reports the results to the healthcare provider.

2. Interpretations of IGRA results:
   a. Positive IGRA: This means that the person has been infected with MTB bacteria.
      - Additional tests are needed to determine if the person has LTBI or MTB disease.
      - A healthcare provider will then provide treatment as needed.
   b. Negative IGRA: This means that the person's blood did not react to the test and that LTBI of MTB disease is not likely.

Figure 1-V-01:
Administering the Mantoux TST

Administering the Mantoux TST

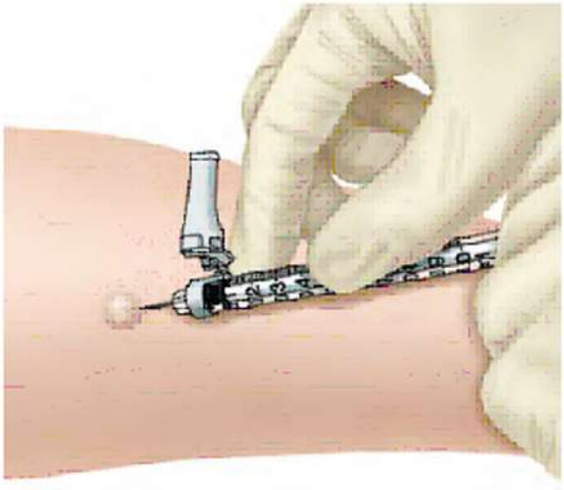


Figure 3.3

Reading the TST Correctly
only the introduction is being measured
This is CORRECT
The correct example below measure 10 mm.

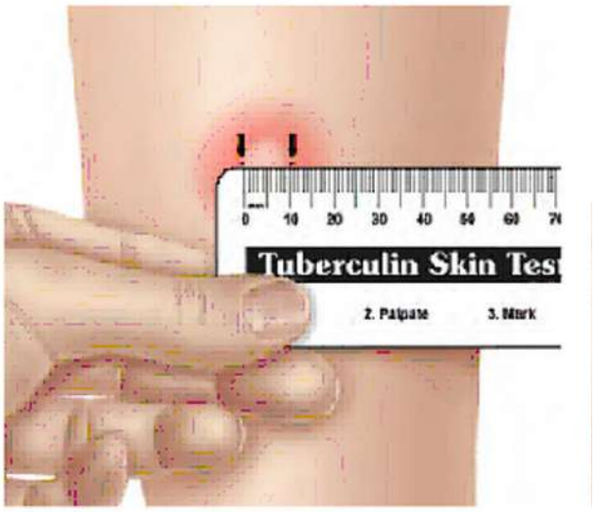
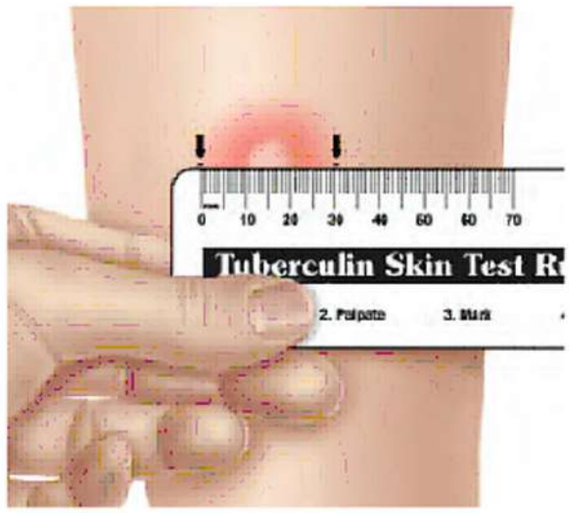


Figure 3.4

Reading the TST Incorrectly
The erythema is being measured
This is INCORRECT
The correct example below measure 30 mm.



Form 1-V-01:
Record of MTB Skin Test

To Whom it May Concern:

The following is a record of Mantoux Tuberculin skin testing:

Name: _____ Medical Record No.:_____

Date of birth: _____

Date and time test administered: _____

Lot number: _____

Date and time test read: _____Read by: _____

Results (in millimeters of induration): _____

TITLE/DESCRIPTION:	INDEX NUMBER
CONTACT TRACING, SCREENING, AND TREATMENT OF MYCOBACTERIUM TUBERCULOSIS IN HEALTHCARE WORKERS	**ICM - V - 02**

EFFECTIVE DATE:	APPLIES TO:	ISSUING AUTHORITY:
01/01/2009 **01/01/2013** **01/01/2018**	**All GCC Countries**	**GULF COOPERATION COUNCIL – CENTRE FOR INFECTION CONTROL (GCC-CIC)**

DEFINITION

To provide a clear policy on the management of healthcare providers identified with Latent Tuberculosis Infection (LTBI) and to manage healthcare workers exposed to Mycobacterium Tuberculosis (MTB) for proper contact tracing and treatment.

REFERENCES

1. Association for Professionals in Infection Control (APIC) and Epidemiology, Inc. (2014). Chapter 100: Occupational health. In APIC Text of infection control and epidemiology 4th ed.)

2. Association for Professionals in Infection Control (APIC) and Epidemiology, Inc. (2014). Chapter 95: Mycobacteria. In APIC Text of infection control and epidemiology (3rd ed.)

3. Association for Professionals in Infection Control (APIC) and Epidemiology, Inc. (2014). Chapter 104: The pregnant healthcare worker. In APIC Text of infection control and epidemiology (4th ed.)

4. Centers for Disease Control and Prevention (CDC). 6th edition U.S. Public Health Service guidelines for TB care guide highlights from core curriculum on tuberculosis: what the clinician should know, 2016.

5. Centers for Disease Control and Prevention (CDC). Targeted tuberculin testing and treatment of latent tuberculosis infection. MMWR, 2000; 49 (NO RR-6).

6. Centers for Disease Control and Prevention (CDC). Update Guidelines for Using the Quantiferon-TB Gold Test for Detecting Mycobacterium tuberculosis infection, United States MMWR 2005;54(No. RR-49-55).

COMMENTS

1. All employees must have their Latent Tuberculosis Infection (LTBI) status identified upon employment which includes the Tuberculin skin testing (TST) or the Interferon-Gamma Release Assays (IGRAs) refer to **ICM-V-01** Diagnosing LTBI: TST or IGRAs. This information should be readily available to the infection control program in case an exposure within the health care facility is identified.

2. A close contact is defined as a person who had close, regular, prolonged contact with the MTB patient while he or she was infectious without wearing a proper PPE, especially in small, poorly ventilated place.

3. All employees must report to the Surveillance Clinic if they have any symptoms suggestive of tuberculosis infection (cough ≥3 weeks in duration, especially in the presence of weight loss, night sweats, haemoptysis, anorexia or fever) or if they have experienced exposure to smear-positive patients.
4. An infectious MTB patient is a patient with open pulmonary or laryngeal MTB or with an open draining (extra-pulmonary TB) wound.

PROCEDURE

A. Contact Tracing of Exposed HCWs to an Infected MTB Patient

A close contact is defined as a person who had close, regular, prolonged contact with the MTB patient (i.e., pulmonary or laryngeal TB with a positive sputum smear) while he or she was infectious without wearing a proper personal protective equipment in a small, poorly ventilated place. They should be evaluated immediately for active MTB disease and LTBI.

1. Micro-laboratory notifies Infection Prevention & Control (IP&C) Department of any positive smear from respiratory secretions of MTB disease.

2. IP&C Department is responsible to identify a list of exposed HCWs with their respective Medical record number (MRNs) and forward it to the Surveillance clinic.

3. Surveillance clinic physician assess all contacts clinically to rule out active MTB.

4. Exposed employees with no active MTB symptoms will undergo either a TST or IGRAs test to rule out LTBI.

5. Those with positive TST or IGRA test result should be counseled to start LTBI prophylaxis.

B. Management of Exposed Healthcare Workers with Latent Tuberculosis Infection (LTBI)

Healthcare workers (HCWs) who have positive TST or IGRAs are considered to have LTBI.

1. Counsel HCWs for the need of taking TB prophylaxis.
2. Order chest x-ray, CBC, ESR and liver function test prior to the start of the prophylaxis.
3. Emphasize regular follow up to ensure compliance to treatment protocols.
4. HCWs who have previous documentation of adequate treatment for LTBI do not need to be retreated. Restarting treatment is indicated for the following situations:
    a. Indicated for persons at high risk of becoming re-infected and progressing to MTB disease (e.g., immunocompromised persons).
5. Provide the patient with documentation of results and completion of treatment therapy including their names, date of treatment, chest radiograph, dosage and duration of medication.
6. Educate patients about signs and symptoms of MTB disease and advise them to contact their healthcare provider if he or she develops any of these signs and symptoms.
7. Regardless of whether the patient completes the prophylaxis for LTBI, serial chest radiographs are not indicated unless the patient develops signs and symptoms suggestive of MTB disease.

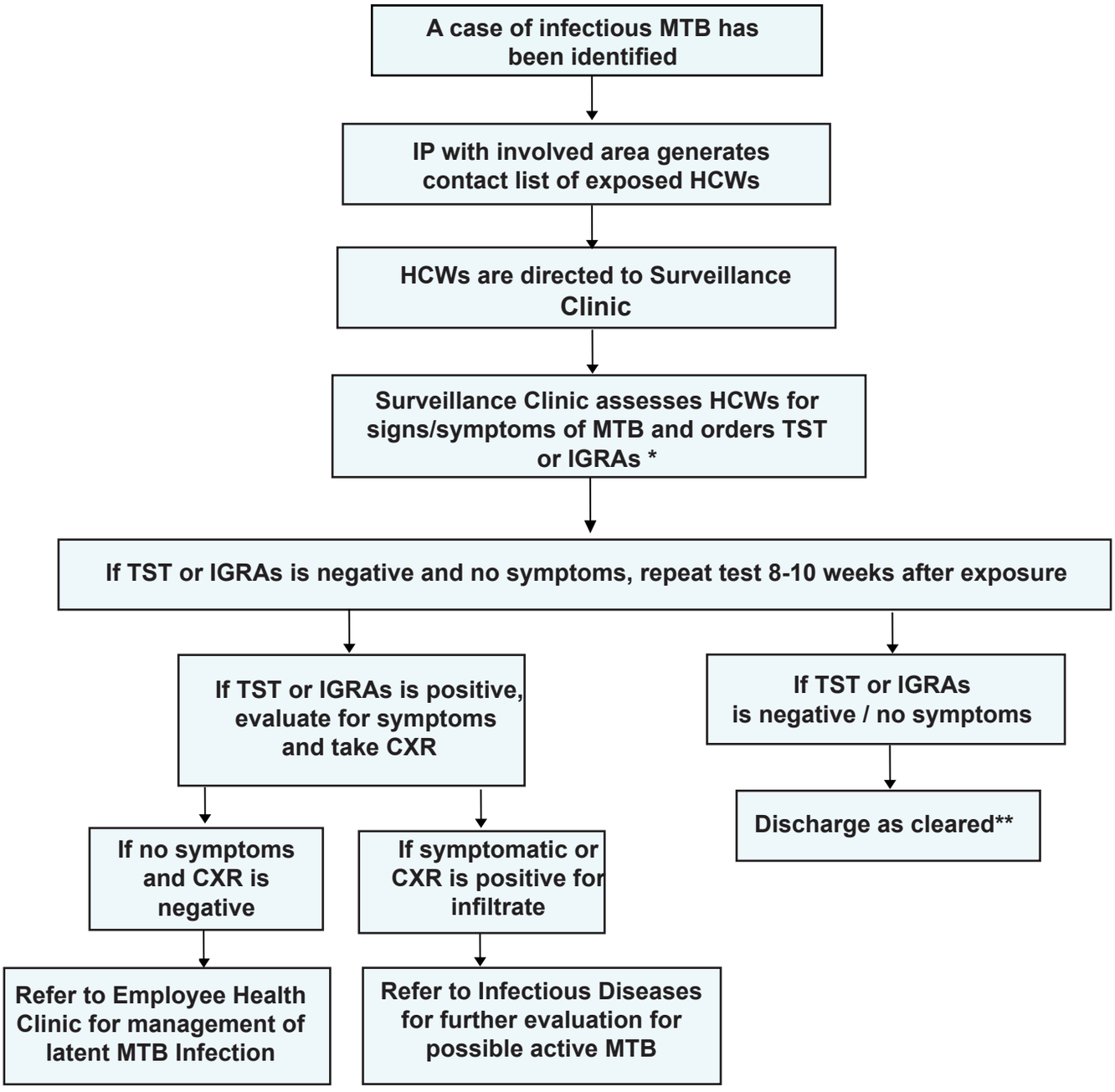
C. Tuberculin Skin Testing (TST) Administration and Interpretation

Refer to **ICM-V-01** Diagnosing LTBI: TST or IGRAs

D. Interferon-Gamma Release Assays (IGRAs)

Refer to **ICM-V-01** Diagnosing LTBI: TST or IGRAs

Flowchart 1-V-02:
Contact Screening of HCWs Exposed to an Infectious MTB



NB:

* Only one method of screening should be chosen either TST or IGRA and not both.

* * Educate patients about the signs and symptoms of TB disease and advised to contact his or her medical provider if he/she develops any of these signs or symptoms.

TITLE/DESCRIPTION:	INDEX NUMBER
MANAGEMENT OF SUSPECTED/CONFIRMED CASES OF INFECTIOUS MYCOBACTERIUM TUBERCULOSIS	**ICM - V - 03**

EFFECTIVE DATE:	APPLIES TO:	ISSUING AUTHORITY:
01/01/2009 **01/01/2013** **01/01/2018**	**All GCC Countries**	**GULF COOPERATION COUNCIL – CENTRE FOR INFECTION CONTROL (GCC-CIC)**

DEFINITION

To outline the steps to be taken when admitting patients with suspected/confirmed infectious Mycobacterium Tuberculosis (MTB) from the Emergency Room or Ambulatory Care area as well as during their subsequent management.

REFERENCES

1. Association for Professionals in Infection Control (APIC) and Epidemiology, Inc. (2014). Chapter 95: Mycobacteria. In APIC Text of infection control and epidemiology (4th ed.).
2. Centers for Disease Control and Prevention (CDC). Guidelines for Preventing the Transmission of Mycobacterium Tuberculosis in Healthcare Settings. MMWR. 2005.
3. HICPAC/CDC Guidelines for isolation precautions: preventing transmission of infectious agents in healthcare setting, 2007.

COMMENTS

1. Risk factors for tuberculosis:
   a. Living in an area endemic for MTB.
   b. History of incarceration or IV drug use.
   c. History of exposure to tuberculosis.
   d. History of untreated or inadequately treated tuberculosis.
   e. HIV infection.
   f. End-stage renal disease patients
2. For confirmed cases of infectious MTB, an N-95 mask should be utilized by the HCWs.
3. HCWs who are at first point of contact in facilities that serve populations at risk for MTB should be trained to ask questions that will facilitate the identification of patients with signs and symptoms suggestive of MTB.
4. Airborne infection isolation room (AIIR) formerly known as negative pressure isolation room is a single-occupancy patient-care room used to isolate persons with suspected or confirmed airborne infectious disease.

PROCEDURE

A. The Triage Process in the Emergency Room and the Ambulatory Care Area

1. Identify promptly patients who are suspected or confirmed to have pulmonary or laryngeal MTB at the time of triage and promptly provide a surgical mask to prevent the risk of infecting others.
2. Follow airborne precautions such as wearing an N95 mask while the diagnostic evaluation is being conducted for these patients:
   a. Place these patients in a separate area apart from other patients, ideally an AIIR or a negative pressure room, and not in an open waiting area.

b. Use a single room temporarily in the absence of an AIIR. Provide the patient with a surgical mask and instruct him/her on how to use them.
c. Educate patients on cough etiquette and respiratory hygiene.
d. Instruct patients, family, and sitters about the importance of such precautions.

NB: AIIR(s) should be available in the ambulatory care setting where patients with MTB are frequently examined or treated.

B. The Admission Process

1. Place a surgical mask on any patient with suspected or confirmed infectious MTB and admit him/her to an AIIR.
2. Perform a chest X-ray to rule out the presence of cavitary lesions, which are indicative of infectivity.
3. For a suspected patient with pulmonary or laryngeal MTB, 3 sputum specimens should be collected over 8 to 24 hours (one must be an early morning specimen) and sent for AFB testing.

C. Isolation Precautions for Admitted Patients

1. Place the patient in a single AIIR (negative pressure room).
2. Keep the patient in his/her room at all times. If the patient must leave the room, he/she must wear a surgical mask.
3. Ensure that doors and windows are closed at all times to maintain negative pressure.
4. Limit the number of individuals entering the room.
5. HCWs must wear an N-95 mask prior to entering the room.
6. Educate HCWs and visitors regarding the importance of adherence to these policies.

D. Patient Transport

1. The transport of suspected and confirmed cases should be kept to an absolute minimum.
2. Keep the patient in the room during the infectious period; if patient is to be transported refer to **ICM-III-09** Transporting Patients on Isolation Precautions.
   a. Place a surgical mask on the patient if he/she is to leave the room.
   b. Limit the transport of patients to essential medical purposes.

E. Discontinuation of Isolation Precautions

1. Suspected patients:
   a. Collected 3 sputum samples are AFB smear negative.
   b. There is no more clinical suspicion of active MTB.
2. Confirmed MTB patients:
   a. After two weeks of medical therapy with clinical improvement.
   b. Have 3 sputum samples which are AFB smear negative.

NB: Consult with the Infection Preventionist (IP) prior to discontinuing isolation.

TITLE/DESCRIPTION:	INDEX NUMBER
MANAGEMENT OF PATIENTS WITH INFECTIOUS MYCOBACTERIUM TUBERCULOSIS IN THE OPERATING ROOM	**ICM - V - 04**

EFFECTIVE DATE:	APPLIES TO:	ISSUING AUTHORITY:
01/01/2009 **01/01/2013** **01/01/2018**	**All GCC Countries**	**GULF COOPERATION COUNCIL – CENTRE FOR INFECTION CONTROL (GCC-CIC)**

DEFINITION

To describe precautionary measures needed to be taken when surgical procedures are being performed on infectious Mycobacterium Tuberculosis (MTB) patients.

REFERENCES

1. Association for Professionals in Infection Control (APIC) and Epidemiology, Inc. (2014). Chapter 95: Mycobacteria. In APIC Text of infection control and epidemiology (4th ed.)
2. Centers for Disease Control and Prevention (CDC). Guidelines for Preventing the Transmission of Mycobacterium Tuberculosis in Healthcare Settings MMWR. 2005.
3. Centers for Disease Control and Prevention (CDC). Control of tuberculosis in the United States. American Thoracic Society. 1992: 146; 1623-1633.
4. HICPAC/CDC Guidelines for isolation precautions: preventing transmission of infectious agents in healthcare setting, 2007.

COMMENTS

1. Only emergency procedures are recommended for patients with active MTB.
2. Elective operative procedures on patients who have MTB should be postponed until the patient is no longer infectious.
3. Communicate the isolation status of the patient so that Operating Room (OR) personnel are aware of the precautions to follow prior to the arrival of the patients in the OR.

PROCEDURE

Operating Room (OR)

1. If possible, perform procedures in operating rooms that have anterooms. For operating rooms without anterooms, the doors to the operating room should be closed, and traffic into and out of the room should be minimal to reduce the frequency of opening and closing the door. Attempts should be made to perform the procedure at a time when other patients are not present in the operative suite and when the minimum number of personnel are present (e.g., at the end of the day). Follow terminal cleaning based on **ICM-X-07** Housekeeping.
2. OR personnel should wear N95 masks throughout the procedure.
3. If a negative pressure room is not available, let the patient recover in the operating room. Or alternatively, in a private room with a portable high-efficiency particulate air (HEPA) filter.

TITLE/DESCRIPTION:	INDEX NUMBER
TRACING CONTACTS OF INFECTIOUS MYCOBACTERIUM TUBERCULOSIS FOR NON-HEALTHCARE WORKERS	**ICM - V - 05**

EFFECTIVE DATE:	APPLIES TO:	ISSUING AUTHORITY:
01/01/2009 **01/01/2013** **01/01/2018**	**All GCC Countries**	**GULF COOPERATION COUNCIL – CENTRE FOR INFECTION CONTROL (GCC-CIC)**

DEFINITION

To outline the process for investigating and screening exposed contacts (non-healthcare workers) of infectious Mycobacterium Tuberculosis (MTB) patients.

REFERENCES

1. Association for Professionals in Infection Control (APIC) and Epidemiology, Inc. (2014). Chapter 95: Mycobacteria. In APIC Text of infection control and epidemiology (4th ed.).
2. Centers for Disease Control and Prevention (CDC). Guidelines for Preventing the Transmission of Mycobacterium Tuberculosis in Healthcare Settings MMWR. 2005.
3. Centers for Disease Control and Prevention (CDC). Control of tuberculosis in the United States. American Thoracic Society. 1992: 146; 1623-1633.
4. HICPAC/CDC Guidelines for isolation precautions: preventing transmission of infectious agents in healthcare setting, 2007.

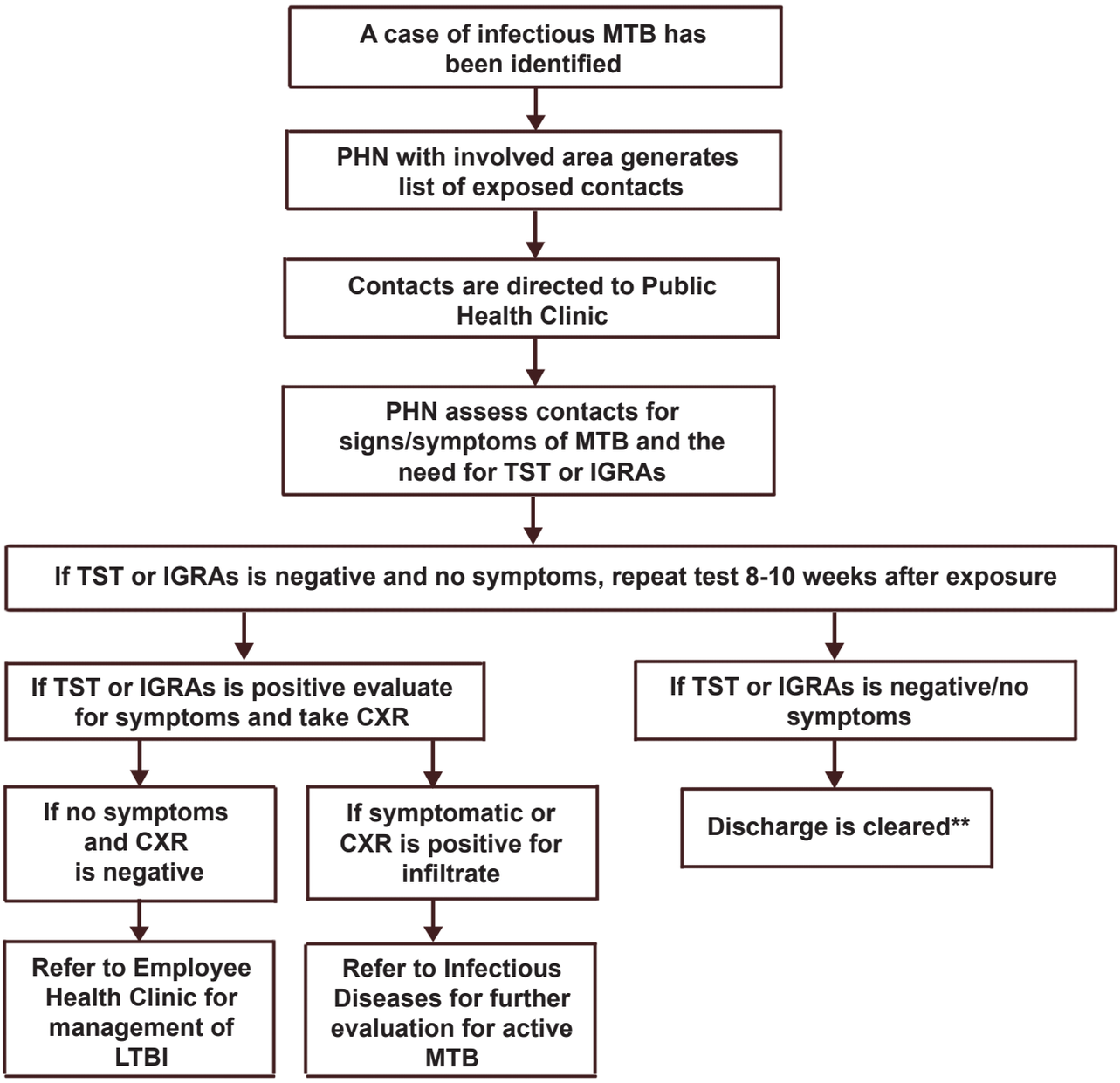
COMMENTS

1. All persons who are close contacts of a confirmed infectious Mycobacterium tuberculosis cases will be investigated for possible acquisition of the disease.
2. A close contact is defined as a person who had close, regular, prolonged contact with the MTB patient while he or she was infectious without wearing proper personal protective equipment in a small, poorly ventilated place.
3. After screening all other close contacts of the index case, the Public Health Nurse (PHN) will refer them to the Public Health clinic to rule out active MTB or latent tuberculosis infection (LTBI).
4. The PHN will provide education regarding the signs and symptoms of the disease and the need for screening.

PROCEDURE

1. Refer to **Flowchart 1–V-05** Tracing Contacts of Infectious Mycobacterium Tuberculosis for Non-Healthcare Workers.
2. Refer to **ICM–V-02** Contact Tracing, Screening, and Treatment of Tuberculosis for Healthcare Workers.

Flowchart 1-V-05:
Tracing Contacts of Infectious MTB Patients other than HCWs



Abbreviation:

HCW	-	Healthcare Worker
ID	-	Infectious Disease
PHN	-	Public Health Nurse
CXR	-	Chest X-ray
LTBI	-	Latent Tuberculosis Infection
TST	-	Tuberculin Skin Test
IGRAs	-	Interferon-Gamma Release Assays

Section 6: EMPLOYEE AND OCCUPATIONAL HEALTH POLICIES

TITLE/DESCRIPTION:	INDEX NUMBER
EMPLOYEE OCCUPATIONAL HEALTH PROGRAM	**ICM - VI - 01**

EFFECTIVE DATE:	APPLIES TO:	ISSUING AUTHORITY:
01/01/2009 **01/01/2013** **01/01/2018**	**All GCC Countries**	**GULF COOPERATION COUNCIL – CENTRE FOR INFECTION CONTROL (GCC-CIC)**

DEFINITION

All healthcare workers (HCWs) are at risk of exposure to an environment in which the potential of an unknown infection hazard always exists.

COMMENTS

The definition of an employee will significantly influence the eligibility of persons for medical assessment and care in the Employee Health Service. Volunteers, casual staff and contract trades people are not usually considered employees. However, there are situations in which such persons are included in the Employee/Occupational Health programs for infection prevention and control purposes.

PROCEDURE

1. Assist in the prevention and control of occupationally acquired infections and hazards, particularly those related to hospital work.
2. Identify any infection risk related to employment and institute appropriate preventive measures.
3. Assess and determine the immune status and immunization requirements of employees for vaccine-preventable diseases and institute the appropriate measures.
4. Assist administration in the hiring and/or assigning of employees to work that is suitable to the employees' capabilities.
5. Provide treatment and medical advice to individual employees and act as a resource for employees to obtain care.
6. Monitor and investigate infectious diseases, potentially harmful infectious exposures and outbreaks of infections among HCWs.
7. Establish and maintain accurate and confidential medical records of employees.
8. Assist in the provision of a safe working environment for patients and staff.

TITLE/DESCRIPTION:	INDEX NUMBER
PRE-EMPLOYMENT ASSESSMENT	**ICM - VI - 02**

EFFECTIVE DATE:	APPLIES TO:	ISSUING AUTHORITY:
01/01/2009 01/01/2013 01/01/2018	**All GCC Countries**	**GULF COOPERATION COUNCIL – CENTRE FOR INFECTION CONTROL (GCC-CIC)**

DEFINITION

The pre-employment history and assessment provides the basis of pre-employment evaluation for all Health Facilities employees.

REFERENCES

1. Saudi Arabia Ministry of Health Circular 19/83026 dated 4-11-1429H.
2. Refer to specific hospital policies on International Recruitment process.
3. Refer to specific hospital policies on Local Recruitment process.

COMMENTS

Exceptional circumstances may allow some potential employees to start work before the completion of all medical assessments. However, continued employment or recontracting is dependent on the successful completion of all necessary tests for medical clearance / annual employee health evaluation.

PROCEDURE

1. Recruiters will advise and instruct all potential employees of the pre-employment medical requirements.
2. The employee will be given a pre-employment package that depends on the status of hiring (i.e., international hire, local hire, or locum position).
3. It is expected from laboratory that pre-employment package is expedited at the earliest to have an early medical clearance.
4. Depending on the hospital policies, it is recommended that upon arrival, all employees shall have repeat testing for HIV, Hepatitis B (HBV), Hepatitis C (HCV), Hepatitis A (HAV), rubella IgG, measles IgG, varicella IgG and syphilis. In addition, any missing tests that are required will be performed at that time.
5. All employees shall have a baseline Tuberculin skin test (TST) or Interferon-gamma release assay (IGRA) test such as the QuantiFERON-TB (QFT).
6. All potential employees must fill out the pre-employment form with the assistance of a medical doctor.
7. All potential employees must fulfill the requirements outlined on the pre-employment physical examination form.
8. Details of the employee's medical results and final clearance will be documented.
9. The completed pre-employment history form, the physical examination form, and the official (original) copies of laboratory and other test reports will form the basis of a medical record chart for each employee.
10. All newly recruited employees will commence Clinical Service (issuing their badges) only after clearance from the Infection Prevention and Control Department.
11. The Head of the Infection Prevention & Control (IP&C) Department shall verify the clearance letter of all newly hired staff in their respective departments prior to scheduling any clinical responsibility; otherwise, the department will be held accountable.
12. Employees arriving from Ethiopia, Eritrea, Kenya, Somalia, Djibouti, Thailand, Vietnam, Sudan, Nepal, Nigeria, Chad and South Africa shall have, in addition to the above, HIV testing regularly, as a requirement for recontracting or continuing work.

TITLE/DESCRIPTION:	INDEX NUMBER
IMMUNIZATION GUIDELINES FOR HEALTHCARE WORKERS	**ICM - VI - 03**

EFFECTIVE DATE:	APPLIES TO:	ISSUING AUTHORITY:
01/01/2009 **01/01/2013** **01/01/2018**	**All GCC Countries**	**GULF COOPERATION COUNCIL – CENTRE FOR INFECTION CONTROL (GCC-CIC)**

DEFINITION

Outlines recommended vaccinations for healthcare workers (HCWs) at any GCC-CIC facility.

REFERENCES

1. Association for Professionals in Infection Control (APIC) and Epidemiology, Inc. (2014). Chapter 103: Immunization in the healthcare worker. In APIC Text of infection control and epidemiology (4th ed.).
2. Hospital Infection Control Practices Advisory Committee (HICPAC). (November 2011). Immunization of healthcare workers: recommendations of the Advisory Committee on Immunization Practices (ACIP). 55:(RR-15).
3. The Pink Book: Course test Book (12th ed.), May 2012.

COMMENTS

1. Optimal vaccination of HCWs can prevent the transmission of certain diseases, and prevention is more cost effective than case management and outbreak control.
2. All live vaccines should be given on the same day or separated by at least 1 month.
3. In addition to immunization, all HCWs should be oriented regarding:
   a. Hand hygiene.
   b. Modes of disease transmission.
   c. The importance of presenting themselves to employee health when they suspect an infectious disease may be present (e.g., rash, fever).
   d. TB control measures.
   e. The importance of cooperating with the Infection Prevention and Control Department.
   f. The importance of complying with standard precautions.
   g. The importance of screening and immunization.

PROCEDURE

1. Refer to **Table 1–VI-03** Routine immunizations recommended for healthcare personnel.

2. Refer to **Table 2–VI-03** Immunizations recommended for healthcare personnel in special circumstances.

Table 1-VI-03:
Routine immunizations recommended for healthcare personnel

Generic name	Dose, route and schedule	Indications	Major precautions and contraindications	Special considerations
Hepatitis B recombinant vaccine	1. Give IM 2. Give 3-dose series (1st dose immediately, 2nd dose in 1 month, 3rd dose 5 months after 2nd dose) 3. Obtain anti-HBs serological testing 1-2 months after 3rd dose	HCWs at risk of exposure to blood and body fluids with no previous evidence of i mmunity documented.	Precautions: Moderate or severe acute illness, with or without fever History of anaphylactic reaction to common baker's yeast Contraindication: Severe allergic reaction after a previous dose or to any vaccine component. Not contraindicated in pregnancy and may be administered to a pregnant woman who is eligible for it.	HCWs who have ongoing contact with blood and body fluids should be tested 1-2 months after completing the vaccination series to determine serologic response.
Influenza vaccine	One dose of trivalent influenza vaccine (TIV) annually.	All HCWs	Precautions: Moderate or severe acute illness, with or without fever. History of Guillain-Barre Syndrome 6 weeks after previous influenza vaccination. Contraindication Severe allergic reaction to previous dose or any vaccine component (e.g., egg)	No evidence of maternal or fetal risk when vaccine was given to pregnant women with underlying conditions that render them at high risk for serious influenza complications.
MMR vaccine	1. Give SC 2. Give 2 doses of MMR, 4 weeks apart	For HCWs who have no serological evidence of immunity or prior vaccination HCWs should have a documentation of 2 doses of MMR.	Contraindication: Pregnancy, immunocompromised state* (including HIV-infected persons with severe immunosuppression). History of thrombocytopenic purpura. Recent immunoglobulin administration.Moderate or severe current illness with or without fever History of allergy or anaphylactic reaction to gelatin or neomycin. Pregnancy: Females should avoid getting pregnant for a minimum of 1 month after each shot	1. MMR is the vaccine of choice ifrecipients are also likely to be susceptible to rubella and/or mumps 2. Persons vaccinated between 1963 and 1967 with a killed measles vaccine alone, killed vaccine followed by live vaccine, or a vaccine of unknown type should be revaccinated with 2 doses of the live measles vaccine.

Table 1-VI-03:
Routine immunizations recommended for healthcare personnel....cont.

Generic name	Primary booster dose schedule	Indications	Major precautions and contraindications	Special considerations
Quadrivalent Meningococcal conjugate vaccine tetravalent (A,C,Y,W) for HCWs ages 19-54 years Quadrivalent meningococcal polysaccharide vaccine for HCW age ≥55 years	One dose in a volume specified by the manufacturer.	HCWs performing or participating in Hajj Clinical and research microbiologist routinely exposed to isolates of Neisseria Meningitidis	Precautions: Moderate or severe acute illness, with or without fever. History of Guillian-Barre syndrome (if not high risk for meningococcal disease)	The safety of the vaccine has not been evaluated among women. It should not be administered during pregnancy unless risk for infection is high.
Tetanus, diphtheria (Td)	Td booster every 10 years following the completion of primary 3-dose series given IM during childhood.	All HCWs	Allergy or anaphylactic reaction to gelatin and neomycin or to any of the vaccine components following a prior dose	
Tetanus-Diphtheria AcellularPertussis (Tdap)	One-time dose ofTdap to all HCWs younger than 65 years of age. After receipt of Tdap, give Td booster every 10 years	All HCWs regardless of age.	History of hypersensitivity to the vaccine or its components. History of Encephalopathy or Guillain-Barre Syndrome (GBS) less than 6 weeks after previous dose of tetanus containing toxoid. Precautions: Moderate or severe acute illness, with or without fever. The safety of the vaccine in pregnant women has not been determined.	
Hepatitis A vaccine	Two doses of the vaccine 6 to 12 months apart (HAVRIX®, AVAXIM®)	For adults who have no sign of immunity or no previously documented series of 2 shots.	History of anaphylactic hypersensitivity to alum (or for HAVRIX®, the preservative 2-phenoxyethanol). The safety of the vaccine in pregnant women has not been determined.	
Rabies vaccine	Refer to ICM-IV-07 to ICM-IV-08			

Table 2-VI-03
Other immunizations recommended for healthcare personnel in special circumstances (modified from ACIP recommendations)

Generic name	Primary booster dose schedule	Indications	Major precautions and contraindications	Special considerations
Varicella-Zoster live virus vaccine	Two 0.5 ml doses SC, 4 weeks apart	For persons who have NO serologic evidence of immunity Or No documentation of vaccination.	Contraindication Severe allergic reaction after a previous dose or to any vaccine component. Anaphylactic reaction to gelatin and neomycin or any of the vaccine components. Immunosuppression due to leukemia, lymphoma, generalized malignancy, immune deficiency or immunosuppressive therapy. Moderate to severe immunodeficiency resulting from HIV infection. **Pregnancy:** Precautions Recent (≤11 months) receipt of antibody containing blood product (i.e. immunoglobulin, whole blood or packed red blood cells) Immunoglobulin should not be given for 3 weeks following vaccination. (specific interval depends on the product) Moderate or severe acute illness, with or without fever.	

HDCV: Human diploid cell rabies vaccine
RVA: Rabies vaccine absorbed
IM: Intramuscularly
SC: Subcutaneously
Hep B: Written documentation of vaccination along with the level of anti-HBs 1-2 months post vaccination is mandatory for HCWs.

* Immunocompromised because of immune deficiencies: HIV infection, leukemia, lymphoma, generalized malignancy, or immunosuppressive therapy with corticosteroids, alkylating drugs, anti-metabolites, or radiation.

TITLE/DESCRIPTION:	INDEX NUMBER
WORK RESTRICTIONS FOR INFECTED HEALTHCARE WORKERS	**ICM - VI - 04**

EFFECTIVE DATE:	APPLIES TO:	ISSUING AUTHORITY:
01/01/2009 **01/01/2013** **01/01/2018**	**All GCC Countries**	**GULF COOPERATION COUNCIL – CENTRE FOR INFECTION CONTROL (GCC-CIC)**

DEFINITION

To provide methods for decreasing the transmission of infections from healthcare personnel to patients.

REFERENCES

1. Association for Professionals in Infection Control (APIC) and Epidemiology, Inc. (2014). Chapter 100: Occupational health. In APIC Text of infection control and epidemiology (4th ed.).
2. Center for Disease Control and Prevention (CDC). Immunization of healthcare workers: ecommendation of the Advisory Committee on Immunization Practices (ACIP) and the Hospital Control Practices Advisory Committee (HICPAC). MMWR, vol.60/No. 7 (25 November 2011).
3. The Pink Book (April 2016 update).

COMMENTS

The system for categorizing recommendations is as follows:

1. Category IA
   Strongly recommended for all hospitals and strongly supported by well-designed experimental or epidemiologic studies.
2. Category IB
   Strongly recommended for all hospitals and reviewed as effective in the field, representing a consensus of hospital Infection Control Practices Advisory Committee members on the basis of strong rationale and suggestive evidence, although definitive scientific studies have not been performed.
3. Category II
   Suggested for implementation in many hospitals. Recommendations may be supported by suggestive clinical or epidemiologic studies, a strong theoretic rationale, or definitive studies applicable to some but not all hospitals.
4. No recommendation or unresolved issue
   Practices with insufficient evidence or consensus regarding efficacy exists.

PROCEDURE

Refer to **Table 1–VI-04**, Summary of suggested work restrictions for healthcare personnel exposed to or infected with infectious diseases of importance in healthcare settings (modified from ACIP recommendations).

Table 1-VI-04
Summary of suggested work restrictions for healthcare personnel exposed to or infected with an infectious disease of importance in healthcare settings
(modified from ACIP recommendations)

Disease/problem	Work restriction	Duration	Category
Conjunctivitis	Restrict from patient contact and contact with the patients' environment	Until discharge ceases	II
Cytomegalovirus infection	No restriction		II
Diarrheal diseases			
Acute stage (diarrhea with other symptoms)	Restrict from patient contact, contact with the patients' environment, or food handling	Until symptoms resolve	IB
Convalescent stage (Salmonella spp.)	Restrict from care of high-risk patients, such as immunocompromised patients	Until symptoms resolve; consult with employee health	IB
Diphtheria	Exclude from duty	Until antimicrobial therapy is completed and 2 cultures obtained ≥24 hours apart are negative	IB
Enteroviral infections	Restrict from care of infants, neonates, and immunocompromised patients and their environments	Until symptoms resolve	II
Hepatitis A	Restrict from patient contact, contact with the patients' environment, and food handling	Until 7 days after the onset of jaundice	IB
Hepatitis B	Refer to specific MOH recommendation in policy ICM–VII-04 *Management of Sharps Injury and Exposure to Blood-borne Pathogens*		
Hepatitis C	Refer to specific MOH recommendation in IPP ICM–VII-04 *Management of Sharps Injury and Exposure to Blood-borne Pathogens*		Unresolved issue
Herpes simplex			
Genital	No restriction		I
Hands (herpetic whitlow)	Restrict from patient contact and contact with the patients' environment	Until lesions heal	IA
Orofacial	Evaluate for need to restrict from care of high-risk patients	Consult with Employee Health	II

Table 1-VI-04....cont.
Summary of suggested work restrictions for healthcare personnel exposed to or infected with an infectious disease of importance in healthcare settings
(modified from ACIP recommendations)

Disease/problem	Work restriction	Duration	Category
Measles			
Active	Exclude from duty	Until 4 days after the rash appears	IA
Post-exposure (susceptible personnel)	Exclude from duty	From 5th day after first exposure through the 21st day after the last exposure and/or until 4 days after rash appears	IB
Meningococcal meningitis	Exclude from duty	Until 24 hours after the start of antibiotic therapy	IA
Mumps			
Active	Exclude from duty	Until 5 days after onset of Parotitis	IB
Post-exposure (susceptible personnel)	Exclude from duty	From 12th day after first exposure through 25th day after last exposure or 5 days after onset of Parotitis	II
Pediculosis	Restrict from patient contact	Until treated and observed to be free of adult and immature lice	IB
Pertussis			
Active	Exclude from duty	From the beginning of catarrhal stage through the 3rd week after onset of paroxysms or until 5 days after start of effective antimicrobial therapy	IB
Post-exposure (asymptomatic personnel)	No restriction, prophylaxis recommended; refer to policy ICM – VI-09, *Management of Airborne and Droplet Infectious Disease Exposure in Healthcare Workers* (Chickenpox, Measles, Rubella, Mumps, MTB, *N. meningitis*, Pertussis)		II
Post-exposure (symptomatic personnel)	Exclude from duty	Until 5 days after the start of effective antimicrobial therapy	IB
Rubella			
Active	Exclude from duty	Until 7 days after the rash appears	IA
Post-exposure (susceptible personnel)	Exclude from duty	From the 7th day after first exposure through 23rd day after last exposure and /or until 7 days after rash appears	IB
Scabies	Restrict from patient contact	Until cleared by medical evaluation	IB

Table 1-VI-04....cont.
Summary of suggested work restrictions for healthcare personnel exposed to or infected with an infectious disease of importance in healthcare settings
(modified from ACIP recommendations)

Disease/problem	Work restriction	Duration	Category
Staphylococcus *aureus* infection			
Active, draining skin lesions	Restrict from contact with patients, the patients' environment, and food handling	Until lesions have resolved	IB
Carrier state	No restriction, unless personnel are epidemiologically linked to transmission of the organism		IB
Streptococcal group A infection	Restrict from patient care, contact with patients' environment, or food handling	Until 24 hours after adequate antimicrobial therapy	IB
Tuberculosis			
Active disease	Exclude from duty	Until proven noninfectious by physician	IA
Latent TB infection	No restriction	Treatment for latent TB infection	IA
Varicella			
Active	Exclude from duty	Until all lesions dry and crust. If only lesions that do not crust (i.e macules and papules), until no new lesions appear within a 24- hour period	IA IA
Post-exposure (susceptible personnel)	Exclude from duty	From 8th day after 1st exposure through the 21st day (28th day if VZIG given) after the last exposure; if varicella occurs, until all lesions dry and crust or , if only lesions that do not crust (i.e. macules and papules), until no new lesion appear within a 24-hour period.	
Zoster			
Localized, in a healthy person	Cover lesions; restrict from care of high-risk patients [+]	Until all lesions are dry and crusted over	II
Generalized or localized in an immunosuppressed person	Restrict from patient contact	Until all lesions are dry and crusted over	IB
Post-exposure (susceptible personnel)	Restrict from patient contact	From 8th day after 1st exposure through the 21st day (28th day if VZIG given) after the last exposure or, if varicella occurs, until all lesions dry and crust. Or, if only lesions that do not crust (i.e., macules, papules), until no new lesions appear within a 24-hour period.	IA
Disseminated /localized with uncontained/ uncovered lesions			

Table 1-VI-04....cont.
Summary of suggested work restrictions for healthcare personnel exposed to or infected with an infectious disease of importance in healthcare settings
(modified from ACIP recommendations)

Disease/problem	Work restriction	Duration	Category
Zoster Localized zoster with contained/covered lesions	For HCW with at least 1 receipt of varicella vaccine, no work restrictions. For HCW with no doses of varicella vaccine, restrict patient contact.	From 8th day after 1st exposure through 21st day (28th day if varicella zoster immune globulin administered) after the last exposure; if varicella occurs , until all lesions dry and crust, or if only lesions that do not crust (i.e., macules, papules), until no new lesions appear within a 24-hour period.	
Viral respiratory infections, acute febrile	Consider excluding from the care of high-risk patients ++ or from contact with their environment during community outbreaks of RSV and influenza	Until acute symptoms resolve	IB

* Unless epidemiologically linked to the transmission of infection
\+ Those susceptible to varicella and those who are at increased risk of complications due to varicella, such as neonates and immunocompromised persons of any age
++ High-risk patients as defined by the ACIP for complications due to influenza

TITLE/DESCRIPTION:	INDEX NUMBER
PREGNANT HEALTHCARE WORKERS	**ICM - VI - 05**

EFFECTIVE DATE:	APPLIES TO:	ISSUING AUTHORITY:
01/01/2009 01/01/2013 01/01/2018	**All GCC Countries**	**GULF COOPERATION COUNCIL – CENTRE FOR INFECTION CONTROL (GCC-CIC)**

DEFINITION

To provide infection control guidelines for pregnant healthcare workers (HCWs).

REFERENCES

1. Association for Professionals in Infection Control (APIC) and Epidemiology, Inc. (2014). Chapter 104: The pregnant healthcare worker. In APIC Text of infection control and epidemiology (4th ed.).
2. CDC Personnel Health Guidelines. Infection control issues for healthcare personnel: an overview. AJIC. 1998 26(3): 291-327.

COMMENTS

1. The occupational acquisition of infection is of special concern to pregnant HCWs because some infections, such as CMV, rubella, and parvovirus, can have severe effects on the fetus.
2. HCWs planning on becoming pregnant should be reassured with emphasis on practicing standard precautions when dealing with patients.
3. Female HCWs of childbearing age should be advised regarding the performance of pre-pregnancy screening tests during their pre-employment physical evaluation and should be offered the appropriate vaccines.

PROCEDURE

Refer to **Table 1–VI-05** The pregnant worker: pertinent facts to guide management of occupational exposures to infectious agents.

Table 1-VI-05:
The pregnant healthcare worker: pertinent facts to guide the management of occupational exposures to infectious agents

Agent	In-hospital source	Potential effect on fetus	Rate of perinatal transmission	Maternal screening	Prevention
Cytomegalovirus (CMV)	Urine, blood, semen, vaginal secretions, immuno-compromised or transplant patients, dialysis, day care	Classic cytomegalic inclusion disease *5% to10% Hearing loss 10% to 15%	Primary infection 25% to 50% Recurrent infection 52% Symptomatic <5% to 15%	Routine screening not recommended Antibody is not completely protective	Efficacy of CMV immuno-globulin not established No vaccine available Standard Precautions
Hepatitis A (HAV)	Feces most commonly, blood (rarely)	No fetal transmission, transmission may occur at the time of delivery if the mother is still in the infectious phase	None	Routine screening not recommended	Vaccine is a killed virus vaccine and can safely be used in pregnancy Contact Precautions during the acute phase
Hepatitis B (HBV)	Blood, body fluids, vaginal secretions, semen	Hepatitis; early onset hepatocellular carcinoma	HB_eAg positive 90% HBsAg positive 10%	Routine HB_SAg testing is advised.	HBV vaccine during pregnancy Neonate: Vaccine/HBIG at birth Standard Precautions
Hepatitis C (HCV)	Blood, sexual contact	Hepatitis	5% (0 to 25%)	Anti-HCV or HCV RNA routine screening not recommended	No vaccine or immunoglobulin is available Post-exposure treatment with antiviral agents Standard Precautions
Herpes simplex virus (HSV)	Vesicular fluid, oropharyngeal and vaginal secretions	Sepsis, encephalitis, meningitis; mucocutaneous lesions; congenital malformations (rare)	Primary genital 33% to 50% Recurrent genital 1% to 2%	Antibody testing minimally useful Inspection for genital lesions during labor	Chemoprophylaxis at 36 weeks decreases shedding Standard Precautions
Human immuno-deficiency virus (HIV)	Blood, body fluids, vaginal secretions, semen	Acquired immunodeficiency disease syndrome (AIDS) by 2-4 years of age No congenital syndrome	Depends on HIV viral titer If viral titer is <1000, then the rate is 2% If viral titer ≥10,000 then the rate can be up to 25%	Routine maternal screening advised (HIV ELISA, Western blot) If exposed, then testing at 3, 6 and 12 months is recommended	Antiretroviral chemoprophylaxis available for exposure, postnatal chemoprohylaxis for HIV-positive mothers and their infants Standard Precautions

Table 1-VI-05:
The pregnant healthcare worker: pertinent facts to guide the management of occupational exposures to infectious agents

Agent	In-hospital source	Potential effect on fetus	Rate of perinatal transmission	Maternal screening	Prevention
Influenza	Sneezing and coughing, respiratory tract secretions	No congenital syndrome; influenza in the mother can cause hypoxia in fetus	Rare	None	TIV for all pregnant women during influenza season to decrease the risk of hospitalization for cardiopulmonary complications Droplet Precautions
Measles (Rubella)	Respiratory secretions, coughing	Prematurity, spontaneous abortion, congenital syndrome	Rare	Antibody test	Vaccine Airborne Precautions
Parvovirus B19	Respiratory secretions, blood, immuno-compromised patients	Fetal hydrops, stillbirth; no congenital syndrome	Approximately 25% Fetal death <10%	No routine screening; B19 DNA can be detected in serum, leukocytes, respiratory secretions, urine, and tissue specimens	No vaccine, defer care of immunocompromised patients with chronic anemia Droplet Precautions
Rubella	Respiratory secretions	Congenital syndrome *	90% in the first trimester, 40% to 50% overall	Routine rubella IgG testing in pregnancy Preconception screening recommended	Vaccine^{+} No congenital rubella syndrome described for vaccine Droplet Precautions Contact Precautions for congenital rubella
Syphilis	Blood; lesions; fluid; amniotic fluid	Congenital syndrome *	10% to 90%, depending on the stage of maternal disease and the trimester at the time of infection	VDRL, RPR^{++} FTA ABS	Post-exposure prophylaxis with penicillin Standard Precautions Gloves until 24 hrs of effective therapy has been completed for infants with congenital syphilis Contact Precautions when skin and

Table 1-VI-05:
The pregnant healthcare worker: pertinent facts to guide the management of occupational exposures to infectious agents

Agent	In-hospital source	Potential effect on fetus	Rate of perinatal transmission	Maternal screening	Prevention
Toxoplas-mosis	No human-to-human spread; raw meat, cat feces, unwashed fruits and vegetables	Congenital syndrome*	30% to 50%; rate increases as pregnancy advances, severe disease after primary infection in first trimester	Antibody protects against disease. Routine screening not recommended in the US	Frozen or cooked meat; avoid or glove for contact with cat feces; wash fruits, vegetables, change cat litter at least once every 24 hours
Tuberculosis	Sputum; skin lesions	Neonatal tuberculosis, liver most frequently affected.	Rare	Tuberculin Skin test (TST**) QuantiFERON-TB (QFT) Chest radiograph	INH and ethambutol + rifampin for active maternal disease Airborne Precautions
Varicella-zoster virus	Respiratory secretions, vesicular fluid	Malformations (skin, limb, CNS, eye); chickenpox, zoster	Total 25% Congenital syndrome 2% (0 to 4%)	History, antibody	Vaccine+ or VZIG within 96 hours of exposure if susceptible Airborne Precautions Contact Precautions

* Congenital syndrome: varying combinations of jaundice, hepatosplenomegaly, microcephaly, CNS abnormalities, thrombocytopenia, anemia, retinopathy, and skin and bone lesions
\+ Live virus vaccines should be given before or after pregnancy
++ VDRL, Venereal Disease Research Laboratory test; RPR, rapid plasma reagin test
** TST, Tuberculin Skin Test

TITLE/DESCRIPTION:	INDEX NUMBER
HEPATITIS A IMMUNIZATION FOR HEALTHCARE WORKERS	**ICM - VI - 06**

EFFECTIVE DATE:	APPLIES TO:	ISSUING AUTHORITY:
01/01/2009 01/01/2013 01/01/2018	All GCC Countries	GULF COOPERATION COUNCIL – CENTRE FOR INFECTION CONTROL (GCC-CIC)

DEFINITION

To provide guidelines for Hepatitis A virus (HAV) immunization of healthcare workers (HCWs).

REFERENCES

1. Association for Professionals in Infection Control (APIC) and Epidemiology, Inc. (2014). Chapter 97: Viral hepatitis. In APIC Text of infection control and epidemiology (4th ed.)
2. Manual of Immunization for G.C.C. States (1996).
3. Prevention of hepatitis A through active or passive immunization: recommendations of the Advisory Committee on Immunization Practices (ACIP), (19 May 2006) 55:(RR07);1-23.
4. Red Book. (2012). Report of the Committee on Infectious Diseases. The American Academy of Pediatrics.

COMMENTS

1. Saudi Arabia is an area of intermediate endemicity for HAV.
2. In endemic areas, the HAV vaccine is recommended for:
   a. Persons residing in institutions
   b. Food handlers
   c. Municipal workers
   d. Healthcare workers
   e. Day-care staff and children
   f. Homosexually active males
   g. Injecting drug users
   h. Persons with chronic liver disease
   i. Travelers to countries with high rates of Hepatitis A.
   j. Patient who are on lifelong therapy with clotting factors.
3. The HAV vaccine is contraindicated in those with known hypersensitivity to any of the vaccine components, such as alum and phenoxyethanol.
4. The effect of the HAV vaccine on pregnancy and lactation has not been assessed.

PROCEDURE

A. Pre-vaccination Testing and Counseling

1. Screen for HAV antibodies in employees to ensure adequate protection against HAV for prior immunity.
2. Offer inactivated HAV vaccination to those who are non-immune.
3. Exclude from immunization those for whom the vaccine is contraindicated.
4. Educate employees on modes of transmission, which are mainly fecal-oral and waterborne routes, homosexual activity (for males), and intravenous drug use.
5. Explain the risks of foregoing immunization to all employees who refuse HAV immunization.

B. Vaccine Administration

1. Give 2 doses of the inactivated HAV vaccine to all relevant persons 6 to 12 months apart for a full immunization regimen.
   a. AVAXIM®
      i. Two doses 6 to 12 months apart, with 1440 ELISA units per dose, IM in the deltoid muscle.
      ii. Second (booster) dose, 6 to 12 months after the primary dose, of 1440 ELISA units IM in the deltoid.
   b. HAVRIX®
      i. Pediatric dose
         - Two doses should be given, 6 to 12 months apart, with 720 ELISA units per dose, IM in the deltoid muscle (for patients aged 12 months to 18 years).
      ii. Adult dose
         - Two doses should be given 6 to 12 months apart with 1440 ELISA units per dose, IM in the deltoid muscle (for patients aged ≥ 19 years).

C. Post-immunization Serologic Testing

Not indicated.

D. Concurrent Use of HAV Vaccine and Immunoglobulin

Refer to **ICM–IV-04** Hepatitis A Virus Exposure Management.

TITLE/DESCRIPTION:	INDEX NUMBER
HEPATITIS B IMMUNIZATION FOR HEALTHCARE WORKERS	**ICM - VI - 07**

EFFECTIVE DATE:	APPLIES TO:	ISSUING AUTHORITY:
01/01/2009 01/01/2013 01/01/2018	**All GCC Countries**	**GULF COOPERATION COUNCIL – CENTRE FOR INFECTION CONTROL (GCC-CIC)**

DEFINITION

To provide guidelines on Hepatitis B immunization.

REFERENCES

1. Association for Professionals in Infection Control (APIC) and Epidemiology, Inc. (2014). Chapter 97: Viral hepatitis. In APIC Text of infection control and epidemiology (4th ed.)
2. Red Book. (2012). Report of the Committee on Infectious Diseases. The American Academy of Pediatrics.

COMMENTS

1. Evidence for immunity to HBV is needed for all HCWs at risk of exposure to blood or body fluids.
2. All new HCWs will be tested for Hepatitis B immunity, unless a reliable document on immunity status can be provided.
3. HCWs are considered immune to HBV if they have a documented anti-HBs level >10 mIU/L at any time in the past. Even if the level had dropped afterwards they would still be considered immune, and will not need any further doses. The drop in titer is known as anamnestic response.
4. HCWs at risk for occupational HBV exposure with no documented immunity at any time in the past are considered none immune regardless of the documentation of immunization and shall be immunized as outlined in this policy.

PROCEDURE

A. Pre-vaccination Testing

1. Screen all new HCWs for HBsAg and anti-HBs to verify HBV immune status.
2. Provide Hepatitis B immunization to those HCWs who are non-immune for Hepatitis B, i.e., those with anti-HBs < 10 mIU/L, unless they provide documentation of a completed vaccination series and anti-HBs levels > 10 mIU/L 1 to 2 months post-vaccination.
3. Explain the risks of non-immunization to all HCWs who refuse immunization and have them sign a disclaimer form if they refuse immunization.

B. Administration of the Vaccine

1. Give three doses of Hepatitis B vaccine with the second and third doses at 1 and 6 month intervals, as recommended by the manufacturer (as per package insert).
2. Use a 22 to 25 gauge needle, at least 1 to 1.5 inches long. Administer 1.0 ml intramuscularly (IM) into the deltoid muscle. Do not administer in the gluteal region; if this has been done, the dose should be repeated.

C. Post-vaccination Serological Testing

1. To ensure adequate seroconversion and protection:
   - One to two months after completing the series, the vaccine level of anti-HBs is expected to be > 10 mIU/L, and this value should be checked in any HCW with patient exposure.

D. Non-responders to the First Series of Vaccination

If anti-HBs levels are <10 mIU/L 1 to 2 months post-vaccination, take the following steps:

1. A full second series of 3 doses should be given.
2. One month after completing the second series, the vaccine level of anti-HBs is expected to be > 10 mIU/L, and this value should be checked in any HCW with patient exposure.
3. If the HCW remains anti-HBs-negative, then he/she is considered a non-responder and should be counseled accordingly.

E. Counseling Non-responders

1. If all of the above measures were taken and the HCW remains anti-HBs-negative, no further doses should be given.
2. The importance of standard precautions and policy should be stressed to the HCW.
3. The HCW should receive an HBsAg test; if positive, he/she should receive counseling as mentioned above. Professional duties should be reviewed along with appropriate referrals.
4. HBsAg-negative HCWs who fail to seroconvert should receive HBIG if exposed to HBsAg-positive blood products or body fluid. Refer to **ICM–VII-04** Management of Sharps Injury and Exposure to Bloodborne Pathogens.

TITLE/DESCRIPTION:	INDEX NUMBER
VARICELLA IMMUNIZATION FOR HEALTHCARE WORKERS	**ICM - VI - 08**

EFFECTIVE DATE:	APPLIES TO:	ISSUING AUTHORITY:
01/01/2009 **01/01/2013** **01/01/2018**	**All GCC Countries**	**GULF COOPERATION COUNCIL – CENTRE FOR INFECTION CONTROL (GCC-CIC)**

DEFINITION

To describe the criteria and conditions for administering the Varicella vaccine to healthcare workers (HCWs) and the evaluation of HCWs following Varicella Zoster (VZV) infection.

REFERENCES

1. Association for Professionals in Infection Control (APIC) and Epidemiology, Inc. (2014). Chapter 100: Occupational health. In APIC Text of infection control and epidemiology (4th ed.)
2. Centers for Disease Control and Prevention (CDC). Prevention of varicella: recommendations of the Advisory Committee on Immunization Practices (ACIP). MMWR June 22, 2007/56 (RR04).1-40. Updated: January 31, 2008.
3. Red Book (2012)

COMMENTS

1. Evidence for immunity to Varicella Zoster virus (VZV) is needed for all HCWs at risk of exposure patients with chicken pox.
2. All HCWs need to be tested for VZV immunity, unless a reliable document on immunity status or reliable evidence for receiving 2 doses of the VZV vaccine can be provided. Or a history from a reliable source can verify the HCW did have VZV infection in the past. This is important since other diseases may mimic VZV infection.
3. A history of varicella infection is not considered reliable evidence of being immune and a serological test is needed.
4. The VZV vaccine is a live attenuated vaccine and shall not be offered to immunocompromised individuals. Those who are non-immune will be provided the VZV vaccine unless there is a medical contraindication.

PROCEDURE

A. Pre-vaccination Counseling
   1. Advise all HCWs about the seriousness of Varicella infection transmitted to patients, especially the following:
      a. Elderly patients
      b. Neonates
      c. Immunocompromised patients
      d. Transplant patients
   2. Reliable evidence of immunity to VZV is needed; if not available, test HCWs for their serological status for varicella antibodies. A HCW who is found to be immune will require no further action, and the results of varicella serology should be documented in the employee's medical records.
   3. Provide the vaccine to those who are found to be non-immune; unless medically contraindicated.
   4. Documentation of two previous vaccine shots will preclude any further immunization.

B. Vaccine Administration

1. The varicella vaccine is not 100% protective.
2. Defer vaccination for at least 5 months following blood or plasma transfusions or the administration of immunoglobulin (including VZIG) because passively acquired antibodies may inactivate the vaccine.
3. Administer the varicella vaccine (Oka/Merck) as a 0.5ml subcutaneous dose in the outer aspect of the upper arm (deltoid). Give the second dose 4 weeks later.
4. Do not administer immunoglobulin (including VZIG) concurrently with the vaccine or for 2 weeks after vaccination.
5. Avoid the use of salicylates for 6 weeks following vaccination. Avoid immunoglobulin administration for 2 months unless it outweighs the benefits of immunization.
6. Avoid getting pregnant for 1 month after each shot.

C. Complications of the Vaccine

1. Some HCWs may develop papular or vesicular skin lesions at the injection site following vaccination. These lesions should be covered with a bandage, and the person should be allowed to work. However, the employee should not be allowed to work with immunocompromised patients. There should be a daily evaluation in the Employee Health Clinic for dissemination of lesions for up to 21 days after the vaccination.
2. Some HCWs may develop disseminated papular or vesicular skin lesions following vaccination. These persons should be removed from work until all lesions have dried and crusted over.

TITLE/DESCRIPTION:	INDEX NUMBER
MANAGEMENT OF SELECTED AIRBORNE AND DROPLET INFECTIOUS DISEASE EXPOSURES IN HEALTHCARE WORKERS	**ICM - VI - 09**

EFFECTIVE DATE:	APPLIES TO:	ISSUING AUTHORITY:
01/01/2009 **01/01/2013** **01/01/2018**	**All GCC Countries**	**GULF COOPERATION COUNCIL – CENTRE FOR INFECTION CONTROL (GCC-CIC)**

DEFINITION

To provide guidelines for the management of healthcare workers (HCWs) exposed to selected infectious disease transmissible via the airborne or droplet routes.

REFERENCES

1. Association for Professionals in Infection Control (APIC) and Epidemiology, Inc. (2014). Chapter 100: Occupational health. In APIC Text of infection control and epidemiology (4th ed.)

2. HICPAC/CDC Guidelines for isolation precautions: preventing transmission of infectious agents in healthcare setting, 2007

3. Herwaldt LA, et al. Exposure workups. Infection Control Hosp Epidemiol 1997;18:850-71.

4. Red Book. (2012). Committee on Infectious Disease. The American Academy of Pediatrics.

COMMENTS

1. The infection control surveillance clinic will assess HCWs for exposure, prophylaxis, treatment, and work exclusion and will notify Infection Control of the actions taken. When the Employee Health Clinic is closed, HCWs should seek medical attention in the Emergency Room. Expert consultation may be obtained from Infection Preventionist (IP) or the Infectious Disease Consultant on call during weekends and holidays.

2. Management of the following conditions is outlined:
   a. Varicella (Chickenpox) and shingles
   b. Measles
   c. Rubella
   d. Mumps
   e. Mycobacterium tuberculosis
   f. Meningococcal meningitidis (Neisseria meningitidis)
   g. Pertussis

A. MANAGING VARICELLA (CHICKENPOX) or SHINGLES EXPOSURE

1. PROCEDURE: Refer to **Appendix 1–VI-09.**

2. EXPLANATION:
   a. Incubation period
      Usually 14-16 days; range, 10-21 days; up to 28 days in persons who have received varicella zoster immunoglobulin (VZIG).

   b. Exposure criteria
      - *Varicella*
        A household contacts, face-to-face contact for more than 5 minutes with an infected person without wearing a surgical mask, or direct contact with vesicle fluid without wearing gloves
      - *Shingles*
        Direct contact with vesicle fluid without wearing gloves.

   c. Period of communicability
      - *Varicella*
        Affected persons are most contagious 1-2 days before and shortly after vesicles appear. Transmission can occur up to 5 days after onset of rash. Immunocompromised persons may be contagious as long as new vesicles are appearing.
      - *Shingles*
        Affected persons are most contagious from 24 hours before the first vesicle appears and up to 48 hours after the final vesicle appears.

   d. Employee health
      - Assess immunity: HCW is susceptible unless he or she has a history of varicella or has serological evidence of immunity. Consider checking varicella IgG antibody titer to determine the immune status of the HCW.
      - For vaccination of HCWs against VZV, refer to **ICM–VI-08** Varicella Immunization for Healthcare Workers.

   e. Work restrictions
      - *Exposed*
        From days 1-7 of exposure no restrictions is required.
        HCW should be excluded from duty on day 8th after 1st exposure through day 21st of last exposure (28th day if VZIG was given after the last exposure).
      - *Infected*
        HCW may return to work after all lesions have crusted over.

   f. Prophylaxis
      Consider giving VZIG to non-immune, immunocompromised persons or pregnant women within 96 hours of exposure.

B. MANAGING MEASLES EXPOSURE

1. PROCEDURE: Refer to **Appendix 2–VI-09.**

2. EXPLANATION:

   a. Incubation period
   Usually 8-12 days; range, 7-21 days.

   b. Exposure criteria
   Spending time in a room with an infected person without wearing a respirator. If air is recirculated, spending time in the area supplied by the air-handling system while an infected person was present or within 1 hour after the person's departure. Contact with nasal or oral secretions from an infected person or items contaminated with these secretions without wearing gloves.

   c. Period of communicability
   From 4 days before the rash appears to 4 days after the rash appears, but transmission is minimal by 2 to 4 days after the rash appears.

   d. Employee health
   Assess immunity; an HCW is susceptible unless he or she was born before 1957, provides serological evidence of immunity, or has two documented doses of measles vaccine. Obtain blood for IgG antibody titers as needed. For staff who have not received two doses of measles vaccine, consider initiating or completing the vaccine series.

   e. Work restrictions
   - *Exposed*
     From days 1-4 no restrictions required. From days 5 to 21 for a single exposure or day 5 of the first exposure through day 21 of the last exposure the HCW either must not work or must have no direct patient contact or must only work with immune persons away from patient care areas.
   - *Infected*
     HCW may return to work 4 days after developing a rash.

   f. Prophylaxis
   Consider giving susceptible HCWs the vaccine within 3 days or IG within 6 days of exposure to modify severity of infection; vaccine or IG given after exposure does not change work restrictions.

C. MANAGING RUBELLA EXPOSURE

1. PROCEDURE: Refer to **Appendix 3–VI-09.**

2. EXPLANATION**:**

   a. Incubation period
   Usually 16-18 days; range, 14-21 days.

   b. Exposure criteria
   Contact within 3 feet of an infected person without wearing a mask; contact with nasopharyngeal secretions from an infected person or items contaminated with these secretions without wearing gloves; contact with nasopharyngeal secretions or urine from an infant with congenital rubella without wearing gloves.

   c. Period of communicability
   From 7 days before the rash to 7 days after the rash appears; up to 1 year for infants with congenital rubella.

   d. Employee health
   Assess immunity; an HCW is susceptible unless he or she was born before 1957, provides serological evidence of immunity, or has one documented dose of rubella vaccine. Obtain blood for IgG antibody titers as needed. For staff who has not received two doses of rubella vaccine, consider initiating or completing the vaccine series.

   e. Work Restrictions
   - *Exposed*
     From days 1-6 no restrictions required. From 7th day after the 1st exposure through the last exposure on the 23rd day, the HCW either must not work or must have no direct patient contact or must only work with immune persons away from patient care areas.
   - *Infected*
     HCW may return to work 7 days after developing rash.

   f. Prophylaxis
   None; the rubella vaccine does not prevent infection after exposure. IG does not prevent infection.

D. MANAGING MUMPS EXPOSURE

1. PROCEDURE: Refer to **Appendix 4–VI-09.**

2. EXPLANATION:

   a. Incubation period
   Usually 16-18 days; range, 12-25 days.

   b. Exposure criteria
   Being within 3 feet of an infected person without wearing a mask; contact with saliva or items contaminated with saliva from an infected person without wearing gloves.

   c. Period of communicability
   Patients are most communicable 48 hours before the onset of illness, and continue until 5 days after the onset of parotitis.

   d. Employee health
   Assess immunity; an HCW is susceptible unless he or she was born before 1957, provides serologic evidence of immunity, or has one documented dose of mumps vaccine. Obtain blood for IgG antibody titers as needed. For staff who has not received two doses of mumps vaccine, consider initiating or completing the vaccine series.

   e. Work restrictions
   - *Exposed*
   From days 1-11, no restrictions required. Restrict from work day 12th after first exposure through day 25th of last exposure or 5 days after onset of parotitis. The HCW either must not work or must have no direct patient contact, or work only with immune persons away from patient care areas.
   - *Infected*
   HCW may return to work 5 days after the onset of parotid gland swelling.

   f. Prophylaxis
   None; the mumps vaccine is not proven to prevent infection after exposure; mumps IG does not prevent infection.

E. MANAGING MYCOBACTERIUM TUBERCULOSIS EXPOSURE

1. PROCEDURE: Refer to **Appendix 5–VI-09**

2. EXPLANATION:

a. Incubation period
From 2 to 10 weeks after exposure to detection of positive Tuberculin skin test (TST) or Interferon-gamma release assay (IGRA); the risk of developing active disease is greatest in the first 2 years after exposure.

b. Exposure criteria
Spending time in a room with a person who has active disease without wearing an N95 respirator; packing or irrigating wounds infected with Mycobacterium Tuberculosis (MTB) without wearing an N95 respirator.

c. Period of communicability
Persons whose smears are AFB positive are 20 times more likely to cause secondary infections than persons who are smear negative. Children with primary pulmonary MTB are rarely contagious.

d. Employee health
Obtain baseline TST results by doing 2 step TST if these have not been performed recently and if the HCW was previously negative; perform post-exposure TST test at 8 to 10 weeks; if the TST test result comes out positive prescribe MTB prophylaxis. Positive IGRA result is also an indication for MTB prophylaxis.

e. Work restrictions
- Persons whose TST results and IGRA test results are positive
- *Infected*
  Restrict HCWs with active MTB from duty until after they have taken 2 to 3 weeks of effective anti-tuberculosis chemotherapy and they have had 3 AFB-negative sputum samples taken over 8 to 24 hours (one must be an early morning specimen).

f. Prophylaxis
Prescribe Isoniazid 300 mg daily for 9 months (or 12 months for HIV-infected persons) and pyridoxine 20-40 mg daily. Consult with Infectious disease consultant for verification of the most appropriate prophylaxis regimen.

Refer to **ICM–V-03** Management of Suspected/Confirmed Cases of Infectious Mycobacterium Tuberculosis.

F. MANAGING MENINGOCOCCAL DISEASE EXPOSURE

1. PROCEDURE: Refer to **Appendix 6–VI-09.**

2. EXPLANATION:

   a. Incubation period
   Usually ≤4 days; range, 1-10 days.

   b. Exposure criteria
   Extensive contact with respiratory secretions from an infected person without wearing a mask, particularly when suctioning, resuscitating, or intubating.

   c. Period of communicability
   Persons are infectious until they have taken 24 hours of effective antibiotic therapy.

   d. Employee health
   Prescribe prophylaxis; educate exposed HCWs about the signs and symptoms of meningitis.

   e. Work restrictions
   - *Exposed*
     None
   - *Infected*
     HCW should be restricted from work until they have taken 24 hours of effective antibiotic therapy.

   f. Prophylaxis
   Rifampin 600 mg every 12 hours for 2 days (contraindicated in pregnancy) or Ciprofloxacin 500 mg single dose (contraindicated in pregnancy) or Ceftriaxone 250 mg IM single dose (safe during pregnancy).

G. MANAGING PERTUSSIS EXPOSURE

1. PROCEDURE: Refer to **Appendix 7–VI-09.**

2. EXPLANATION:

   a. Incubation period
   Usually 7-10 days; range, 5-21 days.

   b. Exposure criteria
   - Face-to-face contact without wearing a mask for more than 10 min.
   - Spending 1 hour in a room with a confirmed case without wearing a mask.

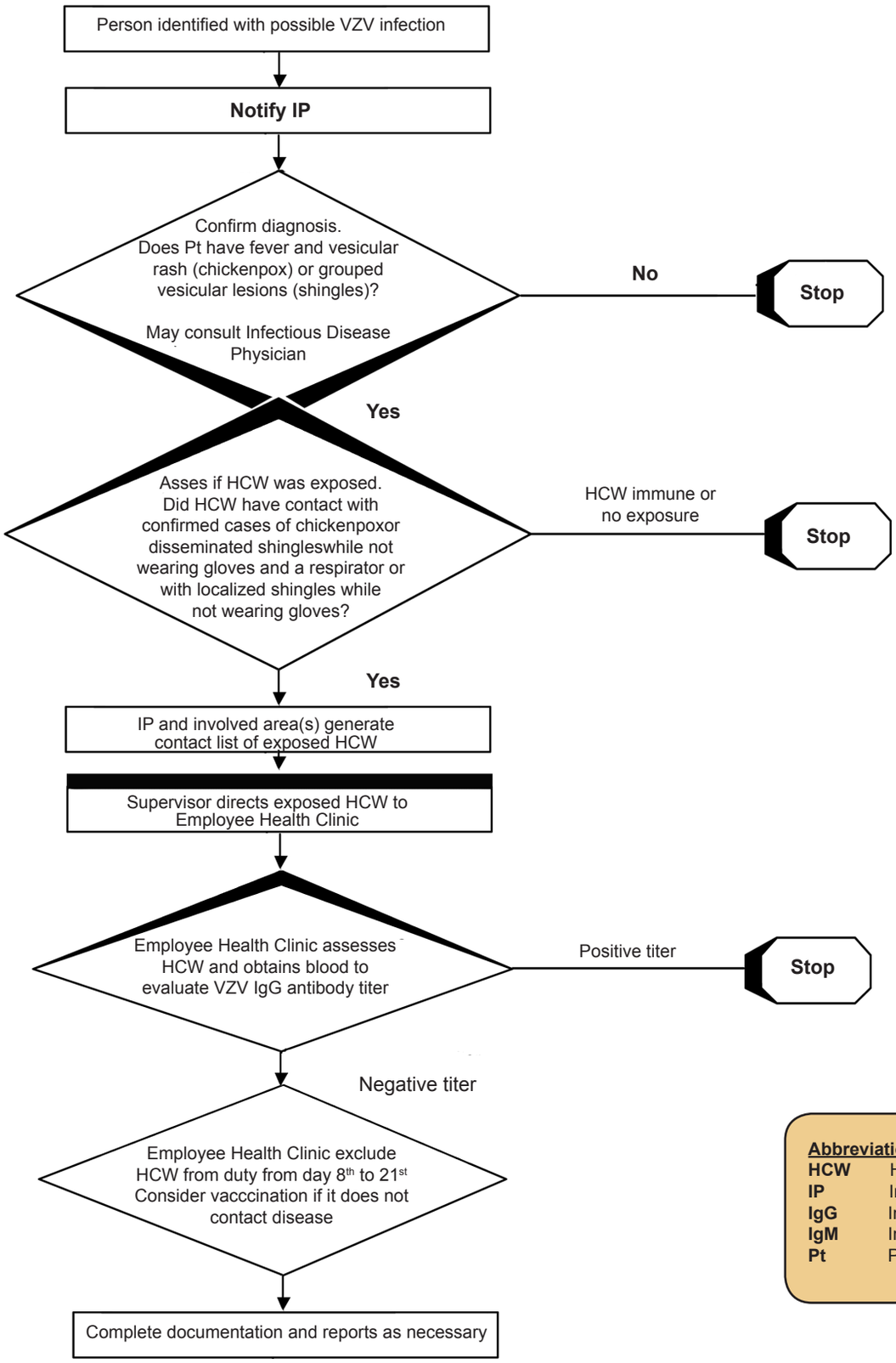
   c. Period of communicability
   Patients are most contagious during the catarrhal stage; communicability diminishes rapidly after the onset of coughing but can persist for as long as 3 weeks.

   d. Employee health
   If the HCW has no symptoms, he/she should begin prophylaxis and return to work. If the HCW is symptomatic, he/she should begin therapy and exclude from work until test results are available.

   e. Work restrictions
   - *Exposed:*
     - Post-exposure (asymptomatic): No restrictions, prophylaxis recommended.
     - Post-exposure (symptomatic): Exclude from duty until 5 days after initiating effective therapy or until the disease is excluded by negative serology and negative nasopharyngeal culture.
   - *Active:*
     Exclude from duty from the beginning of the catarrhal stage through the 3rd week after the onset of paroxysm or until 5 days after the start of effective antimicrobial therapy.

   f. Prophylaxis
   The recommended drug is erythromycin (40 mg/kg/day in 4 divided doses, maximum of 2 gm/day) for 14 days (estolate preparation is preferred). Azithromycin or clarithromycin may be tolerated better than erythromycin. If the HCW is allergic to the macrolide group, Cotrimoxazole DS (1 tablet twice daily for 14 days) can be administered.

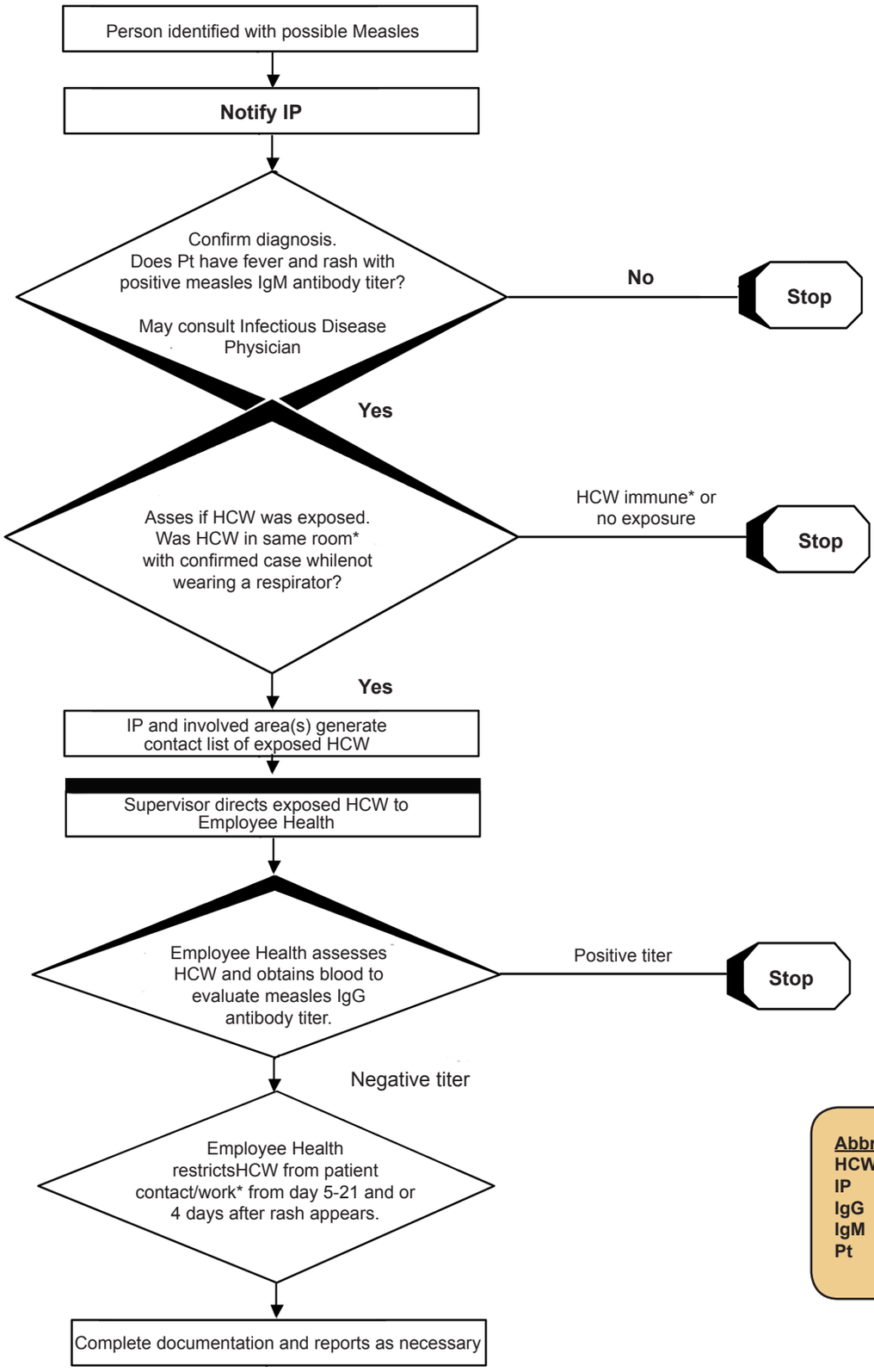
Appendix 1-VI-09: Varicella or Shingles Exposure



Abbreviations:

HCW	Healthcare Workers
IP	Infection Preventionist
IgG	Immunoglobulin G
IgM	Immunoglobulin M
Pt	Patient

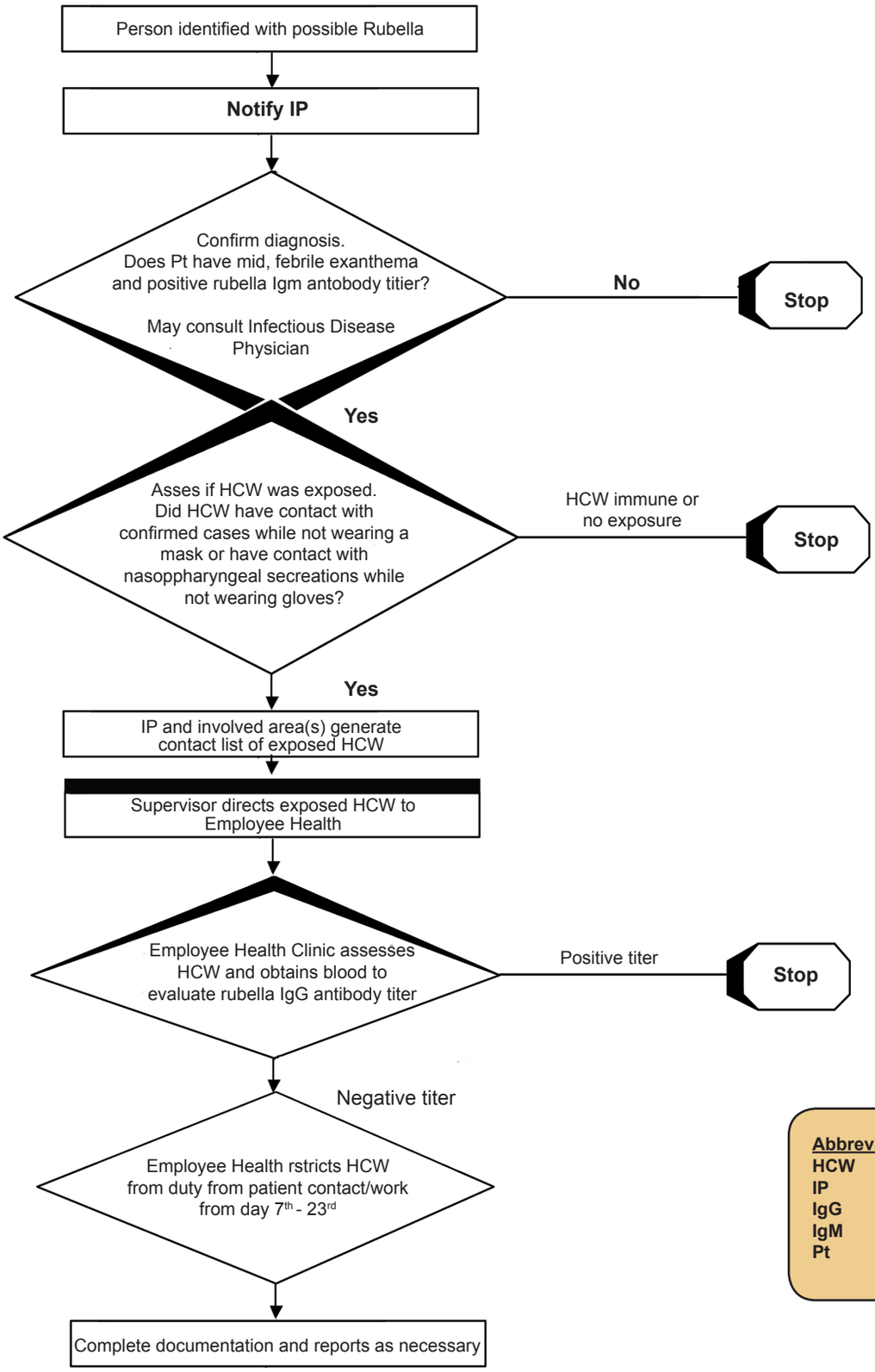
Appendix 2-VI-09: Measles Exposure



Abbreviations:

HCW	Healthcare Workers
IP	Infection Preventionist
IgG	Immunoglobulin G
IgM	Immunoglobulin M
Pt	Patient

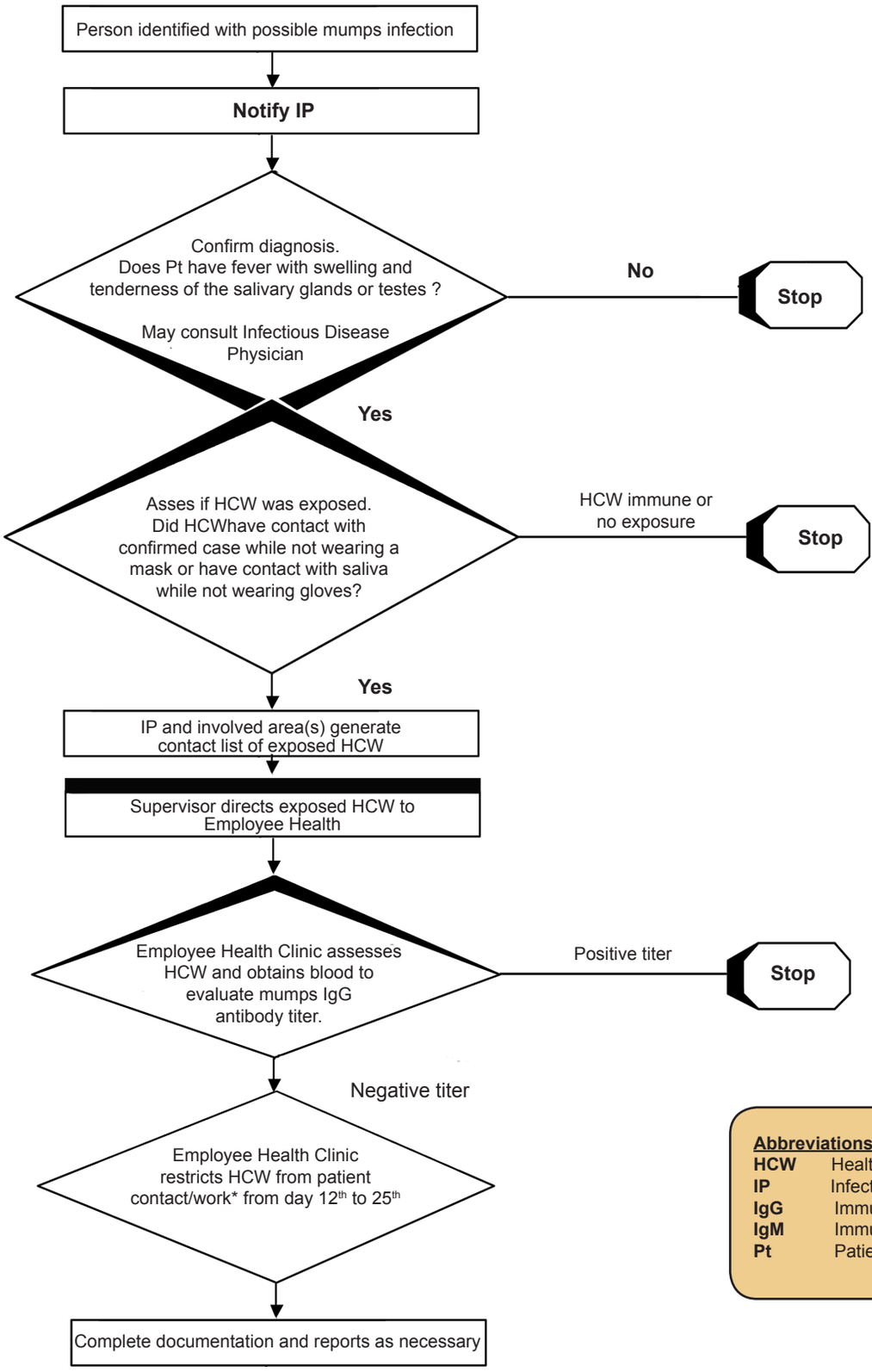
Appendix 3-VI-09: Rubella Exposure



Abbreviations:

HCW	Healthcare Workers
IP	Infection Preventionist
IgG	Immunoglobulin G
IgM	Immunoglobulin M
Pt	Patient

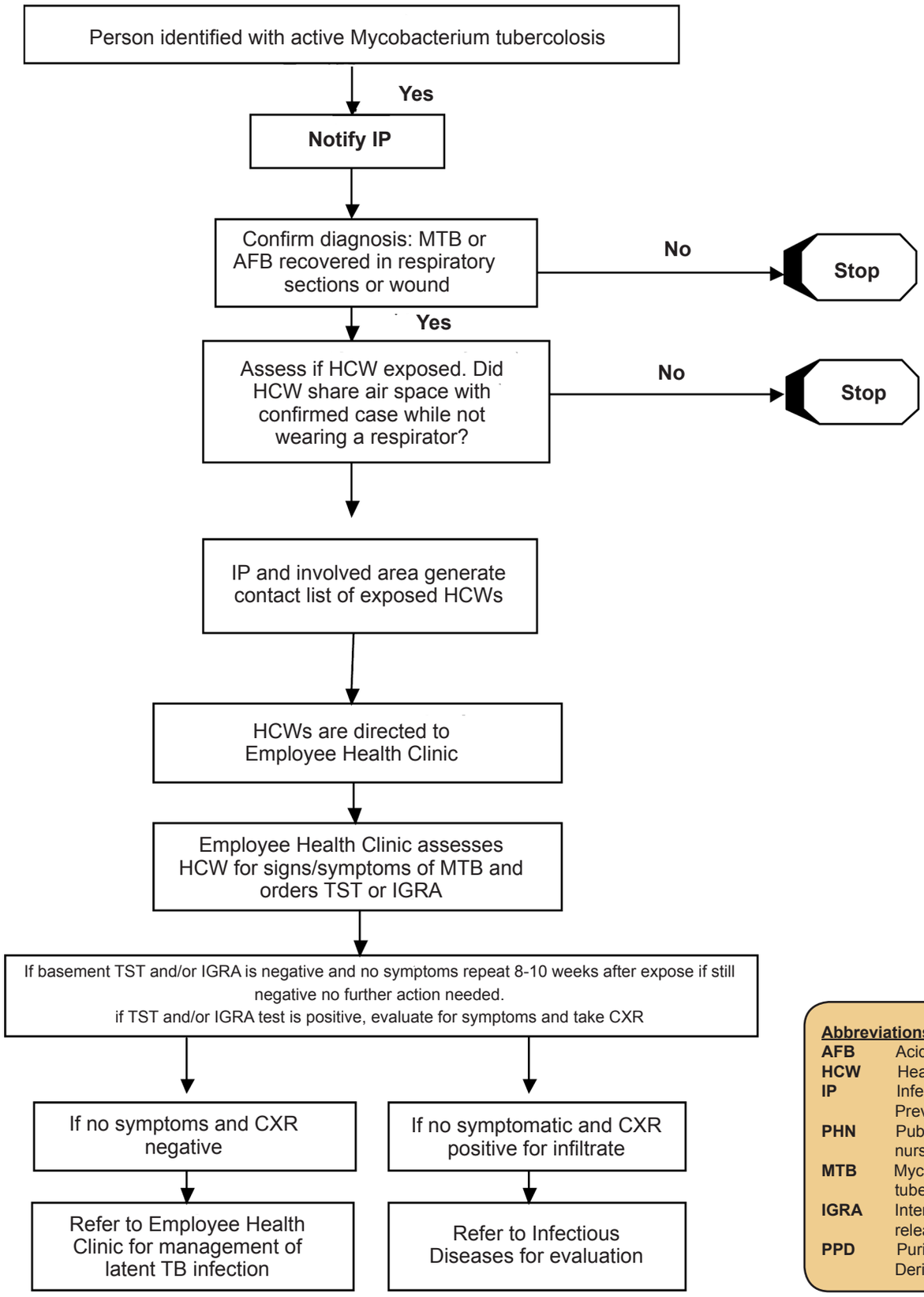
Appendix 4-VI-09: Mumps Exposure



Abbreviations:

HCW	Healthcare Workers
IP	Infection Preventionist
IgG	Immunoglobulin G
IgM	Immunoglobulin M
Pt	Patient

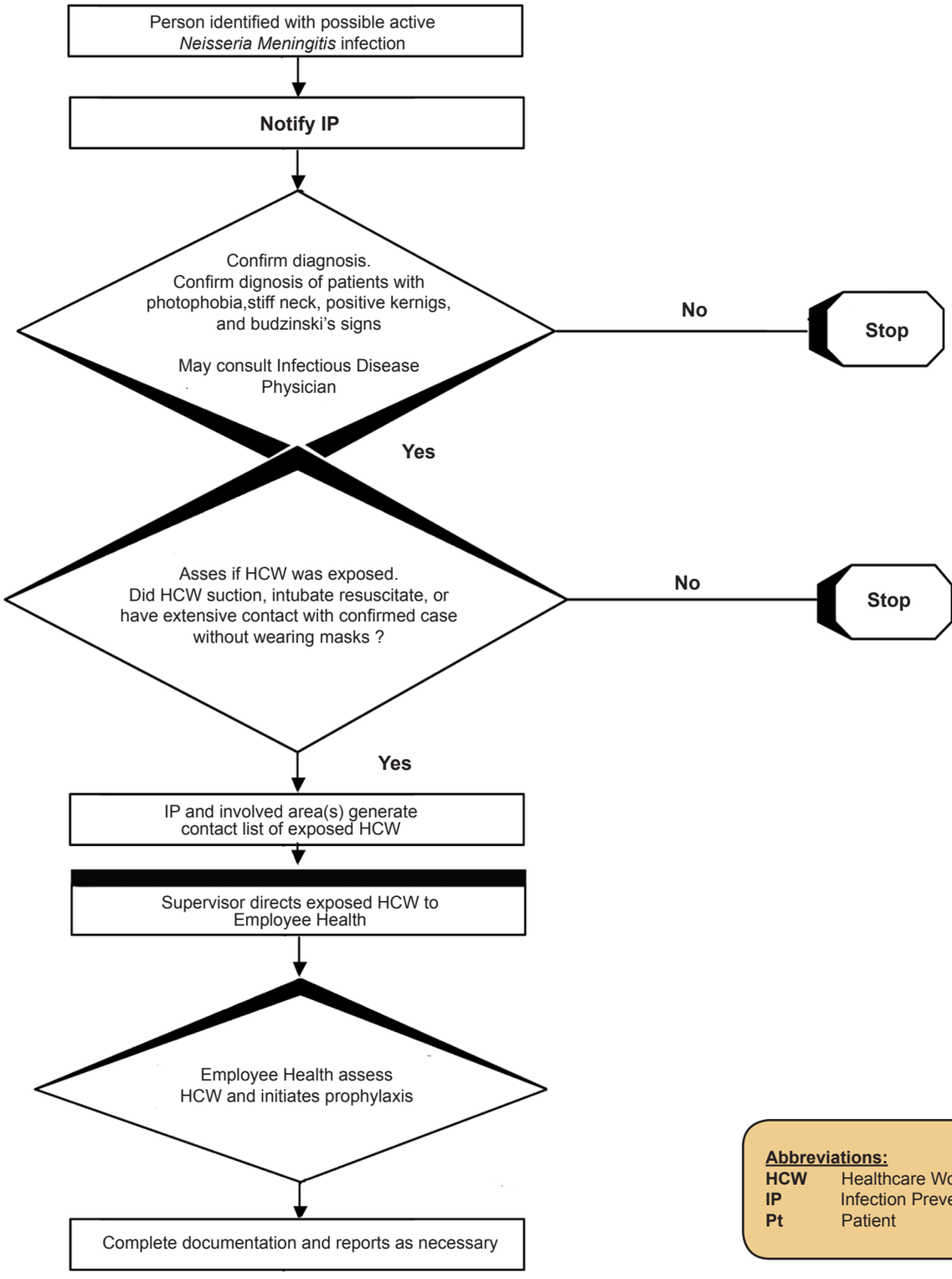
Appendix 5-VI-09: Mycobacterium Tuberculosis Exposure



Abbreviations:

AFB	Acid-fast bacilli
HCW	Healthcare worker
IP	Infection Preventionist
PHN	Public health nurse
MTB	Mycobacterium tuberculosis
IGRA	Interferon-gamma release assay
PPD	Purified Protein Derivative

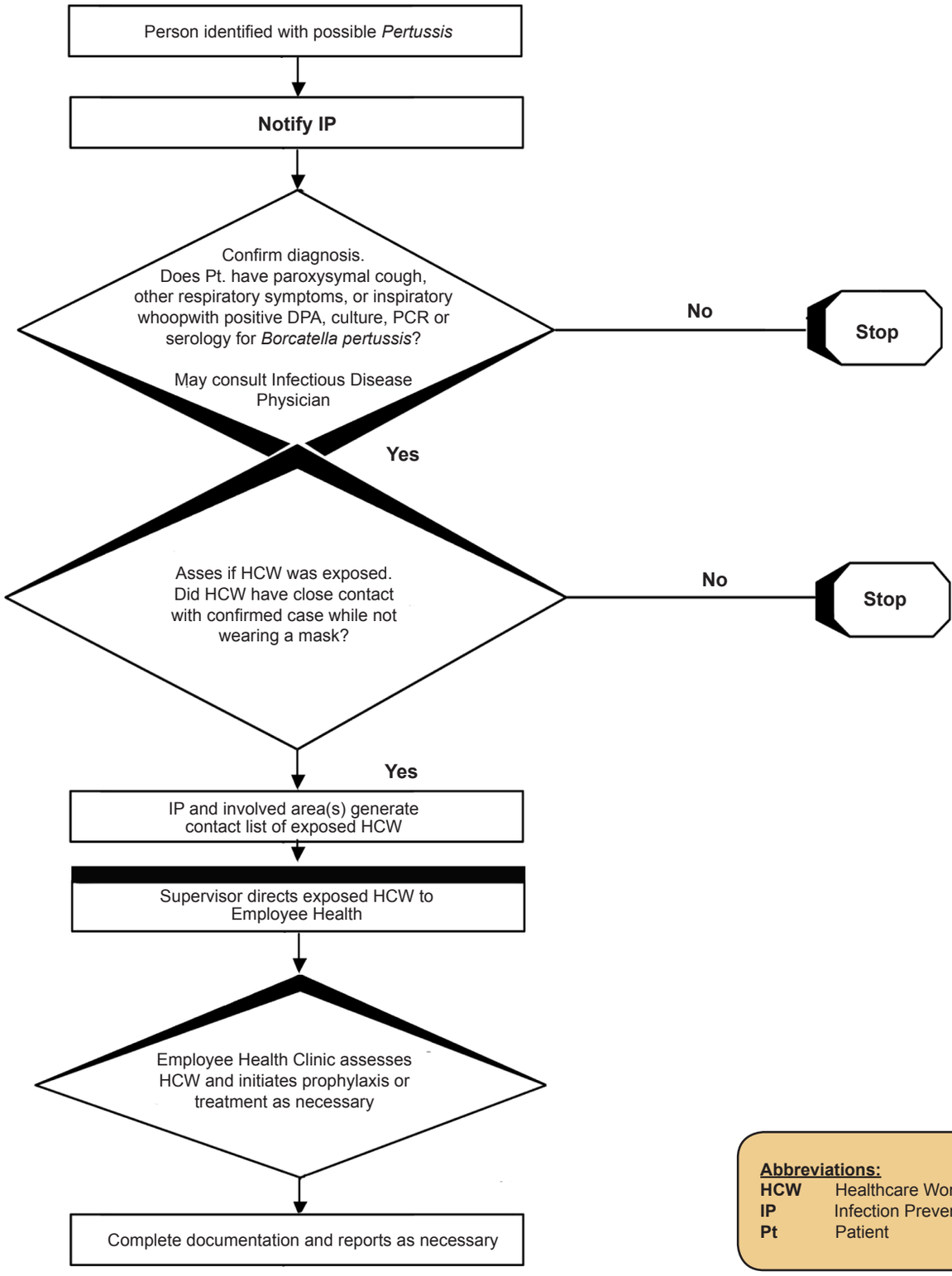
Appendix 6-VI-09: *Neisseria Meningitis* Exposure



Abbreviations:

HCW	Healthcare Workers
IP	Infection Preventionist
Pt	Patient

Appendix 7-VI-09: *Bordatella Pertussis* Exposure



Abbreviations:

HCW	Healthcare Workers
IP	Infection Preventionist
Pt	Patient

TITLE/DESCRIPTION:	INDEX NUMBER
MANAGEMENT OF PEDICULOSIS AND SCABIES EXPOSURE FOR HEALTHCARE WORKERS	**ICM - VI - 10**

EFFECTIVE DATE:	APPLIES TO:	ISSUING AUTHORITY:
01/01/2009 **01/01/2013** **01/01/2018**	**All GCC Countries**	**GULF COOPERATION COUNCIL – CENTRE FOR INFECTION CONTROL (GCC-CIC)**

DEFINITION

To provide guidelines for the management or diagnosis healthcare workers (HCWs) exposed to scabies and pediculosis (lice).

REFERENCE

1. Association for Professionals in Infection Control (APIC) and Epidemiology, Inc. (2014). Chapter 99: Parasites. In APIC Text of infection control and epidemiology (4th ed.).
2. Herwaldt LA, et. al. Exposure workups. Infection Control Hosp Epidemiol 2009;18:850-71. IPP: Management of Infectious Disease Outbreaks.

COMMENTS

1. The Employee Health Clinic (EHC) will assess HCWs who were exposed for prophylaxis, treatment and work exclusion and will notify Infection Control of any actions taken. When the EHC is closed, HCWs should seek medical attention in the Emergency Room. Expert consultation may be obtained from infection preventionists (IP) on weekdays or from the Infectious Disease Consultant-on-call during weekends and holidays.
2. Management of the following conditions is outlined:
   a. Scabies
   b. Pediculosis (Lice)

PROCEDURES

A. MANAGING SCABIES EXPOSURE
   1. PROCEDURE: Refer to **Appendix 1–VI-10.**
   2. EXPLANATION:
      a. Incubation period
         During 4-6 weeks if no previous infestation; 1-3 days in cases of re-infestation.
      b. Exposure criteria
         Direct skin-to-skin contact; minimal direct contact with crusted scabies can result in transmission.
      c. Period of communicability
         - Transmission can occur before the onset of symptoms.
         - A person remains infectious until treated.
      d. Employee health
         - Prescribe scabicide for all exposed HCWs.
         - Do not use Lindane for pregnant women.
      e. Work restrictions
         - Exposed: No restriction after one application of scabicide
         - Infested: Immediate restriction for 24 hours following treatment
      f. Prophylaxis
         Drug of choice: 5% permethrin; alternative drugs: lindane or crotamiton.

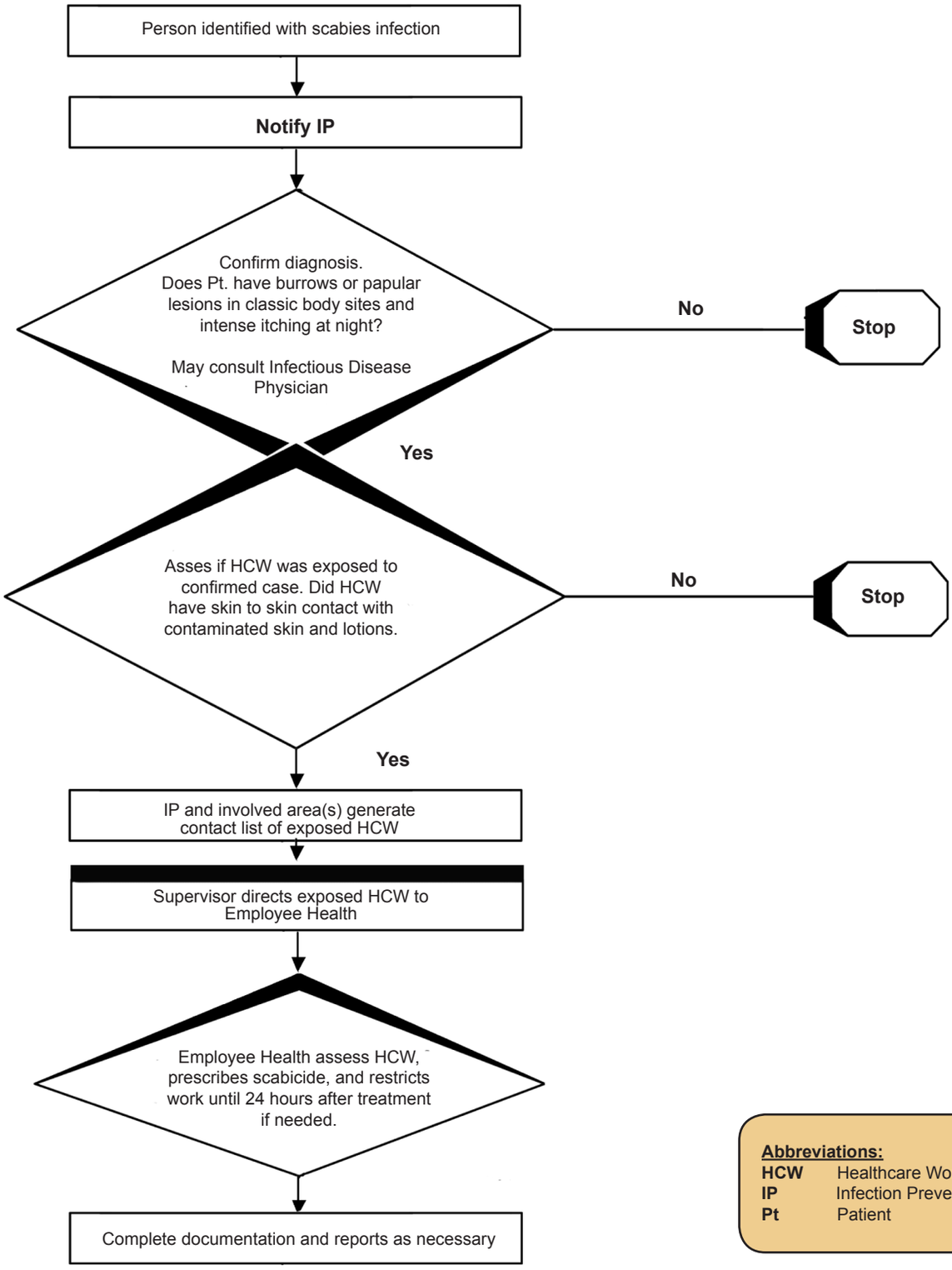
B. MANAGING PEDICULOSIS (LICE) EXPOSURE

1. PROCEDURE: Refer to **Appendix 2–VI-10**

2. EXPLANATION:

   a. Incubation period
      7-10 days.
   b. Exposure criteria
      - Head lice: hair-to-hair contact with an infested person. Sharing of personal items such as hats, helmets, brushes, combs and headsets, or earphones.
      - Body lice: contact with the bedding or clothes of an infested person without
      - Pubic lice: sexual contact.
   c. Period of communicability
      - As long as lice or eggs remain alive on an infested person, clothing, or personal items.
      - Head lice die within 24 to 48 hours after leaving a host.
      - Body lice may survive for up to 30 days in a patient's clothing or linen.
      - Survival time for lice away from the host ranges between 2 days and 1 month.
   d. Employee health
      Treat HCWs only if infested.
   e. Work restrictions
      - Exposed
        No restrictions.
      - Infested
        Immediate restriction until 24 hours after treatment
   f. Prophylaxis
      Not recommended.

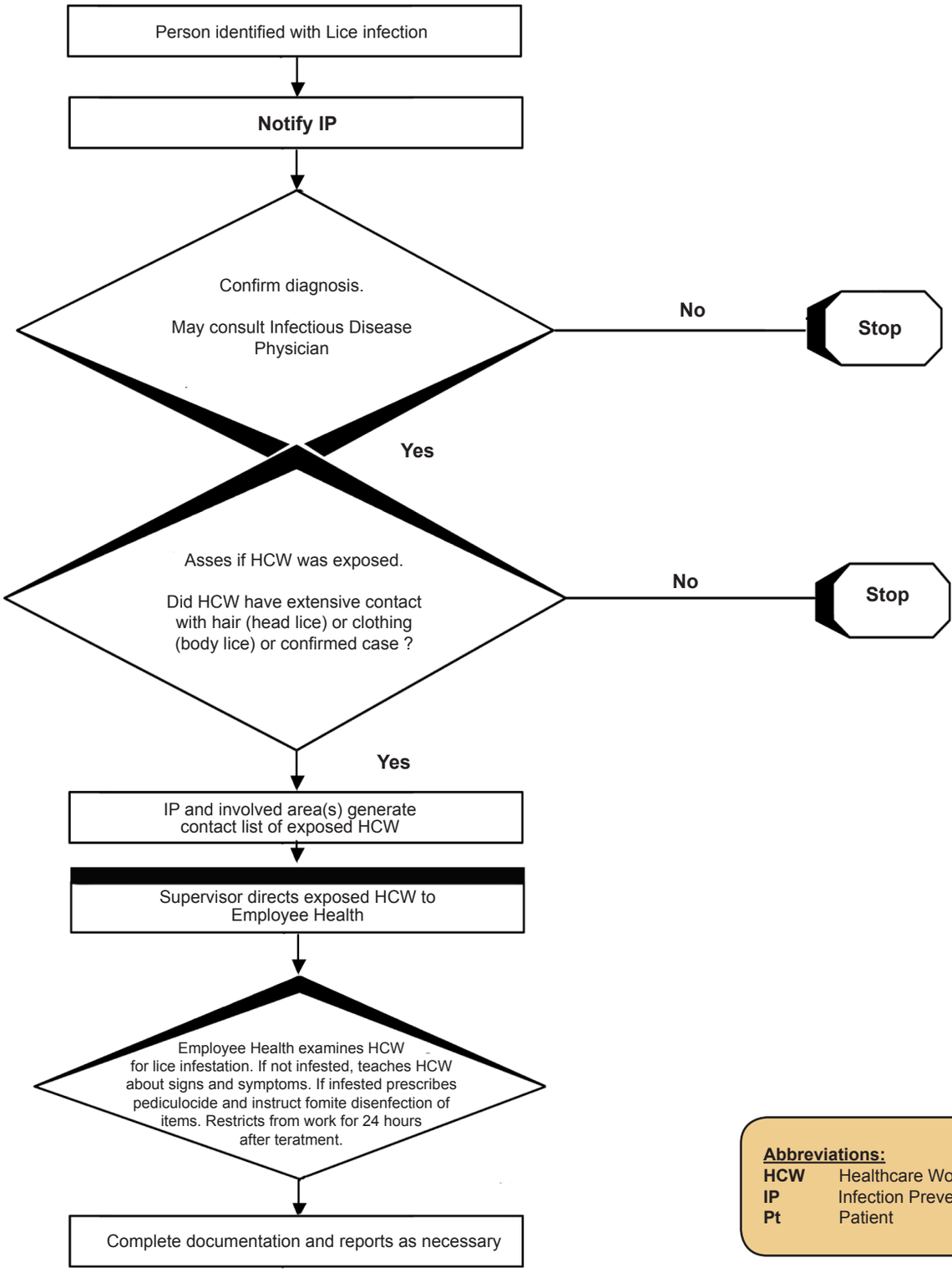
Appendix 1 - VI-10: Scabies Exposure



Abbreviations:

HCW	Healthcare Workers
IP	Infection Preventionist
Pt	Patient

Appendix 2 -VI-10: Pediculosis (Lice) Exposure



Abbreviations:

HCW	Healthcare Workers
IP	Infection Preventionist
Pt	Patient

Section 7: INFECTION CONTROL POLICIES IN SPECIAL SITUATIONS

TITLE/DESCRIPTION:	INDEX NUMBER
MANAGEMENT OF INFECTIOUS DISEASES OUTBREAKS	**ICM - VII - 01**

EFFECTIVE DATE:	APPLIES TO:	ISSUING AUTHORITY:
01/01/2009 **01/01/2013** **01/01/2018**	**All GCC Countries**	**GULF COOPERATION COUNCIL – CENTRE FOR INFECTION CONTROL (GCC-CIC)**

DEFINITION

To provide guidelines for managing infectious diseases outbreaks in the hospital, including early identification; initiation of appropriate control/containment measures to prevent the spread; and assignment of roles and responsibilities.

REFERENCE

Association for Professionals in Infection Control (APIC) and Epidemiology, Inc. (2014). Chapter 12: Outbreak Investigations. In APIC Text of infection control and epidemiology (4th ed.).

EQUIPMENT/MATERIAL

1. Microbiology and other relevant daily/weekly reports.
2. Data collection forms (computer program compatible).

COMMENTS

1. **An outbreak (cluster, epidemic)** is an increase in the incidence of a particular infection or colonization over the expected rate or when an unusual microbe or adverse event is recognized.
2. **Cluster** means an aggregation of cases in a given area over a particular period regardless of whether the number of cases is more than expected.
3. **Epidemic curve** is a graph in which the cases of a disease that occurred during an outbreak are plotted according to the time of onset of illness in each case.
4. **Case definition** is a standard set of criteria for deciding whether an individual should be classified as having the health condition of interest. A case definition includes clinical criteria and, particularly in the setting of an outbreak investigation, restrictions by time, place, and person.
5. **Hypothesis** is the best guess on the likely reservoir, sources, and mode of transmission of disease or infection.
6. **Line-listing** is a two-column list with variables in one column and the number and percentage of those who match that variable in the other column.
7. **Infection Prevention & Control (IP&C)** will monitor potential epidemics or influx of airborne infectious disease through routine surveillance of admission and syndrome surveillance provided by the Emergency Department (ED), and surveillance of microbiology results. Refer to **ICM-III-12** Management of Influx of Airborne Infectious Diseases.
8. **An Infectious Epidemic plan (IDEP)** of a specific emerging pathogen will be developed by the IP&C as the need arises. The IDEP will be made available and accessible to all healthcare workers.

PROCEDURE

Steps	Activity	Responsible Person(s)
Recognizing or confirming the existence of a potential outbreak	Review surveillance reports, patient's charts and microbiology records as an initial step in the investigation. a. Verify the diagnosis: i. Describe the initial concern ii. Promptly identify the source, method of spread, and causative organisms responsible for the outbreak b. Confirm that an outbreak exists: i. Use the case definition to find other cases ii. Based on the report gathered if indeed it represents an increase in the baseline, proceed with the next step	Infection Preventionist (IP) or any personnel recognizing a possible outbreak
Alerting key partners about the investigation	Notify the following: - Notify the Director of Infection Prevention & Control (IP&C) department or designee - Facility administration - Local and state public health officials - Micro laboratory - Other departments as appropriate	IP IP IP/Public Health Nurse (PHN) IP
Performing a Literature review	Literature review will help identify possible sources that might merit further investigation.	IP
Establishing an initial case definition	Develop specific criteria for the definition of a case. The initial case definition should be narrow enough to focus investigate efforts but broad enough to capture the majority of cases.	IP under the supervision of the IP&C Director or designee
Developing a methodology for case finding	A variety of sources can be used to find additional cases: a. If the case definition includes a laboratory result, then laboratory records can facilitate identification of possible cases. b. If outbreak involves healthcare associated infections (HAIs) or adverse event or a multidrug-resistant pathogen for facility is performing surveillance, infection control or surveillance records can be useful.	IP under the supervision of the IP&C Director or designee in collaboration with the micro laboratory and clinical staff
Preparing an initial line list	Develop a line list reviewing different sources of information, which might include medical records, patient location information (admission, discharge, and transfer data), and staff interview. Create an epidemic curve. In some instances, the shape of the epidemic curve will help identify the mode of transmission.	IP
Observing and reviewing potentially implicated patient care activities	It is the observations of practices that ultimately identify the cause. The t hogen and infection being investigated can also be an important factor. For example if the outbreak involves Aspergillus, careful observation of construction activities near patient care is needed. Focus on practice patterns and workflow that deviates from good infection prevention practices, facility or unit	IP

Consider whether environmental sampling should be performed	Recommendations: a. Perform these cultures after making the line list and doing observations so that they can focus on items that seem the most likely implicated b. Before obtaining any environmental cultures, coordinate with the micro laboratory staff to determine whether they are able to process the cultures and discuss optimal methods of obtaining them c. Culture only items that are possible vectors of transmission or the most likely reservoir for the organism (e.g., if outbreaks involve Pseudomonas – focus on liquid items)	IP in collaboration with the Micro laboratory staff
Implementing the initial control measures	Implement a variety of infection control measures including transmission-based precautions as needed throughout the course of the investigation. Reinforce education on compliance with general infection prevention and control recommendations Develop a plan of actions to ensure compliance.	IP with the director of infection control or designee
Steps to follow up investigation	- Refine the case definition - Continue case finding and surveillance - Regularly review control measures - Consider whether an analytical study should be performed	IP with the director of infection control or designee
Communication during and after an Outbreak Investigation	Prepare and disseminate a final report. a. You should include all findings and recommendations b. Should be shared with persons participating in the investigation and others as needed	IP with Director of infection control designee

Other actions that might necessitate involvement of other stakeholders in the healthcare facility depend on the type and magnitude of the outbreak.

Activity	Responsible Person(s)
Establish an ad-hoc committee to manage the potential outbreak.	Director of Infection Control, Infection Preventionists (IP), Director of Nursing Services, and others as deemed necessary
Advise Hospital Administration.	Director of Infection Control/Designee
Inform and assess patient contacts for prophylaxis.	Attending Physician, IP, Director of Infection Control/Designee
Direct HCWs to the Employee Health Clinic for assessment.	Infection control staff (for physicians), Nurse Manager (for other healthcare workers)
Assess HCWs for prophylaxis and work exclusion.	Employee Health Clinic
Designate infected and non-infected cohort areas as required. Move infected cohort to an alternate location as determined by census, patient status, and admitting needs.	Director of Infection Control/Designee, IP, Director of Nursing Services, Department Chairman
Declare unit/ward closure if necessary.	Director of Infection Control/Designee in consultation with Hospital Administration, Department Chairman, Director of Nursing Services

TITLE/DESCRIPTION:	INDEX NUMBER
MANAGEMENT OF INTRAVASCULAR (IV) LINES AND THERAPY	**ICM - VII - 02**

EFFECTIVE DATE:	APPLIES TO:	ISSUING AUTHORITY:
01/01/2009 01/01/2013 01/01/2018	**All GCC Countries**	**GULF COOPERATION COUNCIL – CENTRE FOR INFECTION CONTROL (GCC-CIC)**

DEFINITION

To provide guidelines regarding appropriate catheters and catheter sites, aseptic insertions, and maintenance of catheter sites.

REFERENCES

1. Association for Professionals in Infection Control (APIC) and Epidemiology, Inc. (2014). Chapter 34: Intravascular device infection. In APIC Text of infection control and epidemiology (4th ed.).
2. Association for Professionals in Infection Control (APIC) and Epidemiology, Inc. (2014). Chapter 38: Burns. In APIC Text of infection control and epidemiology (4th ed.).
3. Centers for Disease Control and Prevention (CDC). Guidelines for preventing the transmission of mycobacterium tuberculosis in healthcare settings. MMWR, 2005.
4. Centers for Disease Control and Prevention (CDC). Guideline for prevention of intravascular device-related infections. Recommendations and reports, MMWR, 2002/51(RR10)
5. O'Grady NP, Alexander M, Burns L, et al. Guidelines for the Prevention of Intravascular Catheter-Related Infections, 2011. HICPAC. Centers for Disease Prevention and Control (CDC). Downloaded from: http://www.cdc.gov/hicpac/pdf/guidelines/bsi-guidelines-2011.pdf.
6. SHEA/IDSA practice recommendations, Strategies to Prevent Central-line Associated Bloodstream Infections in Acute Care Hospitals: 2014 update. Infection control and hospital epidemiology. July 2014;35:7.

COMMENTS

1. Intravascular device (IVD)/line is used as a means of direct access to the patient's vascular system for the administration of pharmaceutical agents or fluids that cannot be administered as effectively by other means. IVD is an integral part of patient care.
2. Central venous catheter (CVC) may be used to access the great veins for infusion of irritant solutions or to facilitate hemodynamic monitoring. Central venous lines are also used to provide prolonged venous access.
3. All lines provide a potential portal of entry for microorganisms to enter the vascular system and cause local or systemic infectious complications such as septic thrombophlebitis, bloodstream infections, and metastatic infections. Catheter-related infections are associated with increased morbidity, mortality, medical costs and prolonged hospitalization. The following recommendations, if followed, will reduce the occurrence of catheter-related infections.
4. Follow IVD care protocols and maintain a consistent, high level of aseptic technique during catheter insertion; HCWs must adhere strictly to all care protocols during follow-up care of the catheter. When adherence to aseptic technique cannot be ensured (i.e., catheters inserted during a medical emergency), the catheter will be replaced as soon as possible within 48 hours, taking into consideration the stability of the patient.

5. Ensure all necessary equipment is present for IV or CVC insertion by creating a checklist before the procedure.
6. All intravenous devices provide a potential portal of entry for microorganisms to enter the vascular system and cause local or systemic infectious complications such as septic thrombophlebitis, bloodstream infections, and metastatic infections. When feasible, it is always preferred to switch from intravenous to oral therapy as soon as patients are clinically stable.

PROCEDURE

A. Education, Training and Staffing

1. Educate HCWs regarding indications for intravascular catheter use; proper procedures for the insertion and maintenance of intravascular catheters; and clean or surgical techniques to prevent intravascular catheter-related infections. Refer to **ICM-II-05** Aseptic Technique.
2. Periodically assess knowledge of and adherence to guidelines of all personnel involved in the insertion and maintenance of intravascular catheters.
3. Designate only trained personnel who demonstrate competence in the insertion and maintenance of peripheral and central intravascular catheters.
4. When possible, use simulation training for insertion and maintenance techniques.
5. Ensure appropriate nursing staff levels in intensive care units.

B. Healthcare Worker Safety (Standard Precautions)

1. Wear sterile gloves to avoid sharps injury and to protect hands against blood and body fluid exposure.
2. Wear a surgical mask with an eye shield or goggles to protect against any potential blood or body fluid splash onto the mucous membranes of the face.
3. Do not manipulate or recap used needles and promptly dispose of them into hospital-approved sharps containers kept near the location of the procedure.

C. Hand Hygiene and Aseptic Technique

1. Perform hand hygiene prior to device insertion and subsequent handling of the device or its administration, such as before and after palpating, inserting, replacing, or dressing the device.
2. Do not palpate insertion sites after application of antiseptic. Maintain aseptic technique for the insertion and care of intravascular catheters.
3. Wear clean gloves, rather than sterile gloves, for the insertion of peripheral intravascular catheters, if the access site is not touched after the application of skin antiseptics.
4. Wear sterile gloves for the insertion of arterial, central, and midline catheters.
5. Use new sterile gloves before handling the new catheter when guidewire exchanges are performed.
6. Wear either clean or sterile gloves when changing the dressing on intravascular catheters.

D. Maximal Sterile Barrier Precautions

1. Use maximal sterile barrier precautions, including the use of a cap, mask, sterile gown, sterile gloves, and sterile full body drape, for the insertion of CVCs, PICCs, or guidewire exchange.
2. Use sterile sleeve to protect pulmonary artery catheters during insertion.

E. Selection of Catheters and Sites
Peripheral and Midline Catheter Recommendations

1. In adults, use an upper extremity site for catheter insertion. Replace a catheter inserted in a lower extremity site to an upper extremity site, as soon as possible.
2. In pediatric patients, use the upper or lower extremities or the scalp (in neonates or young infant) as the catheter insertion site.
3. Select catheters on the basis of intended purpose and duration of use; known infectious and non-infectious complications (i.e., phlebitis and infiltration); and, experience of the individual catheter operators.
4. Avoid the use of steel needles for the administration of fluids and medications that might cause tissue necrosis if extravasation occurs.
5. Use a midline catheter or peripherally inserted central catheter (PICC), instead of a short peripheral catheter, when the duration of IV therapy will likely exceed six days.
6. Evaluate the catheter insertion site daily by palpation through the dressing to discern tenderness and by inspection if a transparent dressing is in use.
7. Remove peripheral venous catheters if the patient develops signs of phlebitis (e.g., warmth, tenderness, erythema or palpable venous cord); infection; or malfunctioning catheter.
8. Replace the catheter as soon as possible when adherence to aseptic technique cannot be ensured (i.e., within 48 hours).

F. Skin Preparation

1. Prepare the skin with an antiseptic approved by the Infection Prevention and Control (IP&C) Department. A 2% chlorhexidine gluconate (CHG) preparation with alcohol can be used before central line insertion and during change of dressing.
2. If there is a contraindication to CHG an alternative antiseptic with 70% alcohol, tincture of iodine, or an iodophor can be used on patients. Follow these procedures when preparing the site:
   a. Perform hand hygiene.
   b. Don gloves.
   c. If the intended insertion site is visibly soiled, clean with soap and water before applying the antiseptic (i.e., >2% CHG preparation with alcohol) using a back-and-forth motion for at least 30 seconds to remove flora that would otherwise be introduced into the vascular system.
   d. Do not palpate the insertion site after the skin has been prepared with antiseptic unless the practitioner is employing maximum barrier precautions in a sterile field to maintain asepsis
3. Antiseptics should be allowed to dry according to the manufacturer's recommendation prior to placing the catheter.

G. Catheter Site Dressing Management

1. Use either sterile gauze or sterile transparent, semi-permeable dressing to cover the catheter site.
2. If the patient is diaphoretic or if the site is bleeding or oozing, use a gauze dressing until this is resolved.
3. Replace catheter site dressing if the dressing becomes damp, loosened, or visibly soiled.

4. Do not use topical antibiotic ointment or cream on insertion sites, except for dialysis catheters, because of their potential to promote fungal infections and antimicrobial resistance.
5. Do not submerge the catheter or catheter site in water. Showering should be permitted if precautions can be taken to reduce the likelihood of introducing organisms into the catheter (i.e., if the catheter and connecting device are protected with an impermeable cover during the shower).
6. Replace dressings used on short-term central venous catheter (CVC) sites every 2 days for gauze dressing.
7. Replace dressing used on short-term CVC sites at least every 7 days for transparent dressing, except for pediatric patient with risk of dislodging the catheter that may outweigh the benefit of changing the dressing.
8. Replace transparent dressings used on tunneled or implanted CVC sites no more than once a week (unless the dressing is soiled or loose), until the insertion site has healed.
9. Ensure that the catheter site care is compatible with the catheter material.
10. Use a sterile sleeve for all pulmonary artery catheters.
11. Use a chlorhexidine-impregnated sponge for temporary short-term catheters in patients older than 2 months of age if the CLABSI rate is not decreasing despite adherence to basic prevention measures, including education and training on appropriate use of CHG for skin antisepsis.
12. Monitor the catheter sites visually when changing the dressing or by palpation through an intact dressing on a regular basis, depending on the clinical situation of the individual patient. If patients have tenderness at the insertion site, fever without obvious source, or other manifestations suggesting local or bloodstream infection, the dressings should be removed to allow thorough examination.
13. Encourage patient to report any changes in their catheter site or any new discomfort to their provider.

H. Central Venous Catheters (CVC)

1. Points to remember:
   a. Insert CVCs only when indicated, remove any intravascular line when no longer needed.
   b. Use an all-inclusive catheter kit or cart.
   c. Use single-lumen CVC unless multiple ports are essential for patient care.
   d. Always use a CVC insertion checklist such as the central line bundle to ensure adherence to infection prevention practices at the time of insertion.
   e. CVC insertion should be observed by a nurse or physician who has received appropriate education to ensure that aseptic technique is maintained.
   f. HCWs should be empowered to stop the procedure if breaches in aseptic technique are observed until corrective actions are taken.
2. At insertion, clean hands by using an alcohol-based waterless product or antiseptic soap and water.
3. Site and catheter selection
   a. Weigh the risks and benefits of placing a device at a recommended site to reduce infectious complications against the risk of mechanical complications (e.g., pneumothorax, subclavian artery puncture, thrombosis, hemothorax).

b. Avoid using the femoral vein for central venous access in adult patients.
c. Use a subclavian site rather than a jugular or a femoral site, in adult patients to minimize infection risk for non-tunneled CVC placement.
d. Avoid the subclavian site in hemodialysis patients and patients with advanced kidney disease to avoid subclavian vein stenosis.
e. Use fistula or graft in patient with chronic renal failure instead of a CVC for permanent access for dialysis.
f. Use ultrasound guidance to place CVC (if this technology is available) to reduce the number of cannulation attempts and mechanical complications. Ultrasound guidance should only be used by those fully trained in its technique.

4. After insertion, dressing the site:
   a. Use a CHG containing dressing for CVCs in patients over 2 months of age, and change it every 7 days or immediately if it is soiled, loose, or damp.
   b. Use gauze dressing if blood is oozing from the insertion site and if patient is diaphoretic and change it every 2 days or earlier if the dressing becomes soiled, loose or damp.
5. Accessing the site:
   a. Perform hand hygiene.
   b. Always disinfect catheter hubs before every access to the port, needleless connectors, and injection ports before accessing the catheter. Disinfection involves applying mechanical friction for no less than 15 seconds using the hospital-approved antiseptics.
   c. Whenever available, use an antiseptic-containing hub/connector cap or port protector to cover connectors and use according to manufacturer's instructions.
6. Special approaches for prevention of CLABSI
   a. Bathe ICU patients older than 2 months of age with a CHG preparation on a daily basis. Use with caution in premature infants or infants under 2 months of age as this product may cause irritation or chemical burns.
   b. Use antiseptic- or antimicrobial–impregnated central venous catheters for adult patients.
   c. Use CHG–containing sponge dressings for CVCs in patients older than 2 months of age.
   d. Use antimicrobial locks for CVCs.

I. Replacement of CVCs, Including PICCs and Hemodialysis Catheters

1. Do not routinely replace CVCs, PICCs, hemodialysis catheters, or pulmonary artery catheters to prevent catheter-related infections.
2. Do not remove CVCs or PICCs on the basis of fever alone. Use clinical judgment regarding the appropriateness of removing the catheter if infection is evidence elsewhere or if a non-infectious cause of fever is suspected.
3. Do not use guidewire exchanges routinely for non-tunneled catheters to prevent infection.
4. Do not use guidewire exchanges to replace a non-tunneled catheter suspected of infection.
5. Use a guidewire exchange to replace a malfunctioning non-tunneled catheter if no evidence of infection is present.
6. Use new sterile gloves before handling the new catheter when guidewire exchanges are performed.
7. Replacement of peripheral and mid-line catheter:
   a. There is no need to replace peripheral catheters more frequently than every 72-96 hours to reduce risk of infection and phlebitis in adults.

b. Replace peripheral catheters in children only when clinically indicated.
c. Replace midline catheters only when there is a specific indication

J. Umbilical Catheters

1. Remove and do not replace umbilical artery catheters if any signs of catheter-related bloodstream infections (CRBSI); vascular insufficiency in the lower extremities; or thrombosis are present.
2. Remove and do not replace umbilical venous catheters if any signs of CRBSI or thrombosis are present.
3. Clean the umbilical insertion site with an antiseptic before catheter insertion. Avoid tincture of iodine because of the potential effect on the neonatal thyroid. Other iodine-containing products (i.e., povidone-iodine) can be used.
4. Do not use topical antibiotic ointment or cream on umbilical catheter insertion sites because of the potential to promote fungal infections and antimicrobial resistance.
5. Add low-dose heparin (0.25-1.0 U/ml) to the fluid infused through the umbilical arterial catheters.
6. Remove umbilical catheters as soon as possible when no longer needed or when any sign of vascular insufficiency to the lower extremities is observed. Optimally, umbilical artery catheters should not be left in place >5 days.
7. Umbilical venous catheters should be removed as soon as possible when no longer needed, but can be used up to 14 days if managed aseptically.

K. Peripheral Arterial Catheters and Pressure Monitoring Devices for Adult and Pediatric Patients

1. In adults, use the radial, brachial, or dorsalis pedis sites over the femoral or axillary sites of insertion to reduce the risk of infection.
2. In children, do not use the brachial site. Use the radial, dorsalis pedis, and posterior tibial sites over the femoral or axillary sites.
3. Use a minimum cap, mask, sterile gloves and small sterile fenestrated drape during peripheral arterial catheter insertion.
4. Use a minimum cap, mask, sterile gloves and small sterile fenestrated drape during peripheral arterial catheter insertion.
5. Use maximal barrier precautions during axillary or femoral artery catheter insertion.
6. Replace arterial catheters only when there is a clinical indication.
7. Remove arterial catheter as soon as it is no longer needed.
8. Use disposable, rather than reusable transducer assemblies, when possible.
9. Do not routinely replace arterial catheters to prevent catheter-related infections.
10. Replace disposable or reusable transducers at 96-hours intervals. Replace other components of the system (including the tubing, continuous flush device, and flush solution) at the time the transducer is replaced.
11. Keep sterile all components of the pressure monitoring system (including calibration devices and flush solution).
12. Minimize the number of manipulation and entries into the pressure monitoring system.

13. Use a closed flush system (i.e., continuous flush), rather than an open system (i.e., one that requires a syringe and stopcock), to maintain the potency of the pressure monitoring catheters.
14. When the pressure monitoring system is accessed through a diaphragm rather than a stopcock, scrub the diaphragm with an appropriate antiseptic before accessing the system.
15. Do not administer dextrose-containing solutions or parenteral nutritional fluids through the pressure monitoring circuit.
16. Sterilize reusable transducers according to the manufacturer's instruction if the use of disposable transducer is not feasible.

L. Replacement of Administration Sets

1. In patients not receiving blood, blood products, or fat emulsions, replace administration sets that are continuously used, including secondary sets and add-on devices no more frequently than at 96-hour intervals.
2. Tubing sets used for the administration of blood products will be replaced every 4 hours.
3. Tubing sets used for the administration of lipid emulsions will be replaced every 24 hours.
4. Tubing sets used to administer total parenteral nutrition (TPN) will be replaced within 24 hours of initiating the infusion.
5. Needle components will be changed as frequently as administration sets.

M. Needleless Intravascular Catheter Systems

1. Change the needleless connectors no more frequently than every 72 hours or according to manufacturers' recommendations for the purpose of reducing infection rates.
2. Ensure that all components of the system are compatible to minimize leaks and breaks in the system.
3. Minimize contamination risk by scrubbing the access port with an appropriate antiseptic and access the port only with sterile devices.
4. Use a needleless system to access IV tubing.
5. When needleless systems are used, a split septum valve may be preferred over some mechanical valves due to the increased risk of infection with mechanical valves.

N. Intravenous Injection Ports

Disinfect the injection ports, catheter hubs, and needless connectors with an alcoholic chlorhexidine gluconate solution or 70% alcohol before accessing the system to reduce contamination.

O. Preparation and Quality Control of Intravenous Admixtures

1. Mix all parenteral fluids in the pharmacy only.
2. Check all containers of parenteral fluid for visible turbidity, leaks, cracks, particulate matter, and the manufacturer's expiration date before use.
3. Use single-dose vials for parenteral additives or medications whenever possible.
4. If multidose vials are used:
   a. Note the date and time on the multidose vials once opened.

b. Refrigerate the multidose vial after opening if recommended by the manufacturer.
c. Cleanse the rubber diaphragm of the multidose vial with alcohol before inserting a device into the vial.
d. Use a sterile device each time a multidose vial is accessed and avoid touch contamination of the device prior to penetrating the rubber diaphragm.
e. Discard multidose vials when suspected or visible contamination occurs, when the manufacturer's expiration date is reached, or when the nursing policy expiration date is reached.

P. Documentation

Document the following information for all procedures related to IV therapy in the patient's record:

1. Date and time of insertion.
2. Type of device used and site of insertion.
3. Type of fluid administered.
4. Name(s) of person(s) who inserted the device.
5. Date and time of device termination or guidewire exchange.

TITLE/DESCRIPTION:	INDEX NUMBER
ANTIMICROBIAL SURGICAL PROPHYLAXIS	**ICM - VII - 03**

EFFECTIVE DATE:	APPLIES TO:	ISSUING AUTHORITY:
01/01/2009 01/01/2013 01/01/2018	**All GCC Countries**	**GULF COOPERATION COUNCIL – CENTRE FOR INFECTION CONTROL (GCC-CIC)**

DEFINITION

Antimicrobial prophylaxis is used to reduce the incidence of postoperative wound infection and is generally indicated for the following types of operations:

Clean-contaminated operative wound in which the respiratory, alimentary, genital, or urinary tract is entered under controlled conditions without unusual contamination. Specifically, operations involving the biliary tract, appendix, vagina, and oropharynx are included in this category, provided that no evidence of infection or major break in technique is encountered.

Clean non infected operative wounds in which no inflammation is encountered and the respiratory, alimentary, genital, or uninfected urinary tract is entered. Example, an intravascular prosthesis or prosthetic joint is inserted, cardiac operations, including pacemaker placement and vascular surgery, and most neurosurgical operations.

Antimicrobial prophylaxis is not indicated for an operation classified as dirty or contaminated.

REFERENCES

1. American Society of Health-system Pharmacist (ASHP) therapeutic guidelines (2013).
2. The Johns Hopkins Hospital Antimicrobial Stewardship Program. Antibiotic Guidelines 2015-2016: Treatment recommendations for adult inpatients. Also available online at https://www.hopkinsmedicine.org/amp/guidelines/antibiotic_guidelines.
3. The Sanford Guide to Antimicrobial Therapy. (43rd ed.). 2013.

COMMENTS

The following points should be considered when using antimicrobial prophylaxis:

1. Neonatal doses are not included in this policy. Prophylactic antibiotics should be administered within one (1) hour prior to surgical incision and all antibiotic administration must be complete at the time of surgical incision.
2. Cephalosporins can be administered over 3-5 minutes IV push just before the procedure and will achieve appropriate skin levels in minutes. Clindamycin should be infused over 10-20 minutes. If vancomycin or ciprofloxacin is used, the infusion should begin 60-120 minutes before the incision.
3. Antibiotics must be discontinued as per provided recommendations. Patients who have documented infections at the time of surgery or within 48 hours postoperatively should receive empiric therapy.
4. Administration should be repeated intraoperatively if the surgical procedure is prolonged (i.e., lasting more than 4 hours) or in the case of a major blood loss.
5. Re-administration is not warranted in patients for whom the half-life of the antibiotic is prolonged (e.g., patients with renal failure).
6. Cefazolin is an appropriate first-line agent for most surgical procedures.

7. Routine use of vancomycin is discouraged.
8. MRSA colonized patients should be offered decolonization before any elective surgical procedures especially cardiothoracic surgeries. Antibiotics should cover the predominant flora of the operative site: Staphylococcus and streptococci for most cases. Anaerobes and Enterobacteriaceae for gastrointestinal cases
9. In patients with penicillin and cephalosporin allergies, clindamycin or vancomycin may be used. Gentamicin or ciprofloxacin can be added if gram-negative coverage is required.
10. Patients receiving pre-operative antibiotics generally do not need additional antibiotics for endocarditis prophylaxis.
11. Antibiotic prophylaxis to prevent endocarditis solely is not recommended for genitourinary or gastrointestinal tract procedures.
12. Antibiotic prophylaxis is recommended for the following dental procedures ONLY manipulation of gingival tissues or periapical region of teeth and perforation of oral mucosa.

Table 1-VII-03: Recommended Doses and Redosing Intervals for Commonly Used Antimicrobials for Surgical Prophylaxis

Antimicrobial	Recommended dose in adults with normal renal functions	Recommended dose in Pediatrics with normal renal functions	Redosing frequency intraoperatively
Cefazolin	< 120 kg : 2g ≥ 120 kg : 3g	30 mg/kg	Q4H(Q2H for Cardiac surgery)
Cefuroxime	1.5 g	50 mg/kg	Q4H
Ciprofloxacin	400 mg	10 mg/kg	NA
Clindamycin	900 mg	10 mg/kg	Q6H
Gentamicin	5 mg/kg	2.5 mg/kg	NA
Metronidazole	500 mg	15 mg/kg	Q8H
Vancomycin	< 70 kg: 1 g 71-99 kg: 1.25 g > 100 kg: 1.5 g	15 mg/kg (maximum 1gm)	Q12H

PROCEDURES

Cardiac Procedures	COMMON PATHOGEN	RECOMMENDED REGIMEN	ALTERNATIVE REGIMEN
• Median sternotomy • Prosthetic valve placement • Coronary artery bypass • Congenital repairs	• Coagulase-negative Staphylococcus • Staphylococcus aureus • Enterobacteriaceae	Cefazolin	Vancomycin
• Pacemaker/AICD placement • Ventricular Assist Device • Arterial patch • Ventriculoatrial shunts		Cefazolin	Vancomycin

• Median sternetomy, heart transplant **with previous VAD or MRSA** colonization/infection • Pacemaker/AICD placement **with MRSA colonization/infection** • VAD insertion **with MRSA colonization/infection**		Cefazolin PLUS Vancomycin	Vancomycin
• VAD insertion with open chest		Cefazolin PLUS Vancomycin until closure	Vancomycin PLUS Ciprofloxacin until closure
• Lung transplant		Cefepime	Consult transplant ID

Thoracic Non-Cardiac	COMMON PATHOGEN	RECOMMENDED REGIMEN	ALTERNATIVE REGIMEN
• Pulmonary resection, lobectomy, pneumonectomy, thoracotomy, VATS	• Coag- negative Staph • Staphylococcus aureus • Enterobacteriaceae	Cefazolin	Clindamycin
• Closed chest tube insertion for chest trauma with hemo- or pneumothorax		Cefazolin	Clindamycin + Gentamicin
• Esophageal cases		Cefazolin PLUS Metronidazole	Clindamycin

Vascular Procedures	COMMON PATHOGEN	RECOMMENDED REGIMEN	ALTERNATIVE REGIMEN
• Arterial surgery involving the abdominal aorta, a prosthesis or a groin incision • Carotid endarterectomy	• S. aureus • Coagulase-negative Staph • Enterobacteriaceae	Cefazolin	Vancomycin + Gentamicin
• Brachial artery repair with placement of prosthetic material • Lower extremity amputation		Cefazolin	Vacomycin + Gentamicin
Carotid and brachiocephalic procedures without prosthetic graft		Prophylaxis not recommended	Prophylaxis not recommended

Neurosurgery	COMMON PATHOGEN	RECOMMENDED REGIMEN	ALTERNATIVE REGIMEN
• Craniotomy • Skull fracture • CSF leak • Penetrating trauma • CSF shunt • Ventriculostomy placement	• Staphylococcus aureus • Coagulase-negative Staph	Cefazolin	Vancomycin

Spinal Surgery	COMMON PATHOGEN	RECOMMENDED REGIMEN	ALTERNATIVE REGIMEN
• Laminectomy	• Staphylococcus aureus • Coagulase-negative Staph	Cefazolin	Vancomycin
• Spinal fusion (insertion of foreign material)		Cefazolin	Vancomycin Or Clindamycin
• Spinal fusion **with MRSA colonization/ infection**		Cefazolin PLUS Vancomycin	Vancomycin
• Transsphenoidal procedures		Ceftriaxone	Moxifloxacin 400 mg over 60 minutes
Orthopedic Procedures	**COMMON PATHOGEN**	**RECOMMENDED REGIMEN**	**ALTERNATIVE REGIMEN**
• Diagnostic or operative arthroscopy, clean operations involving hand, knee, or foot		Cefazolin	Vancomycin
• Open reduction of fracture	• Staphylococcus aureus • Coagulase-negative Staph	Cefazolin	Vancomycin Or Clindamycin
• Fracture with internal fixation (nails, screws, plates)		Cefazolin	Vancomycin
• Total joint replacement		Cefazolin	Vancomycin
• Open fractures (considered contaminated)		Institute treatment rather than prophylaxis	
• Total joint replacement **with MRSA colonization / infection**		Cefazolin PLUS Vancomycin	Vancomycin
• Lower limb amputation		Cefazolin PLUS Metronidazole	Clindamycin PLUS Gentamicin
Head and Neck	**COMMON PATHOGEN**	**RECOMMENDED REGIMEN**	**ALTERNATIVE REGIMEN**
• Incision through oral, sinus, or pharyngeal mucosa • Tonsillectomy • Parotid surgery	• Staphylococcus aureus • Streptococcus spp. • Oral anaerobes	Cefazolin Plus Metronidazole	Clindamycin or Vancomycin + Metronidazole
• Major neck dissection (look above)		Cefazolin	Clindamycin
• Reconstructive procedure with prosthesis placement		Cefazolin PLUS Metronidazole	Clindamycin
• Adenoidectomy, rhinoplasty, tumor-debulking, or mandibular fracture repair		Cefazolin PLUS Metronidazole or Clindamycin	Clindamycin

Gastrointestinal	COMMON PATHOGEN	RECOMMENDED REGIMEN	ALTERNATIVE REGIMEN
• Gastroduodenal procedures • Gastric resection • Gastroplasty • Esophageal (high risk only, obstruction, decreased gastric acidity or motility, morbid obesity, gastric ulcer or malignant hemorrhage) • Percutaneous endoscopic gastrostomy (PEG)	• Gram-positive cocci • Enterobacteriaceae	Cefazolin	Clindamycin + Gentamicin
• Biliary tract (In high-risk patients > 70 years of age) - common duct stone - obstructive jaundice - acute cholecystitis - non-functioning gallbladder - ERC	• Enterobacteriaceae • Enterococcus spp. • Clostridia	Cefazolin	Clindamycin + Gentamicin
• Procedures involving entry into lumen of upper GI tract, gastric bypass procedures, pancreaticoduodenectomy, highly selective vagotomy, Nissen fundoplication • Hepatectomy		Cefazolin + Metronidazole	Clindamycin +/- Gentamicin
• Colorectal • Appendectomy (non-perforated) – (if complicated or perforated, treat as secondary peritonitis)	• Enterobacteriaceae • Enterococci	**Adult:** Cefazolin PLUS Metronidazole **Pediatric:** Cefazolin PLUS Metronidazole	**Adult:** Clindamycin + Gentamicin **Pediatric:** Clindamycin + Gentamicin
• Perforated viscus		Institute treatment rather than prophylaxis	
• Whipple procedure or pancreatectomy		Cefazolin PLUS Metronidazole	Clindamycin + Ciprofloxacin
• Small bowel procedures		Cefazolin PLUS Metronidazole	Clindamycin + Gentamicin

Gynecologic Surgery	COMMON PATHOGEN	RECOMMENDED REGIMEN	ALTERNATIVE REGIMEN
• Vaginal, abdominal, laparoscopic hysterectomy • Oncology Procedure	• Enterobacteriaceae • Group B streptococci • Enterococcus spp. • Anaerobes	Cefazolin Cefazolin PLUS Metronidazole	Clindamycin + Gentamicin Clindamycin + Gentamicin
• Cesarean section		Cefazolin	Clindamycin + Gentamicin
• Abortion		Doxycycline 100 mg PO 1 hr pre-abortion and 200 mg PO ½ hr post-abortion	

Genitourinary	COMMON PATHOGEN	RECOMMENDED REGIMEN	ALTERNATIVE REGIMEN
• Cystoscopy alone (high risk) - Urine culture positive or unavailable - Pre-operative catheter insertion - Placement of prosthetic material • Cystoscopy with manipulated material • Cystoscopy with manipulation of upper tract • Prostatectomy (TURP or peritoneal)	• Enterobacteriaceae • Enterococci	**Adult:** Ciprofloxacin 500 mg PO 2 hr pre-op or Ciprofloxacin 400 mg IV 1-2 hr pre-op **Pediatric:** Trimethoprim-Sulfamethoxazole (TMP-SMX) 6 mg/kg PO 2 h pre-op or Cefazolin 30 mg/kg (max 1 gm) IV pre-op	Gentamicin Clindamycin (for Prostatectomy)
• Lithotripsy • Nephrectomy • Adrenalectomy • Open or laparoscopic surgery		Cefazolin	Gentamycin (Clindamycin for Nephrectomy)
• Ileal conduit	• Enterobacteriaceae • Anaerobes	Cefazolin plus Metronidazole	Clindamycin plus Gentamicin
Transrectal prostate biopsy (look above)		Cafazolin PLUS Metronidazole	Ciprofloxacin OR (Gentamicin + Metronidazole)
• Penile or other prosthesis		Cefazolin OR (Vancomycin +- Gentamicin)	(Clindamycin OR Vancomycin)+- Gentamicin

Plastic Surgery	COMMON PATHOGEN	RECOMMENDED REGIMEN	ALTERNATIVE REGIMEN
• Reconstructive surgery, clean with risk factors or clean contaminated • Tissue expander insertion/implants/all flaps	• Staphylococcus aureus • Streptococcus spp.	Cefazolin	Clindamycin
• Rhinoplasty		Cefazolin	Clindamycin

Inguinal Hernia	COMMON PATHOGEN	RECOMMENDED REGIMEN	ALTERNATIVE REGIMEN
• Complicated, recurrent mesh placement	• Staphylococcus aureus • Coagulase-negative Staph • Streptococcus spp.	Cefazolin	Clindamycin
• Complicated, emergent or repeat inguinal hernia repair		Cezolin PLUS Metronidazole	Clindamycin +- Gentamicin

Breast	COMMON PATHOGEN	RECOMMENDED REGIMEN	ALTERNATIVE REGIMEN
• Mastectomy involving placement of prosthetic material, saline implant, and/or tissue expander • Mastectomy with lymph node dissection	• *Staphylococcus aureus* • Coagulase-negative *Staph*	Cefazolin	Clindamycin + Gentamicin

Interventional Radiology	COMMON PATHOGEN	RECOMMENDED REGIMEN	ALTERNATIVE REGIMEN
• Biliary/GI procedure, including radio ablation or splenic embolization	• S.aureus • Coagulase-negative Staph • Gram-negative rods	Cefazolin plus Metronidazole	Clindamycin + Gentamicin
• Urological procedure (not ablation)		Cefazolin	Gentamicin
• Implantable venous access port (*e.g.,* mediport)		Cefazolin	Clindamycin
• Lymphangiogram, vascular malformation ablation, fibroid treatment		Cefazolin	Clindamycin
• Chemo embolization; fibroid/urineartery embolization; percutenaous liver/renal/lung ablation; vascular malformation embolization		No prophylaxis	

Ophthalmic	COMMON PATHOGEN	RECOMMENDED REGIMEN	ALTERNATIVE REGIMEN
Ophthalmic procedures	• Staphylococcus aureus • Coagulase-negative Staph • Streptococci • Enterobacteriaceae • Pseudomonas spp.	Ophthalmic drops: • Gentamicin • Tobramycin • Polymyxin B gramicidin • Ciprofloxacin (multiple drops topically over 2-24 hours)	Multiple drops topically over 2 to 24 hours

Transplantation procedures	COMMON PATHOGEN	RECOMMENDED REGIMEN	ALTERNATIVE REGIMEN
• **Renal Transplantation**	• *Staphylococcus aureus* • Coagulase-negative *Staph* • Enterobacteriaceae	Cefazolin	**Adult:** Clindamycin plus Ciprofloxacin 400 mg IV pre-op **Pediatrics:** Clindamycin plus Gentamicin
• **Liver Transplantation**	• Enterobacteriaceae • *Enterococcus* spp. • Staphylococci	**Adult:** Piperacillin Tazobactam (Tazocin) 3.375 gm IV pre-op plus Q 6 h x 48 hr post-op **Pediatric:** Tazocin 60 mg/kg IV pre-op plus Q 6 h x 48 hr post-op	**Adult:** Vancomycin 1 gm IV pre-op plus Q 12 h post-op x 48 hr plus Ciprofloxacin 400 mg IV pre-op plus Q 12 h x 48 hr post-op **Pediatric:** Vancomycin 20 mg/kg (max 1 gm) IV pre-op plus Q 12 h x 48 hr post-op
• Pancreas or pancreas/kidney transplant		Cefazolin PLUS Metronidazole	Clindamycin + Ciprofloxacin

TITLE/DESCRIPTION:	INDEX NUMBER
MANAGEMENT OF SHARPS INJURY AND EXPOSURE TO BLOODBORNE PATHOGENS	**ICM - VII - 04**

EFFECTIVE DATE:	APPLIES TO:	ISSUING AUTHORITY:
01/01/2018	All GCC Countries	GULF COOPERATION COUNCIL – CENTRE FOR INFECTION CONTROL (GCC-CIC)

DEFINITION

To provide guidelines for the management of healthcare workers who have had occupational exposure to blood and/or body fluids.

REFERENCES

1. Association for Professionals in Infection Control (APIC) and Epidemiology, Inc. (2014). Chapter 100 : Occupational health. In APIC Text of infection control and epidemiology (4th ed.).
2. Association for professionals in Infection Control (APIC) and Epidemiology, Inc. (2014) Chapter 101: Occupational Exposure to Bloodborne Pathogens. In APIC Text of infection control and epidemiology (4th ed.).
3. Centers for Disease Control and Prevention (CDC). For edition U.S. Public Health Service guidelines for the management of occupational exposures to HBV, HCV and HIV and recommendation for post exposure prophylaxis, MMWR 2001/50 O (RR11);1-42.
4. Centers for Disease Control and Prevention (CDC). For edition U.S. Public Health Service guidelines for public health service; guidelines for the management of occupational exposures to HIV; and, recommendation for post exposures prophylaxis. MMWR 2005; 54 (RR-09);1-17.

COMMENTS

1. Occupational exposure is defined as percutaneous injury (e.g., a needlestick or cut with sharp object) or contact of mucous membranes (e.g., splashes to eyes, nose, oral cavity) or non-intact skin (e.g., exposed skin that is chapped, abraded or afflicted with dermatitis) that may place the healthcare worker (HCW) at risk for infection with Hepatitis B virus (HBV), Hepatitis C virus (HCV) or human immunodeficiency virus (HIV).
2. Any direct contact (i.e., contact without barrier protection) to concentrated virus in a research laboratory or production facility is considered an exposure that requires clinical evaluation.
3. Potentially infectious materials include blood, body fluids containing visible blood, and tissue as well as medical supplies, equipment or environmental surfaces contaminated with these substances.
4. The following fluids are considered potentially infectious: cerebrospinal fluid, synovial fluid, pleural fluid, pericardial and amniotic fluids, semen, and vaginal secretions. While, feces, saliva, sputum, nasal secretions, sweat, tears, urine and vomit are not considered potentially infectious unless they contain blood.

PROCEDURE

A. Any exposed HCW should report immediately to the Employee Health Clinic during working hours or to the Emergency Department (ED) after hours or over the weekend. The HCW should report the incident to his/her supervisor. A Safety Reporting Systems (SRS) report form should be completed.
B. The employee should adhere to the following steps immediately after exposure:

1. First Aid
   If you experienced a needle stick or sharps injury or were exposed to blood or other body fluid of a patient during the course of your work, immediately follow these steps:
   a. Percutaneous injuries
      i. Wash needle sticks and cuts with soap and water;
      ii. Then apply isopropyl alcohol 70%; and
      iii. Bandage appropriately.
   b. Mucocutaneous and non-intact skin exposures
      i. Splash water to the nose, mouth, or non-intact skin.
      ii. Irrigate eyes with clean or sterile water or saline.
      iii. Flush site for 10 minutes.
2. Reporting the injury
   a. The employee should report the incident to his/her supervisor and complete a Safety Reporting System (SRS) form.
   b. The report should include:
      i. The date and time of the incident;
      ii. The location where the incident occurred;
      iii. The department where the employee works; and
      iv. The source patient Medical Record Number (MRN), if known.

C. The physician evaluating the exposure should obtain the following information:
   1. The name and identification of the source.
   2. The time and date of the exposure.
   3. The nature of the exposure (i.e., non-intact skin, mucosal or percutaneous, human bite).
   4. The type of fluid involved (i.e., blood, blood-contaminated fluid, or other contaminated fluid).
   5. The body location of the exposure and the contact time with the contaminated fluids.
   6. Infection status of the source (i.e., HIV, HCV, HBsAg). If known, include the date of testing.
   7. The exposed HCW should be questioned about the circumstances of the exposure:
      a. For percutaneous injuries, the depth of the wound, solid versus hollow needle, sharps use in the source patient.
      b. HBV immunization and post-immunization titer, if known (the HCW's medical records can be reviewed to ascertain this information).
      c. Previous testing for HIV, HBV, and HCV.
      d. Tetanus immunization status.
      e. Current medical condition.
   8. In case of a needlestick injury and or mucocutaneous exposure from a known HIV- positive source, the ER physician should initiate antiretroviral regimen immediately upon consultation with the ID consultants on call. Please refer to section J for HIV post exposure prophylaxis. They should be questioned about the circumstances of the exposure.

D. The exposed HCW's blood should be tested for HBV, HCV and HIV. Follow institutional policies for consent requirements to obtain the source patient's blood for testing.

E. The source individual's blood should be tested as soon as possible to determine HBV (HBsAg, HBsAb, anti-HBc), HCV (anti-HCV), and HIV (HIV test) serological status. When the source individual is already known to be infected with HCV or HIV, testing the source need not be repeated.
   1. The nurse will notify the patient's most responsible physician (MRP) of the incident.

2. It is the responsibility of the MRP to order the following baseline serology on the source patient after obtaining consent:
   a. HBsAg
   b. Anti-HCV
   c. Anti-HIV I/II

F. Counsel the employee regarding the risk of transmission of bloodborne pathogens and post-exposure prophylaxis.

G. HBV post-exposure prophylaxis (PEP) is determined by the HBsAg status of the source and the immune status of the exposed person.

H. Recommended post-exposure prophylaxis for exposure to Hepatitis B virus:
   1. Post-exposure prophylaxis with Hepatitis B immunoglobulin (HBIG) and/or vaccine should be administered as soon as possible (preferably within 24 hours).
      a. The effectiveness of HBIG when administered more than 7 days after percutaneous or mucosal exposure is unknown.
      b. If the exposed person has an adequate antibody response (>10 mIU/ml) documented after completion of an HBV vaccination series, no testing or treatment is needed.
      c. Hepatitis B vaccine and HBIG can be administered simultaneously at separate sites (the vaccine should always be administered in the deltoid muscle).

Table 1 – VII-04: Recommended Post-Exposure Prophylaxis (PEP) for Hepatitis B Virus

Employee Status	Source Patient Status		
	HBsAg Positive	HBsAg Negative	Unknown
Unvaccinated	HBIG*x1 and initiate HB vaccine series.	Initiate HB vaccine series.	Initiate HB vaccine series
Previously vaccinated a. Known responder +	No treatment	No treatment	No treatment
b. Known non-responder ++	HBIG*x2 or HBIG*x1 and initiate revaccination.	No treatment	If known high-risk source, treat as if source were HBsAg positive.
Antibody response unknown	Test exposed person for anti-HBs: 1. if adequate+, no treatment 2. if inadequate++, HBIGx1 and vaccine booster.	Test exposed person for anti-HBs: 1. if adequate+, no treatment 2. if inadequate++, initiate vaccination	Test exposed person for anti-HBs: 1. if adequate+, no treatment 2. if inadequate++, initiate vaccination

Legend:
HBsAg: Hepatitis B surface antigen.
HBIG: Hepatitis B immunoglobulin.
HB vaccine: Hepatitis B vaccine to be given IM in the deltoid muscle.
Anti-HBs: Antibody to hepatitis B surface antigen.
* Dose: 0.06 mg/kg IM to be administered at a different site from the HB vaccine, using a different syringe.
\+ A responder is defined as a person with adequate serum levels of anti-HBs (> 10 mIU/ml) tested 1-2 months after vaccine completion.
++ A non-responder is defined as a person with serum anti-HBs levels < 10 mIU/ml, as tested 1-2 months after vaccine completion (2 series).

I. HCV Infection: Persons exposed to an HCV-positive source should have the following baseline and follow-up testing:
   1. Baseline testing for anti-HCV, HCV RNA and ALT.
   2. Follow-up testing for HCV RNA 4 to 6 weeks after exposure.
   3. Follow-up testing for anti-HCV, HCV RNA and ALT 4 to 6 months after exposure.
   4. No post-exposure prophylaxis is currently recommended for HCV.

J. HIV Post-Exposure Prophylaxis (PEP)
These recommendations apply to situations in which the HCW has been exposed to a source person who either has or is considered likely to have HIV.

Provide counseling:

1. Majority of occupational exposures do not result in transmission of HIV.
   a. The average risk of HIV transmission after percutaneous exposure to HIV-infected blood has been estimated to be approximately 0.3%, approximately 0.09% after mucous membrane exposure, and even lower for non-intact skin exposure.
   b. The risk of transmission after exposure to fluids or tissues other than HIV-infected blood is likely to be considered lower than that for blood exposure.

2. Exposure to source blood to intact skin is considered minimal risk; however, any direct contact without barrier protection to concentrated virus in a research laboratory requires clinical evaluation. Toxicity and drug interactions of antiretroviral agents.
   a. Persons receiving post-exposure prophylaxis (PEP) should complete a full 4-week regimen if tolerated.
   b. Potential side effects of antiretroviral agents should be discussed with the HCWs, and, when anticipated, preemptive prescribing agents for ameliorating side effects may improve PEP regimen adherence.
   c. Medications included in an HIV PEP regimen should be selected to optimize side effect and toxicity profiles and a convenient dosing schedule to encourage compliance.
   d. Potential benefits and risk of PEP must be considered when prescribing PEP. Attached Appendix A for list of HIV PEP regimen.

3. Management of HCWs potentially exposed to HIV. Occupational exposures to HIV should be considered urgent medical concerns and treated immediately.
   a. The selection of PEP regimen should be implemented in consultation with persons who are expert in the administration of antiretroviral therapy and who are knowledgeable about HIV transmission. Refer to **Table 2-VII-04** Situations for which Expert Consultation for HIV PEP is Recommended.
   b. Obtain baseline anti-HIV, CBC, differential liver and renal profile; then reevaluate clinically 72 hours post PEP initiation and at the second and fourth weeks after the initiation of PEP.
   c. Administration of PEP should be given as soon as possible and not to be delayed while waiting for test results, preferably within hours after exposure. The benefit of PEP is greatly diminished 72 hours after exposure.
   d. Reevaluation of exposed HCW is recommended within 72 hours post exposure, especially, as additional information about the exposure or source person becomes available.

e. If PEP is offered and the source is later determined to be HIV-negative (with no risk behavior), PEP should be discontinued and no further HIV follow-up testing is indicated for the exposed provider.
f. It is no longer recommended that the severity of exposure be used to determine the number of drugs to be offered in an HIV regimen. A regimen containing three or more antiretroviral drugs is now recommended routinely for all occupational exposures to HIV.
g. Clinicians might still consider the two drug regimen in consultation with an expert if issues such as medication availability, potential adherence and toxicity, or others associated with a three-drug regimen are face.

Table 2 – VII-04: In Situations for which Expert Consultation for HIV PEP is Recommended

Delayed (i.e., later than 72 hours) exposure report
- Interval after which benefits from PEP are undefined

Unknown source (e.g., needle in sharps disposal container or laundry)
- Use of PEP to be decided on a case-by-case basis.
- Consider severity of exposure and epidemiologic likelihood of HIV exposure.
- Do not test needles or other sharp instruments for HIV.

Known or suspected pregnancy in the exposed person
- Provision of PEP should not be delayed while awaiting expert consultation.

Breastfeeding in the exposed person
- Provision of PEP should not be delayed while awaiting expert consultation.

Known or suspected resistance of the source virus to antiretroviral agents
- If source person's virus is known or suspected to be resistant to 1 or more of the drugs considered for PEP, selection of drugs to which the source person's virus is unlikely to be resistant is recommended.
- Do not delay initiation of PEP while awaiting any results of resistance testing of the source person's virus.

Toxicity of the initial PEP regimen
- Symptoms (e.g., gastrointestinal symptoms) are often manageable without changing PEP regimen by prescribing anti-motility or antiemetic agents.
- Counseling and support for management of side effects is very important, as symptoms are often exacerbated by anxiety.

Serious medical illness in the exposed person
- Significant underlying illness (e.g., renal disease) of an exposed provider already taking multiple medications may increase the risk of drug toxicity and drug-drug interaction.

4. Follow up of Exposed HCW

HCW who have experienced occupational exposure to HIV should receive follow-up counseling, post-exposure testing, and medical evaluation regardless of whether they take PEP.

a. For exposures for which PEP is prescribed, HCWs should be informed regarding:
   i. Possible drug toxicities e.g., rash and hypersensitivity reactions which could imitate acute HIV seroconversion and the need for monitoring;
   ii. Possible drug interactions; and
   iii. The need for adherence to PEP regimens.

b. Early reevaluation after exposure.
Regardless of whether a HCW provider is taking PEP, reevaluation of exposed HCW within 72 hours after exposure is strongly recommended, as additional information about the exposure or source person may be available.

c. Follow up testing and appointments. Follow up testing at a minimum should include:
   i. HIV testing at baseline: 6 weeks, 12 weeks, and 6 months post exposure.
   ii. Use of a 4th generation HIV Ag/Ab combination immunoassays allow for earlier detection of HIV infection. If the clinician is certain that a 4th generation combination HIV p24 antigen-HIV antibody test is being utilized, then HIV testing could be performed at baseline, 6 weeks, and concluded at 4 months post exposure.
   iii. Complete blood count, renal and hepatic function tests (at baseline and 2 weeks post-exposure; further testing may be indicated if abnormalities were detected).
   iv. Extended HIV follow up for 12 months is recommended for HCW who become infected.

K. Counseling for employees exposed to viral hepatitis and HIV for the duration of follow-up:
   1. Refrain from donating blood, semen, plasma or tissue.
   2. Pregnant or lactating women should be advised against breast feeding.
   3. Personal items such as toothbrushes and razors should not be shared.
   4. Sexual intercourse should involve protection.

Appendix A-VII-04:
Human Immunodeficiency Virus (HIV) Post-exposure ProphylaAxis (PEP) Regimens

Preferred HIV PEP Regimen	
Raltegravir (Isentress®; RAL) 400 mg PO twice daily Plus Truvada™, 1 PO once daily (Tenofovir DF [Viread®; TDF] 300 mg + emtricitabine [Emtriva™; FTC] 200 mg)	
Alternative Regimens *(May combine 1 drug or drug pair from the left column with 1 pair of nucleoside/nucleotide reverse-transcriptase inhibitors from the right column; prescribers unfamiliar with these agents/regimens should consult physicians familiar with the agents and their toxicities)*	
Raltegravir (Isentress®; RAL)	Tenofovir DF (Viread®; TDF) + emtricitabine (Emtriva™; FTC); available as Truvada™
Darunavir (Prezista®; DRV) + ritonavir (Norvir®; RTV)	Tenofovir DF (Viread®; TDF) + lamivudine (Epivir®; 3TC)
Etravirine (Intelence®; ETR)	Zidovudine (Retrovir™; ZDV; AZT) + lamivudine (Epivir®; 3TC); available as Combivir®
Rilpivirine (Edurant®; RPV)	Zidovudine (Retrovir®; ZDV; AZT) + emtricitabine (Emtriva™; FTC)
Atazanavir (Reyataz®; ATV) + ritonavir (Norvir®; RTV)	
Lopinavir/ritonavir (Kaletra®; LPV/RTV)	
The following alternative is a complete fixed-dose combination regimen, and no additional antiretrovirals are needed: Stribild™ (elvitegravir, cobicistat, tenofovir DF, emtricitabine)	
Alternative Antiretroviral Agents for Use as PEP only with Expert Consultation[b] Abacavir (Ziagen®; ABC) Efavirenz (Sustiva®; EFV) Enfuvirtide (Fuzeon™; T20) Fosamprenavir (Lexiva®; FOSAPV) Maraviroc (Selzentry®; MVC) Saquinavir (Invirase®; SQV) Stavudine (Zerit®; d4T)	
Antiretroviral Agents Generally Not Recommended for Use as PEP Didanosine (Videx EC®; ddI) Nelfinavir (Viracept®; NFV) Tipranavir (Aptivus®; TPV)	
Antiretroviral Agents Contraindicated as PEP Nevirapine (Viramune®; NVP)	

The alternative regimens are listed in order of preference; however, other alternatives may be reasonable based on patient and clinician preference

TITLE/DESCRIPTION:	INDEX NUMBER
IMMUNOCOMPROMISED PATIENT (Non-Hematopoietic Stem Cell Transplantation Patient)	**ICM - VII - 05**

EFFECTIVE DATE:	APPLIES TO:	ISSUING AUTHORITY:
01/01/2009 01/01/2013 01/01/2018	**All GCC Countries**	**GULF COOPERATION COUNCIL – CENTRE FOR INFECTION CONTROL (GCC-CIC)**

DEFINITION

To provide guidance on practices that minimizes the risk of exposure to infectious microorganisms in immunocompromised patients.

REFERENCES

1. Association for Professionals in Infection Control (APIC) and Epidemiology, Inc. (2014). Chapter 44: Infection Prevention in Oncology and other Immunocompromised host. In APIC Text of infection control and epidemiology (4th ed.).
2. Association for Professionals in Infection Control (APIC) and Epidemiology, Inc. (2014). Chapter 23: The Immunocompromised Host. In APIC Text of Infection control and epidemiology (4th ed.).
3. Centers for Disease Control and Prevention (CDC). Guidelines for environmental infection control in healthcare facilities. Recommendations of CDC and the Healthcare Infection Control Practices Advisory Committee (HICPAC). MMWR 2003;52(RR10);1-42.
4. HICPAC/CDC Guidelines for isolation precautions: preventing transmission of infectious agents in healthcare setting, 2007.
5. Infection Prevention and Control Policy, **ICM-II-03** Standard Precautions.
6. Infection Prevention and Control Policy, **ICM-II-04** Hand Hygiene.

COMMENTS

1. Patients who have congenital primary or secondary immune deficiency disorders are at increased risk for numerous types of infections while receiving healthcare and may be located throughout the hospital. Observe Standard Precautions at all times and apply Transmission-based Precautions as needed.
2. Immunocompromised patients can be cared for in the same environment as other patients. However, it is advisable to minimize exposure to other patients with transmissible infections such as influenza and other respiratory viruses.
3. A protective environment (including high-efficiency particulate air filtration of incoming air, ≥12 air exchanges, and with a pressure differential of ≥2.5 Pa [0.01' water gauge] positive pressure) is recommended for immunocompromised patients.
4. Patients with a neutrophil absolute count of <0.5 can be placed in a protective environment until their neutrophil counts have recovered.

PROCEDURE

Adhere to Standard Precautions and Transmission-based Precautions including strict hand hygiene, aseptic technique, and barrier precautions (when necessary) for all patient care.

IMMUNOCOMPROMISED PATIENT
(Non-Hematopoietic Stem Cell Transplantation Patient)

ICM - VII - 05

A. Medical

1. Immunocompromised patients are at the highest risk of developing healthcare associated infections (HAI) such as pneumonia, central line-associated bloodstream infections (CLABSI), and catheter-associated urinary tract infections (CAUTI).
2. Using the Institute of Healthcare Improvement (IHI) care bundles for prevention of ventilator-associated pneumonia (VAP), CLABSI and CAUTI is highly recommended to reduce this risk.

B. Nursing

1. Minimize the rotation of staff (such as those who float in and out of the unit/ward).
2. Staff should report any active infections to the supervisor and do not report to unit until assessment by the Employee Health Clinic regarding HCW exclusion or re-assignment is required.
3. When necessary, assess the patient daily for signs and symptoms of infection and initiate appropriate isolation techniques. Place the patient in a single room if the patient's condition indicates.
4. Avoid unnecessary direct contact with the patient, especially on the part of personnel not involved in essential care.

C. Patient Care

1. Immunocompromised patients can be cared for in the same environment as other patients. However, it is advisable to minimize exposure to other patients with transmissible infections such as influenza and other respiratory viruses.
2. Judicious use of antibiotics on these patients is recommended to prevent Clostridium. difficile infection.
3. Minimize traffic flow (visitors/personnel) in and out of the room.
4. Reduction of exposure to pathogens includes several practices, such as:
   a. Adhere strictly to hand hygiene practices with all patient care activities.
   b. Practice strict aseptic technique with all procedures.
   c. Avoid serving fresh fruits and fresh vegetables (which can carry several species of gram-negative bacilli).These organisms can colonize the gastrointestinal tract of neutropenic patients after ingestion.
   d. Prepare cooked food as required for a neutropenic diet or the low-bacterial diet.
   e. Do not use food from outside sources.
   f. Ban plants and flowers in high risk areas such as oncology and burn units.
   g. Bath the patient daily with mild soap to reduce the number of skin organisms.

D. Visitors

1. The healthcare team should ensure that visitors are properly screened for infections and instructed about the importance of proper infection control precautions, especially proper hand hygiene, before contact with the patient.
   a. Instruct all visitors should to follow the same standard precautions or transmission-based precautions as healthcare workers
   b. Ban visitors who are currently suffering either from a diagnosed illness that is communicable by airborne, droplet nuclei, or contact routes, or who have symptoms of upper respiratory infection or diarrhea should be banned from visiting the patient.
2. Pediatric patients may carry and transmit disease unknowingly, hence, children less than 12 years old are not allowed in the wards.

E. Toys in Play Areas

1. Only allow toys that can be kept clean and disinfected in between uses. Ban the use of stuffed, fluffy toys.
2. Avoid water-retaining bath toys and soil based items
3. Offer disposable play items when possible.
4. Infants, toddlers, and children who put toys in in their mouth should not share toys.
5. Clean and disinfect toys regularly and immediately when visibly soiled.
6. Wash hard plastic toys with soap and water and immerse in a mild bleach solution and air dry or wash in the hot cycle washing machine.
7. Discard toys that cannot be cleaned and disinfected.
8. Clean and disinfect occupational and physical therapy items according to established guidelines.

TITLE/DESCRIPTION:	INDEX NUMBER
HEMATOPOIETIC STEM CELL TRANSPLANTATION (HSCT)	**ICM - VII - 06**

EFFECTIVE DATE:	APPLIES TO:	ISSUING AUTHORITY:
01/01/2009 **01/01/2013** **01/01/2018**	**All GCC Countries**	**GULF COOPERATION COUNCIL – CENTRE FOR INFECTION CONTROL (GCC-CIC)**

DEFINITION

To identify preventive measures and emphasize the provision of a protective environment with meticulous attention to infection control practices.

REFERENCES

1. Association for Professionals in Infection Control (APIC) and Epidemiology, Inc. (2014). Chapter 46 : Hematopoietic Stem Cell Transplantation. In APIC Text of infection control and epidemiology (4th ed.).
2. Centers for Disease Control and Prevention (CDC). Guidelines for preventing opportunistic infections among Hematopoietic Stem Cell Transplantation (HSCT) recipients, MMWR, 2000.
3. Guidelines for preventing infectious complications among Hematopoietic Stem Cell Transplantation (HSCT) recipients: a global perspective. American Society for Blood and Marrow Transplant, 2009.

COMMENTS

1. HSCT recipients are at increased risk of infection for a variety of reasons, including neutropenia, mucositis, and the presence of indwelling catheters.
2. Key infection control measures include scrupulous attention to hand hygiene, care in the insertion and management of intravascular catheters and other medical devices, environmental cleaning, and screening and regulation of visitors and personnel.

TERMINOLOGY

1. Bone marrow transplant is a procedure in which a bone marrow that is diseased or damaged is replaced with healthy bone marrow.
2. Allogeneic means genetically dissimilar between donor and a recipient; genes are not identical in each organism.
3. Autologous means derived from the same individual.
4. Graft versus host disease (GVHD) is an immune-mediated disease resulting from a complex interaction between donor and recipient adaptive immunity. Acute GVHD often involves the skin and gastrointestinal tract, whereas chronic GVHD affects multiple organ system. GVHD results in the disruption of the barrier function of organs with corresponding increase in the risk of infection.
5. Protective environment includes high-efficiency particulate air filtration (HEPA) of incoming air, $\geq$12 air exchanges, and positive pressure.

NB: HSCT recipients are considered immunocompromised for the first 24 months post-transplantation, when on immunosuppressive therapy, and/or if diagnosed with GVHD.

PROCEDURE

A. Pre-transplant screening

Evaluate patients for evidence of prior ongoing infections.

1. Consider serologic studies for CMV, EBV, HSV, and VZV.
   Evaluate for other infectious diseases such as human immunodeficiency virus (HIV) I and II, Hepatitis B virus, Hepatitis C virus , human T-cell lymphotrophic virus I, human T-cell lymphotropic virus II, treponema Pallidum, West Nile virus, and trypanosome cruzi.
2. Consider testing for tuberculosis for at-risk patients.
3. Complete any dental work.

B. Infection Prevention and Control Measures

1. Isolation and barrier precautions:
   a. Healthcare worker follow CDC guidelines for prevention of healthcare-associated infection.
   b. Place HSCT patients in a single positive-pressure or protected environment.
   c. Practice standard precautions if in contact with blood or body fluids is anticipated.
   d. When indicated use Airborne, Contact, or Droplet precautions.

2. Hand hygiene:
   a. Practice hand hygiene as per policy **ICM-II-04** Hand Hygiene.
   b. HSCT recipients should follow good hand hygiene practices.
   c. Use antimicrobial soap or alcohol-based hand rubs for hand hygiene.
   d. Perform hand hygiene before and after glove use.
   e. Change gloves between patients and if moving from a contaminated body site to a clean body site.
   f. Wash hands with soap and water when visibly dirty or soiled with blood and body fluids.
   g. Prohibit staff from wearing artificial fingernails or nail extenders.

3. Patient skin and oral care:
   a. Bathe HSCT recipients daily with chlorhexidine.
   b. Inspect daily potential sites of infection (e.g., perineum, catheter sites, etc.) during periods of neutropenia.
   c. Maintain perineal hygiene.
   d. Educate female patients to wipe the perineum from anterior to posterior to prevent fecal contamination of the urethra.
   e. Advise menstruating women not to use tampons.
   f. Avoid the use of rectal thermometers, enemas, suppositories, anal sexual penetration, and rectal exams.
   g. Maintain good oral and dental hygiene for at least the first years after transplantation.
   h. HSCT recipients with mucositis should perform oral rinses four to six times per day.
   i. Recommend the use of a soft toothbrush to clean teeth at least twice a day.
   j. Recommend the use of a toothette stick for patients who cannot tolerate tooth brushing.
   k. Advise routine dental supervision.
   l. Perform dental flossing daily if it can be done without trauma.

m. Coordinate with the patient's dentist and transplant team for removal of fixed appliances.
n. Clean dentures twice daily when not wearing them, in antimicrobial denture soaking solution.

4. Precautions for HSCT patients while out of their room and during transfers:
   a. Place an N95 mask on the patient. If the N95 mask cannot be tolerated, use a surgical mask.
   b. Place an N95 mask on the severely immunocompromised HSCT recipient when leaving rooms for diagnostics or procedures.
   c. Place clean linen on the stretcher or wheelchair used for transfer.
   d. Clean hands and follow precautions (i.e., use of gowns, gloves) when assisting the patient to a wheelchair or stretcher.
   e. Remove gloves and wash hands after preparing the patient for transport.
   f. Inform the receiving department that the patient requires special precautions.
   g. Disinfect surfaces in the diagnostic areas with a hospital-approved disinfectant immediately before and after use.

5. Healthcare workers (HCWs):
   a. Comply with hospital policy regarding pre-employment evaluation and required immunization for HCWs; evidence of this compliance should always be available.
   b. Immunize HCWs caring for HSCT patients against measles, mumps, rubella, varicella, and Hepatitis B; yearly influenza vaccination is mandatory.
   c. Ensure that HCWs are aware of the potentially infectious conditions of the HSCT patients and prevention strategies.
   d. Familiarize HCWs with methods of screening visitors and family members before visiting the patients.
   e. Adhere to proper hand hygiene practices at all times.
   f. Restrict HCWs with any suspected diseases from patient contact until medically assessed and cleared:
      i. Work restriction should be followed. HCWs are not to report for duty when they have flu-like symptoms but should report for medical assessment.
      ii. Management of exposure: refer to **ICM–VI-09** Management of Selected Airborne and Droplet Infectious Disease Exposures in Healthcare Workers).

6. Room ventilation and engineering:
   a. Place HSCT patients in a protective environment (PE) comprising positive room air pressure in relation to the corridor (pressure differential of >2.5 Pa [0.01' water gauge]) with ≥12 air exchanges per hour and high-efficiency (>99%) particulate air (HEPA) filters capable of removing particles >0.3 µm in diameter.
   b. Rooms should be well-sealed.
   c. The air supply and exhaust grills should be located such that clean, filtered air enters from one side of the room, flows across the patient's bed, and exits on the opposite side of the room.
   d. Self-closing doors should be placed at all room exits.
   e. Maintain back-up ventilation equipment (e.g., portable units for fans or filters) for emergency provision of ventilation requirements for PE areas, and take immediate steps to restore non-functioning ventilation systems.

f. Use anterooms for patients who require both PE and Airborne Infection Isolation (AII) to ensure proper air balance relationships and provide independent exhaust of contaminated air to the outside (or place a HEPA filter in the exhaust duct). If an anteroom is not available, place the patient in an AII room and use portable ventilation units with industrial-grade HEPA filters to enhance filtration of spores.
g. Regularly replace filters based on the manufacturer's recommendations. When there is major construction in the facility, filtration efficiency should be monitored frequently to best determine the appropriate time for replacement.

7. Environmental cleaning: (Refer to **ICM-X-07** Housekeeping)
   a. Cleaning of an occupied patient room. Use a clean cloth for every few items in the room; do not put a dirty cloth back into the hospital-approved solution. All staff members are responsible for reporting any damage or issues that need prompt removal or fixing.
   b. Terminal cleaning after patient is discharged. Nursing staff should ensure that room is free of used medical supplies and soiled patient care equipment, remove bed linen and ensure that the discharged or transferred patient has left the room before housekeeping performs terminal cleaning.
8. Equipment:
   a. Follow hospital procedures for equipment cleaning and disinfection.
   b. Monitor wound dressing supplies to detect mold contamination.
   c. Discard bandages and dressings if they are out of date, having damaged packaging, or are visually contaminated.
   d. Change frequently arm boards and use only sterile dressing materials.
   e. Refrain from using unsterile tongue depressors as splints for intravenous catheter sites.
9. Plants, play areas, and toys, refer to **ICM-VII-05** Immunocompromised Patients.
10. Visitors refer to **ICM-VII-05** Immunocompromised Patients.
11. Infection prevention surveillance:
    a. Do not perform routine fungal or bacterial cultures of asymptomatic HSCT recipients.
    b. Do not perform routine surveillance environmental cultures or fungal cultures of devices in the absence of epidemiologic clusters of infection.
    c. Perform routine sampling of air, ventilation ducts, and filters on a monthly basis for the first 18 months following the start of HSCT service and then as needed, if clinical surveillance indicates an increase in infections due to mold.
12. Prevention of intravascular catheter infection:
    a. Follow aseptic technique (refer to **ICM-II-05** Aseptic Technique).
    b. Contact between tap water and the central venous catheter site should be avoided.
    c. Completely implanted central venous catheters can be used in children younger than 4 years of age.
    d. HSCT recipients and HCWs should receive education regarding proper care of intravenous devices.
    e. HCWs should receive training regarding Central Line Bundles.
    f. Infection Preventionist (IP) will monitor device-associated infections as per surveillance plan.
13. Construction and renovation:
    a. Enforce the infection prevention and control procedure for hospital and healthcare facility construction/renovation. Refer to **ICM-X-09** Construction and Renovation Measures in the Healthcare Facility.
    b. Notify IP&C Department of any planned construction and renovation.

TITLE/DESCRIPTION:	INDEX NUMBER
PREVENTION OF TRANSMISSION OF INFECTION AMONG CHRONIC DIALYSIS PATIENTS	**ICM - VII - 07**

EFFECTIVE DATE:	APPLIES TO:	ISSUING AUTHORITY:
01/01/2009 **01/01/2013** **01/01/2018**	**All GCC Countries**	**GULF COOPERATION COUNCIL – CENTRE FOR INFECTION CONTROL (GCC-CIC)**

DEFINITION

To provide evidence-based guidelines needed for the prevention of healthcare-associated infections among chronic dialysis patients. These guidelines include recommendations for the management of equipment, water supply, screening, monitoring of patients and HCWs, and other related activities.

REFERENCES

1. Alter MJ, Tokars J, Arduro M, Favero MS, and Bland LA. (2004). Nosocomial infections associated with hemodialysis. In Mayhall CG (Ed.): Hospital Epidemiology and Infection Control (pp. 1139-1173). Baltimore: Williams & Willkins.
2. Association for Professionals in Infection Control (APIC) and Epidemiology, Inc. (2009). Chapter 48: Dialysis. In APIC Text of infection control and epidemiology (3rd ed.).
3. Centers for Disease Control and Prevention (CDC). Hepatitis: Control measures for hepatitis B in dialysis centers. Viral Hepatitis Investigations and Control Series, November 1997.
4. Centers for Disease Control and Prevention (CDC). Recommendations of the Advisory Committee on Immunization Practices (ACIP): Use of vaccines and immune globulins in persons with altered immunocompetence. MMWR, April 1993/42 (RR-04).
5. Centers for Disease Control and Prevention. Recommendations for preventing transmission of infections among chronic hemodialysis patients. MMWR, April 2001/50 (No. RR-5).
6. Guide to the Elimination of Infections in hemodialysis. An APIC Guide 2010.
7. CDC. Guidelines for Vaccinating Kidney Dialysis Patients and Patients with Chronic Kidney Disease Summary of ACIP Recommendations. Atlanta, GA: Author, 2012. Available online at http://www.cdc.gov/vaccines/pubs/downloads/b_dialysis_guide.pdf. .
8. Association for the Advancement of Medical Instrumentation (AAMI). American National Standard for Dialysate for Hemodialysis. RD:52:2004.
9. Guidelines for Design and Construction of Health Care Facilities. The Facility Guidelines Institute 2010 edition.

COMMENTS

1. Hemodialysis was introduced first in 1940, and until the early 1960s, it was used exclusively for the treatment of acute renal failure. Subsequently, with the development of advanced technology in dialysis equipment, the use of both hemodialysis and peritoneal dialysis has increased. Dialysis is a hazardous process, and adverse reactions may occur due to chemical or microbial contamination during the process of dialysis.
2. Patients with end-stage renal failure on hemodialysis (HD) maintenance are vulnerable to infections for many reasons including the immunodepressed state intrinsic to end- stage renal disease (ESRD); the high prevalence of diabetes; exposure to other patients in the HD facility three times per week; frequent hospitalization; and, the invasiveness of the HD procedure.

3. An effective infection prevention and control program for HD units is comprised of multiple interventions which are designed to reduce the risk of infection based on the unique characteristics of the HD patient population and environment.

PROCEDURE

A. Infectious Complications

1. Conventional hemodialysis
   In general, the hemodialysis system consists of a water supply, a system for mixing water and concentrated dialysis fluid and a machine to pump the dialysis fluid through the artificial kidney. This aqueous environment provides a good growth medium that can result in the massive accumulation of Gram-negative bacteria, which can have direct and indirect infectious complications for patients, such as, septicemia and a pyrogenic reaction to bacterial endotoxins.
   a. Non-tuberculous mycobacteria, which have the capability of multiplying in aqueous environment can cause infectious complications for dialysis patients.
   b. The process of hemodialysis requires vascular access for prolonged periods; hence, these patients are at high risk for vascular access infection.
   c. Such an infection is usually caused by S. aureus, coagulase-negative staphylococci Gram-negative bacilli, non-staphylococcal gram-positive cocci (including enterococci), or fungi.
   d. Bacterial infections, especially those involving vascular access, are considered the most frequent infectious complications of hemodialysis and the most common.

2. Hemodiafiltration
   a. Hemodiafiltration requires the infusion of large volumes of electrolyte solutions into the blood to replace the volume of plasma water removed. Use of ultrapure dialysate is considered a requirement for online convective therapies, as it can be used as feed solution for further processing to create fluid intended for injection directly into the blood (substitution or replacement fluid).
   b. Ultrapure dialysate is born out of the concern that endotoxin and endotoxin fragments can move from the dialysate to the blood, a phenomenon called back-filtration, which happens in dialyzers with highly permeable membranes (high flux dialyzers).

3. Peritoneal dialysis (PD)
   PD is associated with several infection risks and complications involving the catheter exit site (exit site infection), infection of the subcutaneous catheter (tunnel infection), and peritonitis. Peritonitis is considered the most serious complication and leads to the destruction of the peritoneal membrane and a shift to hemodialysis treatment. Studies have suggested that PD patients who use automated cycles are less prone to infections.

   The most commonly diagnosed pathogens involved with peritoneal dialysis infections are:
   a. Gram-positive bacteria as a group (including S. epidermidis and S. aureus) are the most common etiologic agents causing peritonitis, complicating conventional PD. Patients who are nasal carriers of S. aureus are at a high risk for exit site infection and peritonitis.
   b. Gram-negative bacteria: These are found on the skin and in the gastrointestinal tract, the urinary tract, contaminated water, and disinfectant solutions. Automated peritoneal dialysis machines can serve as a reservoir for pathogens (e.g., Pseudomonas spp. and non-tuberculous mycobacteria).

c. Fungi: The fungal infections are usually difficult to eradicate and require early removal of the catheter. One of the predisposing factors for fungal infection is prior use of antibiotic therapy.

B. Water Supply

Dialysis centers use water from the public supply, which despite being chlorinated, is usually contaminated with bacteria (e.g., Gram-negative bacteria, non-tuberculous mycobacteria and certain types of blue-green algae). Endotoxins produced by Gram-negative bacteria may reach levels high enough to produce a pyrogenic reaction in patients undergoing dialysis.

1. Water treatment system
   Water used for the production of dialysis fluid must be treated adequately by reverse osmosis (RO) to remove chemical contaminants. It should be also filtered to prevent bacterial contamination. Used filters should be frequently and regularly changed and/or disinfected according to the manufacturer's instructions.

2. Distribution system
   a. This system delivers dialysis fluids to each dialysis machine and consists of plastic pipes and appurtenances. This distribution system plays a role in microbial contamination because pipes that are larger diameter and longer than necessary are frequently used to control the required fluid flow. This scenario increases both the total volume and the wetted surface area of the system and decreases the fluid velocity, which allows Gram-negative bacteria to multiply rapidly and colonize the wetted surfaces of the pipes. Such colonization leads to the formation of biofilms, which are usually difficult to remove or disinfect.
   b. To ensure adequate disinfection of the distribution system, the system should be routinely disinfected at least weekly. Furthermore, the system should be designed in a way that facilitates adequate disinfection and prevents fluids from being trapped and serving as a reservoir for bacteria. Use of an ultra-filter at the outlet of the storage tank of the distribution system is recommended.

3. Regular monitoring of the system
   a. Monitoring bacteria and endotoxin levels serve to demonstrate the effectiveness of the water system's disinfection program.
   b. Standard microbial assay methods to test for waterborne microorganisms and presence of endotoxin should be performed at least monthly.
   c. More frequent testing (i.e. weekly for one month) is recommended for a newly-installed system or when changes are made to the existing system.
   d. Tests should be repeated if counts exceed the allowable levels. There should be written procedures regarding water monitoring and a plan of action if excessive contamination is found.

C. Disinfection of the Dialysis System

1. The purpose of the disinfection procedures for the dialysis system is not only to prevent the multiplication of waterborne bacteria to a significant level but also to eliminate bloodborne viruses.

2. The routine disinfection of isolated components of a dialysis system is usually inadequate, and consequently, the complete dialysis system (water treatment system, distribution system and dialysis machine) should be considered during the disinfection procedures. For single-pass machines, the disinfection process should be performed at the beginning and end of the shift. Disinfection processes should be performed after each use for batch recirculating machines.
3. The rinse water, which usually contains some Gram-negative bacteria, should not be permitted to stand overnight; otherwise, the water will contain significant microbial contamination and nullify the disinfection procedure. Different types of disinfectants are used for the purpose of disinfecting dialysis systems. The manufacturer's instructions should be followed for both the machines and the disinfectants.

D. Dialysis Facility

1. A designated room for dialyzing patients with positive HBsAg.
2. Space requirements for treatment area:
   a. Area: Individual patient area shall have a minimum floor area of 80 feet (7.43 m^2).
   b. Clearance: There shall be a minimum clear dimension of 4 feet (1.22 meters) between beds/or chairs.
3. Adequate storage rooms for clean and sterile supplies.
4. A designated room for disinfection of portable dialysis equipment.
5. A dirty (soiled) utility room with a sluice for disposal of blood or body fluid.
6. Hand washing sinks must be close to the nurse station and patient treatment areas.
7. Alcohol hand rub in a wall-mounted dispenser or tabletop pump bottles should be available for hand hygiene.

E. Infection Control Practices in the Dialysis Unit

Infection control recommendations for the prevention of healthcare-associated infections in hemodialysis patients:

1. Use Standard Precautions for all patients, regardless of their known or presumed infectious status. (Refer to **ICM-II-03** Standard Precautions)

2. Personal protective equipment (PPE)
   a. Healthcare Worker (HCW):
      i. HCW should always wear protective equipment (i.e., fluid-resistant gown, gloves, mask, and eyewear) to prevent exposure to blood as per standard precautions.
      ii. Wear protective equipment (i.e., fluid-resistant gown, gloves, mask and eyewear) during initiation and termination of dialysis treatment, manipulation of access needles or catheter, administration of medications through the extracorporeal circuit and reprocessing of dialyzers.
      iii. It is advisable for staff to wear protective eyeglasses and surgical masks during procedures in which splashing of blood is anticipated.
      iv. Staff should change gowns between patients.
      v. Aprons without sleeves are sufficient PPE for procedures which may not result in spurting or splattering of blood.

vi. Staff should not drink or eat in the dialysis treatment area.
vii. Crowding of patients and staff should be avoided. Give enough space for the easy movement of staff, placement of equipment, and cleaning of the environment.

b. Patients:
i. Patients should wear mask during initiation and termination of dialysis treatment if vascular access is a catheter.
ii. Patients should wear a mask in an HD facility when experiencing symptoms of an upper respiratory illness.

3. Gloves
a. Use non-sterile disposable gloves when performing non-invasive procedures or when cleaning or disinfecting instruments or the environment, including the dialysis machine
b. Use sterile gloves when performing invasive procedures or connecting the patient to the dialysis machine

4. Hand hygiene (Refer to **ICM-II-04** Hand Hygiene)
a. Before and after handling dialysis machine.
b. Before and after performing non-invasive techniques.
c. Before performing any invasive procedure such as inserting a circulatory access, CV lines and peritoneal catheters.
d. Before and after connecting the patient to the dialysis machine through the AV fistula.
e. Before donning gloves and after removal of gloves.
f. After leaving a particular patient's dialysis station and before dealing with another patient's station.

5. Patient care items, equipment, and devices
Any item taken to a patient's HD station could become potentially contaminated with blood and other body fluids and serve as a vehicle of transmission to other patients.
a. Disposable items, used or unused must be disposed after each treatment session.
b. Reusable items must be cleaned and disinfected before use on another patient or returned to a common area following manufacturer's instructions and/or disinfection policy.

6. Medication vials
Medications should be prepared and stored in an area away from the dialysis stations (and other areas considered "contaminated") and delivered separately to each patient.

7. Separation of clean and contaminated areas
Clean areas should be clearly designated for medication preparation, handling, and storage of unused supplies and equipment. They should be clearly separated from contaminated areas (i.e., where used equipment or laboratory samples are handled).

F. Bloodborne Viral Infections

In the dialysis unit, both patients and staff are at high risk of acquiring bloodborne viral infections. Viral hepatitis is a major complication of hemodialysis, and several agents such as Hepatitis B, C, and D are involved.

PREVENTION OF TRANSMISSION OF INFECTION AMONG CHRONIC DIALYSIS PATIENTS

ICM - VII - 07

Recent studies have proven that HIV is significantly less efficiently transmitted than Hepatitis B virus.

1. Hepatitis B (HBV) infection
   a. Mode of Transmission of Hepatitis B
      i. Chronically infected patients are the primary source of transmission. HBV is considered to be a resistant virus, is relatively stable in the environment, and remains viable for at least seven days on environmental surfaces at room temperature.
   b. Dialysis staff members may acquire the infection by
      i. Accidental needle puncture through intact skin.
      ii. Infected plasma, serum or contaminated environmental surfaces through breaks in the skin such as abrasions, cuts, or scratches.
      iii. Introduction of infected serum or plasma into mucosal membranes (e.g., the splashing of blood onto the mouth or eyes).
   c. Dialysis patients may become infected through the following means:
      i. Internally through contaminated dialysis equipment (e.g., venous pressure gauges, isolators or filters).
      ii. Externally through contaminated dialysis machines, including their surfaces, control knobs or intravenous poles.
      iii. Improperly prepped or contaminated injection site.
      iv. Through breaks in the skin or mucous membranes.
      v. Contaminated items and surfaces such as clamps, scissors, telephones or walls.
      vi. Improper handling of multiple-dose medication vials and intravenous solutions.
      vii. The dialysis staff (contaminated hands, gloves and other objects).
   d. Screening
      i. All patients in the dialysis unit should be screened for hepatitis B surface antigen HBsAg) and anti-HBs, HBc and HCV Ab when they join the unit, to determine their serologic status, and then tested periodically according to the following table:

Patient Status	On Admission*	Monthly	Semi-annual	Annual
All patients	HBsAg, anti-HBc(total), anti-HBs, anti-HCV, ALT			
HBV susceptible, including nonresponders to vaccine		HBsAg		
Anti-HBs positive (> 10 mIU/mL), anti-HBc negative				Anti-HBs
Anti-HBs and anti-HBc positive		No additional HBV testing needed		
Anti-HCV negative		ALT	Anti-HCV	

*Results for HBV testing should be known before the patient begins dialysis.
HBsAg, Hepatitis B surface antigen; anti-HBc, antibody to hepatitis B core antigen; anti-HBs, antibody to hepatitis B surface antigen; anti-HCV, antibody to hepatitis C virus; ALT, alanine aminotransferase.

ii. Care should be taken when testing for HBsAg because recent administration of Hepatitis B vaccine may result in positive HBsAg results for 7-30 days following vaccination.

e. Hepatitis B Vaccination
   i. Hepatitis B vaccination is recommended for all susceptible patients and staff in the hemodialysis unit.
   ii. Vaccination includes three IM doses, with the second and the third doses given at one and six months, respectively. Test for anti-HBs 1 to 2 months after the last dose.
   iii. If anti-HBs levels are below 10 mIU/ml, revaccinate with 3 additional doses.
   iv. Patients who are anti-HBc and HBsAb+ do not require further testing.
   v. Patients who are only positive for HBsAb require annual anti-HBs testing and a booster if anti-HBsAb levels decline to less than 10 mIU/ml..

f. Management of Hepatitis B virus-positive patients
   i. Isolate HBsAg-positive patients in a designated or separate room for treatment with dedicated machines, equipment, instruments, supplies, and medications. These equipment and supplies must not be used on HBV-susceptible patients.
   ii. These patients should be dialyzed at a station away from adjacent stations (e.g., at the end or corner of the unit).
   iii. HCWs caring for HBsAg-positive patients should not care for susceptible patients at the same time, including during the period when dialysis is terminated for one patient and initiated for another.
   iv. HCWs should not attend to both HBsAg-positive and HBV-susceptible patients during the same shift.
   v. Staff caring for HBV patients should be HBV-immune.
   vi. Machines used on an HBsAg-positive patient must be disinfected using manufacturer's recommendations and should not be included in the dialyzer reuse program.
   vii. External surfaces should be cleaned using hospital-approved disinfectant.
   viii. A specific dialysis machine, bed, chair, and supply tray (including tourniquet, antiseptics and blood pressure cuff) should be assigned for each patient.
   ix. Disposable, single-use external venous and external pressure transducer filters/ protectors should be used once for each patient and discarded. These items should not be reprocessed or reused.
   x. Non-disposable items such as clamps and scissors should be appropriately cleaned and disinfected or sterilized before use with another patient.
   xi. When multiple-dose medication vials are used, doses should be prepared and labeled in a clean area away from the dialysis stations and should be delivered separately to each patient.
   xii. Do not use common medication carts to deliver medications to patients. Trays should be used to deliver medications to individual patients. These trays must be cleaned and disinfected between patients.
   xiii. Patients should not share food or utensils with other patients or staff.
   xiv. HCWs should change PPE and perform hand hygiene between patients.

g. HBsAg seroconversion
   i. Report HBsAg-positive seroconversion to the local health department as required by law or regulation.

ii. When a seroconversion occurs, review all patients' routine laboratory test results to identify additional cases.
iii. Investigate potential sources for infection to determine whether transmission may have occurred within the dialysis unit. Review newly infected patients' recent medical history (e.g., blood transfusion, hospitalization) and history of high-risk behavior (e.g., hypodermic drug use, sexual activity) as well as the unit practices and procedures.
iv. In patients newly infected with HBV, HBsAg is often the only serologic marker detected; repeat HBsAg testing and test for anti-HBc (including anti-HBc IgM) 1 to 2 months later. Six months later, repeat HBsAg testing and test for anti-HBs to determine clinical outcome and the need for counseling, medical evaluation, and vaccination of the patient's contacts.
v. Patients who become HBsAg-negative are no longer infectious and can be removed from isolation.

2. HCV Infections
   a. Mode of transmission
      HCV is most efficiently transmitted by percutaneous exposure to infectious blood. A chronically infected person is central to transmission, which occurs because of inadequate infection control practices and cross-contamination among patients.
   b. Screening
      i. Screening of patients for HCV should be performed upon admission to determine the prevalence of the virus in the hemodialysis unit.
      ii. Screening for ALT and anti-HCV should be carried out upon admission, with anti-HCV-negative patients screened monthly for ALT and semi-annually for anti-HCV.
   c. Management of HCV infection
      i. HCV transmission within the dialysis environment can be prevented by strict adherence to the infection control precautions recommended for all hemodialysis patients.
      ii. Although the isolation of HCV-infected patients is not recommended, routine testing for ALT and anti-HCV is important for monitoring transmission within centers and ensuring that appropriate precautions are being properly and consistently used.
      iii. HCV-positive persons should be evaluated (by consultation or referral, if appropriate) for the presence or development of chronic liver disease according to current medical practice guidelines.
      iv. HCV-positive patients should receive information concerning how they can prevent further harm to their liver and prevent transmitting HCV to others.
      v. Persons with chronic liver disease should be vaccinated against hepatitis A, if susceptible.
   d. HCV-negative patients
      i. Monthly ALT testing will facilitate the timely detection of new infections and provide a pattern from which to determine when exposure or infection may have occurred.
      ii. In the absence of unexplained ALT elevation, testing for anti-HCV every 6 months should be sufficient to monitor the occurrence of new HCV infections
      iii. If unexplained ALT elevation is observed in patients who are anti-HCV negative, repeated anti-HCV testing is warranted. If unexplained ALT elevation persists in patients who repeatedly test anti-HCV negative, testing for HCV RNA should be considered.

e. Anti-HCV seroconversion
   i. Report anti-HCV-positive seroconversion to the local health department as required by law or regulation.
   ii. When a seroconversion occurs, review all other patients' routine laboratory test results to identify additional cases.
   iii. Perform additional testing as indicated later in this section.
   iv. nvestigate potential sources for infection to determine if transmission may have occurred within the dialysis unit; review newly infected patients' recent medical history (e.g., blood transfusion, hospitalization) and history of high-risk behavior (e.g., hypodermic drug use, sexual activity) as well as unit practices and procedures.
   v. If patient(s) seroconvert from anti-HCV-negative to anti-HCV-positive during a 6-month period, frequent monitoring (every 1 to 3 months) of all patients may be indicated for a limited time to detect additional infections. If no additional cases are identified, semi-annual testing can be resumed.

3. Hepatitis D infections
   a. Delta Hepatitis is caused by hepatitis delta virus (HDV), which causes infection only along with active HBV infections either as a co-infection or super-infection.
   b. Screening
      i. Routine testing of hemodialysis patients is not recommended.
      ii. Prevention of HBV transmission will reduce the risk of HDV infection in HBV- susceptible patients.
   c. Management of HDV infection
      i. Patients known to be infected with HDV should be isolated from all other dialysis patients, including HBV-positive patients, and should receive dialysis on dedicated machines.
      ii. Routine screening for HDV is only indicated if there is a patient who is known to be infected with HDV or evidence of transmission within the dialysis unit.

4. HIV infections
   a. Mode of transmission
      i. HIV is transmitted by blood and body fluids.
   b. Screening
      i. Routine testing for HIVAb for the purpose of infection control is not recommended.
      ii. HIV patients do not require isolation from other patients or separate dialysis on dedicated machines.
   c. Management of HIV infection
      i. Patients with risk factors for HIV infection should be tested so that if they are infected, they can receive proper medical care and counseling regarding preventing the transmission of the virus.
      ii. Infection control practices such as standard precautions and hand hygiene are sufficient to prevent HIV transmission between patients.
      iii. Patients with risk factors should be tested. If found to be positive, they should receive counseling and medical care.

G. Vaccination for Patients

1. Pneumococcal vaccine:
   a. One dose 13-valent pneumococcal conjugate vaccine (PCV13) is recommended for adults >19 years with immunocompromised conditions, including those with chronic renal failure or nephrotic syndrome, and others. PCV13 should be administered in addition to the 23-valent pneumococcal polysaccharide vaccine (PPSV23).
   b. The 23-valent pneumococcal polysaccharide vaccine is administered in two doses, 5 years apart, for dialysis patients 19-65 years old.
   c. Refer to **Table 1-VII-07** Guidelines for administering PCV13 and PPSV23 vaccine for infants and children (ages 0-18) with chronic kidney disease and Table 2-VII-07 Guidelines for administering PCV13 and PPSV23 vaccines for adults 19-64 years. Another dose is recommended once the patient reaches the age of 65 years or later if at least 5 years have passed since the previous dose. Those who receive PPSV23 at or after age 65 should only receive a single dose (Refer to Table 3-VII-07 Guidelines for administering PCV13 and PPSV23 vaccines for adults ≥65 years).
2. Influenza vaccination is required yearly.
3. There are no specific recommendations for HAV vaccination for hemodialysis patients. The inactivated killed vaccine is recommended for persons with chronic liver disease (HCV and HBV infection), given in 2 doses 6 months apart.
4. Tetanus: a dose of dT should be given every 10 years; a single dose of dT with acellular pertussis vaccine (Tdap) can be substituted for those under 65 years of age. This assumes the patient has completed a primary series. If not, this should be done.
5. Shingles: all dialysis patients over 60 should be evaluated for the need of Zoster vaccine.
6. HBV: full series of vaccination and serologic testing of HD patients 1-2 months after administration of the vaccine is required.

H. MycobacteriumTuberculosis (MTB) Screening

It is critical to ensure that screening for latent MTB infection in patients with renal failure occurs at a very early stage. Patients with ESRD are at high risk for progression from latent MTB to active MTB disease. CDC recommends that all HD patients be screened for MTB at baseline and when - ever exposure is suspected. Screening can be done by tuberculin skin test (TST) or blood test or the Interferon-gamma release assay (IGRAs). Refer to **ICM-V-01** Diagnosing Latent Tuberculosis Infection (LTBI): Tuberculin Skin Test or Interferon Gamma Release Assays (IGRAs).

I. Prevention and Management of Bacterial Infections

1. Follow published guidelines for the judicious use of antimicrobials, particularly vancomycin, to reduce selection for antimicrobial-resistant pathogens.
2. Infection control practices such as standard precautions and hand hygiene are sufficient to prevent disease transmission for patients infected or colonized with pathogenic bacteria, including antimicrobial-resistant strains.
3. A single isolation room is recommended for patients who may be at increased risk for transmitting pathogenic bacteria. Such patients include those with either
   a. An infected skin wound with drainage that is not contained by dressings (the drainage does not have to be culture positive for VRE, MRSA, or any specific pathogen); or

b. Fecal incontinence or diarrhea not successfully controlled with personal hygiene measures.
c. For these patients, consider using the following additional precautions:
   i. Staff members treating the patient should wear a separate gown over their usual clothing and remove the gown when finished caring for the patient; and
   ii. Dialyze the patient at a station with as few adjacent stations as possible (e.g., at the end or corner of the unit).
d. If a private room is not possible, separation of patients and staff, strict adherence to standard precautions and meticulous environmental cleanliness is recommended.

J. Hemodialysis Staff Members

1. Routine testing of staff members is not recommended for HBV except when required to document response to HBV vaccination.
2. In addition, routine testing of staff for HCV, HDV, or HIV is not recommended.

K. Patient Monitoring

1. The patient's temperature should be monitored before and after dialysis to detect early signs of a pyrogenic reaction. Any fever (> 37.8°C) or rigors should be investigated by:
   a. Clinical assessment of the patient to rule out other causes of fever (e.g., pneumonia)
   b. Culturing of blood samples
   c. Culturing of other body fluids or secretions if suspected to be the source of infection
   d. Culturing of the dialysate (on the downstream side) using quantitative and qualitative bacteriologic assays
2. Assessment of the vascular access site should be monitored for signs of infection such as pus discharge, swelling, redness, heat, or pain.

L. Recordkeeping

1. A properly kept recording system is essential in the dialysis unit for better surveillance and follow-up purposes.
   a. The patient records in the dialysis unit should include the following:
      i. Lot number of all blood and blood products used;
      ii. Name or number and location of the machine used for each dialysis session;
      iii. Names of staff members assigned for the patient during each dialysis session;
      iv. Any mishaps, including dialysis machine malfunction and blood leaks.
   b. A log for all incidents sustained by patients and staff, such as needlestick injury.
   c. A log for all hepatitis serology results for patients.
   d. A log of all IV antimicrobials administered to patients.

M. Cleaning and Disinfection of the Dialysis Station and Other Environmental Surfaces

Dialysis units are considered high-risk areas due to the nature of the procedures performed and the immune status of the patients; thus, housekeeping should serve two tasks: removal of soil and waste to prevent the accumulation of infectious material and maintaining a clean environment for better patient care.

1. Housekeeping and nursing staff have a joint responsibility of cleaning and disinfecting the dialysis station and surrounding environment. Each should be aware of the areas or items they are responsible to clean and disinfect.
2. Special training should be given to nursing and housekeeping personnel working in the dialysis unit.
3. Store cleaning agents/disinfectants separately from skin antiseptics and patient supplies to avoid potential contamination
4. Perform hand hygiene before and after cleaning the patient station.
5. All personnel should wear gloves and gowns during work and when handling contaminated items.
6. Clean and disinfect all frequently touched or "high touch" surfaces in the dialysis station between patient treatments (such as the dialysis machines, chairs, side tables, and light switches).
7. Dedicate cleaning equipment for cleaning the area designated for patients with bloodborne diseases.
8. At the end of the day, wet mop the floor.
9. Perform high dusting on a routine basis.
10. Follow the manufacturer's recommendation for proper dilution and contact time of the hospital-approved disinfectants.
11. Linens should be used on chairs and beds and should be changed after each patient.
12. Soiled linens and other laundry items should be placed in linen bags or water-soluble bags before sending to the laundry.
13. Soiled linen should be collected in such a way as to keep the heavily soiled portion contained in the center by folding or rolling the soiled part.
14. Other items and surfaces found outside the immediate patient care area such as lounge chairs, wheelchairs, and stretchers should be routinely cleaned and disinfected.
15. Blood spills should be managed as per policy. (Refer to **ICM-IX-02** Management of Infectious Waste).

N. Waste Management

1. Disposable items should be placed in strong leak-proof bags; double bagging is only necessary when contamination of the outer surface occurs.
2. Disposable used needles and sharp items should be discarded in hospital-approved puncture-Wproof sharps containers.
3. All used disposable items should be discarded according to the waste management policy.

O. Education

1. A continuous educational program regarding infection control should be instituted in dialysis units for patients and staff. The program should highlight the following points:

2. Nursing Education
   a. The most common pathogens causing infections in dialysis patients.
   b. Principles and practices of infection control (aseptic technique, hand hygiene and standard precautions) to prevent the transmission of microorganisms both in the dialysis unit and at home.
3. Patient Education
   a. Patients should be instructed to keep the access site clean and dry at all times. The importance of personal hygiene and its possible relation to access site infections should be emphasized.
   b. Patients should be instructed about the proper way to care for the access site and to recognize and report any signs and symptoms of infection immediately. These signs include fever, chills, pain, and redness or drainage around the access site.
   c. Patients should be educated on the importance of complying with respiratory hygiene/ cough etiquette procedures when they have symptoms of upper respiratory tract infection.

P. Infection Control Recommendations for Peritoneal Dialysis at Home

1. Continuous ambulatory peritoneal dialysis (CAPD), continuous cyclic peritoneal dialysis (CCPD), and nocturnal intermittent peritoneal dialysis (NIPD) all are self-administered treatment done at home. Care to prevent infection during the process of dialysis is of high importance.
2. When replacing the solution or removing it, this process should be done under the following precautions:
   a. The room should not be crowded; no more than two attendants should be in the room.
   b. The room should be clean.
   c. The bed sheets should be clean.
   d. The patient should be kept away from air drafts.
   e. The patient should be hygienically clean and wearing clean clothes.
   f. The care provider should:
      i. Not be complaining of fever, upper respiratory tract infection, skin infection, eye discharge or diarrhea.
      ii. Wear clean clothes.
      iii. Cut nails short.
      iv. Wash hands thoroughly with soap and water and then dry hands using a clean towel.
      v. Avoid touching surfaces and items not related to the procedures to avoid contamination of his/her hands.
   g. During the process, smoking and unnecessarily talking are not permitted.
   h. Sterile supplies (e.g., clamps, gauze) should be used.
   i. The site of the peritoneal catheter should be cleaned using a proper antiseptic solution.
   j. Used disposable items should be discarded directly in a separate yellow bag, and the area should be kept clean.
   k. Finally, the hands of the care providers and the helpers should be washed using soap and water.
   l. The treating physician should be informed about any complaint, for example, redness at the site of infection, fever, or change in the color of the fluid drained.

m. Continuous care of the site of insertion between dialysis sessions should be as follows:
   i. The site should be kept covered using sterile gauze.
   ii. When taking a bath, the site should be covered using a plastic bag to avoid wetting of the gauze and to prevent water from entering through the catheter into the peritoneal cavity.

n. Vaccination against Hepatitis B is preferable for both the patient and the care provider.

Table 1-VII-07: Guidelines for Administering PCV13 and PPSV23 Vaccines for Infants and Children (ages 0-18) with Chronic Kidney Disease

Infants and Children (ages 0-18)				
Vaccination History	**Recommended Regimen**			**Notes**
Never vaccinated with PCV7 or PCV13 up to age 59 months	Routine vaccination for PCV13 (4 dose series)	Administer 1 dose of PPSV23 at age ≥2 years and ≥8 weeks after last indicated dose of PCV13	Administer 1 dose of PPSV23 5 years later	The ACIP recommendation for routine vaccination with PCV13 and the vaccination schedules for infants and toddlers through age 59 months who have not received any previous PCV7 or PCV13 doses are the same as those previously published for PCV7. PCV13 is recommended as a 4-dose series at ages 2, 4, 6, and 12–15 months.[2]
Completed all recommended doses of PCV7	Administer 1 dose of PCV13 ≥8 weeks later	Administer 1 dose of PPSV23 at age ≥2 years and ≥8 weeks after last indicated dose of PCV13	Administer 1 dose of PPSV23 5 years later	For children who have underlying medical conditions, a single supplemental PCV13 dose is recommended through 71 months of age. This includes children who have received PPSV23 previously. PCV13 should be administered at least 8 weeks after the most recent dose of PCV7 or PPSV23. This will constitute the final dose of PCV for these children.[2]
Children aged 24-71 months who received <3 doses of PCV7 before age 24 months	Administer 2 doses of PCV13 now	Administer 1 dose of PPSV23 ≥8 weeks later after last indicated dose of PCV13	Administer 1 dose of PPSV23 5 years later	Children aged 24–71 months with underlying medical conditions who received
Children aged 24-71 months who received any incomplete schedule of 3 doses of PCV7 before age 24 months	Administer 1 dose of PCV13 now	Administer 1 dose of PPSV23 5 years later	Administer 1 dose of PPSV23 5 years later	Children aged 24–71 months with underlying medical conditions who received any incomplete schedule of 3 doses of PCV7 before age 24 months should receive 1 dose of PCV13 followed by 1 dose of PPSV23 administered ≥8 weeks later.[2]
Completed all recommended doses of PCV13	Administer 1 dose of PPSV23 at age ≥2 years and ≥8 weeks after last indicated dose of PCV13	Administer 1 dose of PPSV23 5 years later		A second dose of PPSV23 is recommended 5 years after the first dose of PPSV23 for children who have anatomic or functional asplenia, including SCD, HIV infection, or other immunocompromising condition.[2]
Children aged 6-18 years who have not received PCV13	Administer 1 dose of PCV13 now			One dose of PCV13 is recommended by ACIP for children aged 6-18 years with high-risk conditions such as functional or anatomic asplenia, immunocompromising conditions, cochlear implants, or CSF leaks.[1]

Table 2-VII-07: Guidelines for Administering PCV13 and PPSV23 Vaccines for Adults (ages 19-64) with Chronic Kidney Disease

Adults (ages 19-64)				
Vaccination History	**Recommended Regimen**			**Notes**
Never vaccinated with PCV13 or PPSV23	Administer 1 dose of PCV13 dose now	Administer 1 dose of PPSV23 ≥ 8 weeks later	Administer 1 dose of PPSV23 ≥ 5 years later	ACIP recommends that adults aged ≥19 years with immunocompromising conditions, functional or anatomic asplenia, CSF leaks, or cochlear implants, and who have not previously received PCV13 or PPSV23, should receive a dose of PCV13 first, followed by a dose of PPSV23 at least 8 weeks later. Subsequent doses of PPSV23 should follow current PPSV23 recommendations for adults at high risk. Specifically, a second PPSV23 dose is recommended 5 years after the first PPSV23 dose for persons aged 19–64 years with functional or anatomic asplenia and for persons with immunocompromising conditions. Additionally, those who received PPSV23 before age 65 years for any indication should receive another dose of the vaccine at age 65 years, or later if at least 5 years have elapsed since their previous PPSV23 dose.[1]
Previously vaccinated with 1 dose PPSV23 ≥ 1 year ago; never vaccinated with PCV13	Administer 1 dose of PCV13 dose now	Administer 1 dose of PPSV23 ≥ 8 weeks after PCV13, which must be ≥ 5 years after first dose of PPSV23		
Previously vaccinated with 2 doses of PPSV23 (last dose was ≥ 1 year ago); never vaccinated with PCV13	Administer 1 dose of PCV13 dose now			
Previously vaccinated with ≥ 1 dose PCV13 (≥8 weeks ago); never vaccinated with PPSV23	Administer 1 dose of PPSV23 now	Administer 1 dose of PPSV23 ≥5 years later		
Previously vaccinated with ≥ 1 dose PCV13 (≥8 weeks ago) and 1 dose PPSV23	Administer 1 dose of PPSV23 ≥5 years after first PPSV23 dose			

Source: http://www.cdc.gov/vaccines/pubs/downloads/dialysis-guide-2012.pdf

1 Centers for Disease Control and Prevention. Use of 13-Valent Pneumococcal Conjugate Vaccine and 23-Valent Pneumococcal Polysaccharide Vaccine for Adults with Immuno-compromising
Conditions: Recommendations of the Advisory Committee on Immunization Practices (ACIP). MMWR Morbidty and Mortality Weekly Report. Oct 12 2012;61:816-819.

2 Nuorti JP, Whitney CG. Prevention of Pneumococcal Disease Among Infants and Children - Use of 13-Valent Pneumococcal Conjugate Vaccine and 23-Valent Pneumococcal Polysaccharide
Vaccine - Recommendations of the Advisory Committee on Immunization Practices (ACIP). MMWR Recommendations and Reports. Dec 10 2010;59(RR-11)

Table 3-VII-07: Guidelines for Administering PCV13 and PPSV23 Vaccines for Adults (ages 65 and over) with Chronic Kidney Disease

Adults (ages 65 and over)			
Vaccination History	**Recommended Regimen**		**Notes**
Never vaccinated with PCV13	Administer 1 dose of PCV13 now	Administer 1 dose of PPSV23 ≥ 8 weeks after PCV13, which must be ≥ 5 years after last dose of PPSV23	All persons should be vaccinated with PPSV23 at age 65 years. Those who received PPSV23 before age 65 years for any indication should receive another dose of the vaccine at age 65 years or later if at least 5 years have passed since their previous dose. Those who receive PPSV23 at or after age 65 years should receive only a single dose.[3]
Previously vaccinated with ≥ 1 dose PCV13 (≥8 weeks ago)	Administer 1 dose of PPSV23 now		

Source: http://www.cdc.gov/vaccines/pubs/downloads/dialysis-guide-2012.pdf

1 Centers for Disease Control and Prevention. Use of 13-Valent Pneumococcal Conjugate Vaccine and 23-Valent Pneumococcal Polysaccharide Vaccine for Adults with Immuno-compromising
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TITLE/DESCRIPTION:	INDEX NUMBER
ANTIMICROBIAL STEWARDSHIP PROGRAM	**ICM - VII - 08**

EFFECTIVE DATE:	APPLIES TO:	ISSUING AUTHORITY:
01/01/2018	**All GCC Countries**	**GULF COOPERATION COUNCIL – CENTRE FOR INFECTION CONTROL (GCC-CIC)**

DEFINITION

To provide a process governing the Antimicrobial Stewardship Program (ASP) and proper antimicrobial prescribing.

APPLICABILITY

For all clinicians, health administrators, and personnel involved with the proper utilization of antimicrobials in hospitals and affiliated facilities.

REFERENCES

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3. Centers for Disease Control and Prevention. Core Elements of Hospital Antibiotic Stewardship Program. http://www.cdc.gov/getsmart/healthcare/implementation/core- elements.html
4. Centers for Disease Control and Prevention. Antibiotic Use in Nursing Homes. 5/11/13. http://www.cdc.gov/getsmart/healthcare/learn-from-others/factsheets/nursinghomes.html
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TERMINOLOGIES

1. Antibiogram summarizes the cumulative proportions of pathogenic organisms that are susceptible to particular antimicrobials. This provides a profile of the susceptibilities of specific pathogenic bacteria to antimicrobial agents as tested in routine clinical microbiology practice.
2. Antimicrobial Stewardship Program (ASP) refers to a systematic approach to optimizing antimicrobial therapy through a variety of structures and interventions. ASP promotes not only limiting inappropriate use but also optimizing antimicrobial selection, dosing, route, and

duration of therapy to maximize clinical cure or prevention of infection, while limiting the unintended consequences, such as the emergence of resistance, adverse drug events, and unnecessary costs.

3. The Antimicrobial Stewardship Team (AST) is a hospital-based team of experts in the field of infectious diseases responsible in monitoring the appropriateness of antimicrobial usage, composed of, but is not limited to the following:
   a. Consultant, Infectious Diseases
   b. Clinical Pharmacists
   c. Infection Control Preventionist/Coordinator
   d. Representative from the Microbiology Department
4. An Antimicrobial Stewardship Committee (ASC) is a standing committee responsible for reviewing all Drug Formulary management requests related to antimicrobial agents; wherein the composition includes physicians and pharmacists specialized in the field of infectious diseases.
5. Clinical Pathway refers to a multidisciplinary standardized plan of care that describes the course of events in the treatment of patients with similar problems with specific time line, incidents/actions/interventions which must take place, and resources that should be used to achieve desired, standardized outcomes.
6. Defined Daily Dose (DDD) is the assumed average maintenance dose per day for a drug used for its main indication in adults.

POLICY

1. It is a priority for each hospital to improve the use of antimicrobial agents with the establishment of an ASP, which resides within the hospital's highest quality improvement and patient safety governance structure, as well as, the hospital's quality and safety strategic plan.
2. The development of antibiotic guidelines and the associated clinical pathways/protocols must be in accordance with the existing hospital standards, policies, and procedures for improving the appropriate use of antibiotics.
   a. The antimicrobial guidelines must be reviewed and updated on a yearly basis by the AST or any other existing committee competent to address antimicrobial agents.
   b. The associated clinical pathways are based on internationally accepted standards of practice and clinical practice guidelines that incorporates relevant standards of care, protocols, and procedures.
   c. The associated clinical pathways must include disclaimer and waiver of liability statements that the recommendations given by AST are meant to serve as guidelines only and not intended to replace good clinical judgment and the ASP assumes no responsibility for any injury or damage resulting from the reliance thereof.
3. The ASC in each hospital monitors compliance upon the recommendations of the AST and ensures the following:
   a. Establish antimicrobial order tools for restricted antimicrobials by ASC for endorsement by the AST.
   b. That the antimicrobial usage are regularly conducted and reports on antimicrobial utilization are provided to clinical departments and executive management committees.
4. The AST in each hospital provide specific guidance regarding antibiotic prescribing for surgical infections and surgical prophylaxis in accordance with existing relevant hospital policy and procedures. It is also the functional responsibility of the AST to:

a. Assist the prescriber or clinican for better utilization of the antimicrobial guidelines/ protocols and enhance de-escalation as well switching parenteral to oral when needed.
b. Conduct review on the restricted antimicrobials concurrently with the guidelines in a timely manner and provide feedback on improving utilization.
c. With the assistance of microbiology department, ensures that antibiograms are prepared on bi-annual basis to determine which antimicrobial is best against a strain of infection.

5. All clinicians and practitioners involved in antimicrobial ordering, dispensing, administration and monitoring antimicrobial resistance and antimicrobial stewardship practices must be properly educated and trained upon hiring to be granted initial privileges.
   a. Continuous education and trainings are conducted by the program to improve antimicrobial prescribing of clinicians.
   b. Physicians with prescribing privileges must conform with the provisions stipulated in the hospital policies and procedures for prescribing antimicrobial agents.
   c. Prescribing physician are provided with seminars and/or training conferences in order to be updated in the hospital therapeutic guidelines, policies and procedures.
   d. The prescribing physician ensures that authorization is obtained from restricted drug physicians in accordance with the approved Antimicrobial Guidelines.

PROCEDURES

A. The Director/Acting Director of Infection Prevention and Control will allocate adequate resources in terms of manpower and time for dedicated AST.

1. High-performing staff will be assigned/endorsed by Director/Acting Director, Infection Prevention and Control to the AST.
2. The Director/Acting Director of Infection Prevention and Control will endorse the annual AST activities, review the progress of the AST, identify barriers and provide advices on specific stewardship related cases and issues.

B. The AST consists of the following:

1. Consultant, Infectious Diseases will serve as Team Leader and perform the following:
   a. Provide expert advice, educate prescribers, and play a major role in the development and implementation of antimicrobial policy and prescription guidelines.
   b. On weekends, on-call Infectious Diseases Consultant will provide expert advice on Antimicrobial Stewardship activities.
   c. Use antimicrobial stewardship as clinical outcome measures and quality improvement, wherein the outcome measurements include, but not limited to the following:
      i. Antimicrobial Resistance Prevalence Rate
      ii. Antimicrobial Defined Daily Dose (DDD)
      iii. Duration of Therapy (DOT)
      iv. Antimicrobial Cost
      v. Clostridium difficile Infection Rate.
2. Clinical Pharmacist will perform the following:
   a. Review antimicrobial orders in accordance with the Antimicrobial Guidelines and provide timely feedback (where applicable) to the prescriber.
   b. Work with and educate ward pharmacists to identify potential patients for stewardship interventions (e.g. de-escalation, IV to oral switch etc.).

c. Ensure dose optimization is carried out especially for complex antimicrobials and complex clinical scenarios.
d. Enforce the approval system of restricted antimicrobials.
e. Collects and analyze local consumption and expenditure.
f. Leads and conducts appropriate antimicrobial audits.
g. Provide timely feedback for future improvement
h. Attends rounds with the AST.
i. Provide guidance on measure selection, data collection, analysis, validation of measurement data and the process measurement, which includes the following:
   i. Percent of compliance with the ASP recommendations; and
   ii. IV to Oral Switching Rate.

3. Infection Control Preventionist/Coordinator will perform the following:
   a. Prepares surveillance and audit reports
   b. Obtain and timely provision of data as required by the Program
   c. Ensures complete filling of the forms (whenever applicable)
   d. Provide help in organizing the administrative and educational activities
4. Clinical Microbiologist will perform the following
   a. Provision of timely and accurate reporting of culture and antimicrobial susceptibility data
   b. Prepare antibiogram on bi-annual basis (every 6 months)
   c. Work closely with the attending clinician, infectious diseases specialist and antimicrobial pharmacist in the management of patients with infections.
   d. Ensures to adopt new technology or advances in microbiological identification and susceptibility testing.

C. Pre-authorization System for Restricted Antimicrobials

1. Each hospital has to have restricted antimicrobial policy where specific antimicrobials would be restricted by specific physicians in each hospital.
2. If a physician is not privilege to presecribe an antiboitic, he has to go over required steps to obtain authorization.
3. At initiation of treatment, the prescribing physician will provide a clinical rationale for antimicrobial initiation.
4. The prescribing physician will send the appropriate specimens to diagnostic microbiology before the administration of antimicrobials.
5. The prescribing physician will select the antimicrobial according to the hospital Antimicrobial Guidelines.
6. When prescribing restricted antimicrobial, the prescribing physician has to communicate with the AST in a timely manner to obtain the authorization.
7. Upon contacting AST, the prescribing physician will be able to provide detailed clinical status of the patient, indication for antimicrobial therapy, drug allergies and microbiology
8. The AST member will respond to the prescribing physician in a timely manner, discuss the case with the prescribing physician and on the basis of the information provided, may recommend the use of the restricted agent or recommend an alternative therapeutic option or recommend further investigations or clinical follow- up.
   a. Targeted restricted antimicrobials require approval within 24 hours for non-ICU orders and within 72 hours for ICU orders.
   b. Each hospital will design a mechanism for a timely efficient antimicrobial approval.
   c. The AST service is active on weekdays from 0800 to 1700 hours.

9. Approvals during the weekends will require authorization from the on-call Infectious Disease Consultant or their designee.
10. Clinical pharmacist in each clinical unit will identify patients in need for ASP intervention and help in making appropriate clinical decisions with the AST.
11. Compliance with the pre-authorization or pre-approval process will be audited on a regular basis by the AST.

D. Antimicrobial Review and Prescriber Feedback

The AST will review and provide feedback at the unit level in wards with high antimicrobial usage (intensive care, oncology, hematology units, etc.)

E. Prescribing Physicians

During continuation of treatment, the prescribing physician will monitor antimicrobial drug levels as required by the hospital policy and ensure daily consideration of de-escalation, intravenous-oral switch or stopping antimicrobials (based on clinical picture and laboratory results).

F. ASP Point-of-care (POC) interventions

1. AST will provide direct feedback to the prescriber and an opportunity to educate clinicians on appropriate prescribing.
2. ASP Point-of-care interventions will be determined by the Executive Management and experts, which includes but is not limited to the following:
   a. Reviewing appropriateness of choice of antimicrobial and eliminating dual therapy.
   b. Directed therapy based on microbiological studies.
   c. Dose optimization
   d. Parenteral-to-oral conversion
   e. Therapeutic drug monitoring
   f. Automatic stop orders
   g. Appropriateness of time of initiation of antibiotic therapy with respect to time of surgery for prophylactic use and with respect to time of cultures for therapeutic use.

G. Information Services and Informatics Division (ISID)

1. As required by the AST, ISID will provide access to the Hospital Information System (HIS) electronic medical record (EMR), software and hardware support, as well as, support in maintaining electronic files, records, etc.
2. AST's access to the patient's EMR will be initiated by completing the HIS-EMR form.

RESPONSIBILITIES

1. It is the responsibility of Infection Prevention and Control, Medical Services and all other related departments to implement and monitor the provisions stipulated herein. See sample **Form 1-VII-08** Restricted Antimicrobial Order for guidance.
2. The Quality & Patient Safety Department / Quality Management Department in each hospital is responsible for monitoring compliance to all the provisions stipulated herein.

Form 1-VII-08:
Restricted Antimicrobial Order

Kingdom of Saudi Arabia
Ministry of National Guard - Health Affairs

المملكة العربية السعودية
وزارة الحرس الوطني - الشؤون الصحية

Restricted Antimicrobial Order

Part I - To be completed by Prescribing Physician

Please send the form to the Antimicrobial stewardship e-mail once the physician and nurse sign it.

☐ Meropenem ☐ Impienem ☐ Pip/Tazo ☐ Colistin ☐ Linezolid

☐ Tigecycline ☐ Caspofungin ☐ Anidulafungin ☐ Vancomycin (IV only)

Infectious disease consult already requested: ☐ Yes ☐ No

Diagnosis: ☐ Pneumonia ☐ UTI ☐ Meningitis/Encephalitis ☐ Osteomyelitis

☐ Skin and Soft Tissue Infection ☐ Intra-abdominal Infection ☐ Septic Shock

☐ Others: .....

Justification of restricted antimicrobial use:

☐ Emperic ☐ Culture guided treatment: Source: .....

Organism and Sensitivities : .....

Culture sent prior to antibiotic initiation:

☐ Yes ☐ No

☐ Blood culture x 2 sets ☐ CSF ☐ Sputum ☐ BAL ☐ Urinalysis & Urine Culture

☐ Wound Culture/Location: .....

☐ Body Fluid (specify): .....

☐ Prescriber contacted Antimicrobial (ASP) team (please check appropriate box)

Verbal: ☐ Approval

☐ No Approval. Alternatives recommended: .....

Person contacted: .....

☐ Prescriber did not contact the ASP team (please contact ASP team within 24 hours for non-ICU and 72 hours for ICU & Hem/onc orders)

Prescribing Physician/Designee (Name & Signature) | **Badge No.** | **Pager No.** | **Date/Time**

Nurse (Name & Signature) | **Badge No.** | **Date/Time**

Send form to: .....

Part II - To be completed by Antimicrobial Stewardship Team

☐ **Approved antimicrobial(s):** .....

Approved Duration: .....

Condition: .....

☐ **Non-approved antimicrobial(s):** .....

Reason:

Consultant/Designee (Name & Signature) | **Badge No.** | **Date/Time**

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Part III - To be completed by Clinical Pharmacist

- ☐ Prescriber accepted ASP recommendation
- ☐ Prescriber did not accept ASP recommendation
- ☐ Infectious disease team consulted

Clinical Pharmacist (Name & Signature) | **Badge No.** | **Date/Time**

ASP Team/Clinical Pharmacist - Comments	Signature	Date

Note: A Patient with a life threatening condition due to a suspected infection can receive prompt antimicrobial dose without waiting for the approval.

Section 8: DEPARTMENTAL POLICIES & PROCEDURES

TITLE/DESCRIPTION:	INDEX NUMBER
NUTRITION SERVICES	**ICM -VIII- 01**

EFFECTIVE DATE:	APPLIES TO:	ISSUING AUTHORITY:
01/01/2009 **01/01/2013** **01/01/2018**	**All GCC Countries**	**GULF COOPERATION COUNCIL – CENTRE FOR INFECTION CONTROL (GCC-CIC)**

DEFINITION

To provide food services staff with infection control and environmental health guidelines and standards to prevent food borne diseases and food poisoning.

REFERENCES

1. Association for Professionals in Infection Control (APIC) and Epidemiology, Inc. (2014). Chapter 109: Nutritional services. In APIC Text of infection control and epidemiology(4th ed.).
2. Environmental Health Manual, Infection Prevention and Control Department, KAMC 2016.

PROCEDURE

A. Food Service Manager

1. Provides written standards for:
   a. Safe preparation, handling and storage of food to minimize contamination by microorganisms and chemicals.
   b. Cleaning and sanitizing trays, utensils, tableware, and other surfaces.
   c. Employee health and work restrictions.
   d. Employee orientation, education, and training.
   e. Valid health certificates issued by the Infection Prevention & Control (IP&C) Department.
2. Conducts educational programs for personnel concerning food preparation and storage, personal hygiene, and their relevance to food borne infections. The educational sessions should include and not be limited to the following:
   a. Hand hygiene.
   b. Bacterial growth and temperature.
   c. Food storage, preparation, transportation and display.
   d. Sanitation and disinfection.
   e. Personal hygiene.
3. Assures that food handlers are monitored appropriately for illnesses.
4. Restricts unauthorized personnel from entering food preparation areas and food facilities in general.
5. Restricts visitor entry unless the visitor is wearing an over coat and hair cover.
6. Assures that food handlers carry out all cleaning procedures in a manner consistent with optimal food hygiene.

B. Food Handlers

1. In addition to the hospital pre-employment screening requirements, food handlers complete a screening process involving the following:
   a. Clinical examination (evaluation of the chest and abdomen, as well as, possible skin diseases and other communicable diseases).
   b. Chest X-ray to rule out pulmonary tuberculosis.
   c. Stool analysis for ova and parasites.

d. Stool culture for Salmonella, Shigella and Vibrio cholerae.
e. Vaccination for meningococcal disease, with a booster every 5 years.
f. Vaccination for typhoid fever, with a booster every 5 years.

2. Receive a valid medical examination certificate indicating that they are free from infectious diseases and fit to work as a food handler; this certificate must be issued by the Infection Prevention & Control Department and will be valid for one year, renewable yearly after an assessment of the food handler.
3. Follow proper and frequent hand hygiene and personal hygiene practices
   a. Fingernails: Keep fingernails trimmed and filed; do not apply finger nail polish or artificial fingernails.
   b. Jewelry: Do not wear jewelry on the arms and hands while preparing food to allow for proper hand hygiene.
4. Wear and maintain proper clean attire during food handling (clean uniform, apron, hair and beard restraint, clean gloves when needed). Do not wear street clothes in food service areas.
5. Do not eat, drink or smoke while preparing or handling food.
6. Do not go to the washroom with masks or gloves on.
7. Do not leave the work area with mask or gloves on.

C. Purchasing and Receiving

1. Purchase food from a reputable source and inspect upon delivery for the expiration date and signs of spoilage.
2. Reject damaged food or containers.
3. Select food products in commercially filled, unopened packages whenever possible.
4. The receiving personnel should check the following items:
   a. Temperature strips of potentially hazardous foods.
   b. Inspection stamps and labels/tags of meat, eggs, milk, poultry, fish, juice, and pureed food.
   c. All use-by and expiration dates.
   d. Color, texture, odor and condition of products
   e. Temperature of frozen and refrigerated food, including milk. When the outside temperature reaches 90°F (32°C), all refrigerated perishable item need to be refrigerated within 1 hour.
   f. Open and examine contents of tampered or damaged containers; if appropriate reject product.
   g. Inspect for signs of pest infestations and/or spoilage.
5. Store perishable foods immediately at the proper temperature.
6. Dispose damaged items.

D. Storage

1. Store non-perishable food in clean, dry, properly ventilated areas and inspect them periodically for expiration dates and any signs of spoilage.
2. Store food in designated areas. Do not store in housekeeping and dishwashing areas or near any sources of potential contamination.
3. Store in clean wrappers or containers with covers; label contents appropriately with date when item was received.
4. If products are removed from original container that has the lot number, it is important to maintain lot numbers to be able to track and recall in the event of an identified problem.

5. Store eggs in original container in the refrigerator at 45°F (7°C).
6. Remove all corrugated cardboard as soon as possible, because these boxes may deteriorate or damage the product, the product may leak, or water damage may be present; any moisture rots the boxes, and these conditions allow for pest infestation and possible damage to the product.
7. Keep storage areas and vehicles that transport food clean. The area must have variable lighting, ventilation, and air circulation. A temperature range for dry storage is 50°F to 70°F (10°C to 21°C). Document monitoring of temperature in a log book.
8. Low temperature storage maintenance:
    a. Fruit and vegetables (except those in dry storage): 40°F to 45°F (4°C to 7°C).
    b. Dairy products, eggs, meats, poultry, fish, and shellfish: 32°F to 40°F (0 °C to 4°C).
    c. Frozen foods: -10°F to 0°F (-23°C to -10°C).
9. Keep temperature logs of all storage areas, if a problem occurs, correct it and record the methods used to correct it; date, sign, and file.
10. Store food at least 6-inches above the floor level on clean racks with slatted shelves or racks that prevent cross-contamination and proper air circulation. Never cover the slats with foil or other materials as this prevents flow of air; and, keep away from walls to facilitate cleaning and allow for pest control measures.
11. Shelving must allow for cleaning under the bottom of the shelf or flushing of the floor; away from walls to facilitate cleaning; and reduce infestation of pests.
12. Storage shelves should be at least 2 inches from outside walls that may sweat because of differences between inside and outside temperatures.
13. Implement cleaning schedules and monitor for cleanliness, temperature, ventilation, and pest infestation.
14. Never store toxic materials used for cleaning and sanitation in food storage area. Label and store in a locked area away from food and paper goods.
15. Use the first in first out (FIFO) procedure to rotate stock. Periodically check the expiration dates on all food and supplies.
16. Monitor the temperature of all refrigerators and freezers and record them daily in a log.
17. Maintain good housekeeping and hygienic conditions.
18. Segregate food products according to each type such as poultry, meat, vegetables and fruits.

E. Preparation

1. Instruct personnel and supervise them regarding personal hygiene and food safety during food preparation.
2. Wash vegetables and fruits properly.
3. Thaw either in a microwave or refrigerator or under running water. Do not thaw at room temperature.
4. Do not thaw and refreeze.
5. Cook food thoroughly to reach the correct temperature for the specific type of food.
6. Store food protected at the proper temperature once prepared to avoid contamination. Do not allow food to sit uncovered at room temperature.
7. Avoid handling of food with bare hands; use proper, clean utensils such as tongs and spoons.
8. Use separate cutting boards for raw meat, poultry, fish, raw fruits and vegetables and cooked food unless boards are non-absorbent (i.e., will not scratch, chip, or crack) and can be cleaned and sanitized adequately between uses.

9. Use clean equipment and utensils during food preparation to avoid cross-contamination.
10. Food and service workers responsible in the preparation of food should wear disposable gloves. Gloves should be removed before leaving the work area. When returning to the work area, hand hygiene must be performed and new gloves should be worn. Gloves should be changed and hand hygiene performed whenever the gloves are contaminated by touching potentially soiled surfaces such as floors, waste cans, cardboard, boxes, etc.

F. Prevention Strategies for Safe Food Handling

1. Label all food with the preparation date and time.
2. No thawing and refreezing food products; keep product refrigerated or frozen.
3. Thaw food (a) under refrigeration in which food temperature is maintained at or below 41°F (5°C); (b) completely submerged under potable running water (at a water temperature of 70°F (21°C); (c) place food in a water type bag and submerge in cold water (change the water every 30 minutes); (d) as part of the cooking process; or, (e) in a microwave and immediately transferred to conventional cooking equipment with no interruption in the process.
4. No precooking and holding meats for final cooking.
5. Chill cooked perishable leftover foods to an internal temperature of 5°C (41°F) or less or to 7°C (45°F) or less within 2 to 4 hours of preparation.
6. Do not stack shallow pans on top of each other (allow air to circulate around food being chilled).
7. Rapid heating to 165°F (74°C) within 2 hours.
8. Keep hot food at 135°F (57°C) or higher.
9. Stirring food while holding.
10. Do not pour a batch of new hot food into a batch of hot food being served.
11. Do not use hot food-holding equipment (such as steam tables) to reheat food.
12. Do not reuse food or condiments that have been previously served to customers (butter, sauce, dressings, chips, or bread).
13. Use sanitized, calibrated thermometers to monitor the temperatures, as required.
14. All monitoring records should be documented in a log book.

G. Transport, Display, and Serving

1. Transport food to different areas while protected in temperature-controlled carts.
2. Establish safe times for food items to be stored in inpatient care areas.
3. Protect food on display from customer contamination by the use of easily cleanable counter protector devices.
4. Maintain food on display at the proper temperature, whether hot or cold.

H. Washing and Cleaning

1. Establish comprehensive cleaning schedules to include different areas, equipment, fixtures, and physical facility structures (e.g., walls, floors).
2. Monitor dishwasher washing and rinsing temperature to achieve proper sanitation and cleaning of food utensils.
3. After manual washing, sanitize all utensils and equipment either with hot water (70°C) or the use of sanitizer (sodium hypochlorite) with the appropriate concentration and exposure time.
4. Wash all working surfaces: thoroughly rinse and sanitize them after each use with the proper sanitizer, dilution, exposure time and water temperature.

I. Water

Use clean, potable and safe water in the food service facility. Test water routinely for its quality and potability.

J. Ice Machine

1. Use ice-dispensing machines (preferably).
2. Use potable water for ice making.
3. Clean and disinfect ice machines routinely according to a written procedure.
4. Use a clean scoop to dispense ice. Do not handle ice with bare hands.

K. Waste Management

1. Store garbage in leak- and pest-proof containers with tight-fitting covers.
2. Store all garbage containers either outdoors or above a smooth surface of non-absorbent material.
3. Wash containers and sanitize them routinely in an area provided with a floor drain connected to a sanitary sewer.

L. Pest Control

To prevent the access of pests to food areas and allow for extermination, if necessary, follow appropriate pest control measures (e.g., sanitation, screens, closure of cracks and holes).

M. Maintenance

Identify and follow a cleaning and sanitization procedure for each piece of equipment used in food services.

TITLE/DESCRIPTION:	INDEX NUMBER
LAUNDRY	**ICM -VIII- 02**

EFFECTIVE DATE:	APPLIES TO:	ISSUING AUTHORITY:
01/01/2009 01/01/2013 01/01/2018	**All GCC Countries**	**GULF COOPERATION COUNCIL – CENTRE FOR INFECTION CONTROL (GCC-CIC)**

DEFINITION

To describe infection control practices for the hospital laundry to protect workers from exposure to potentially infectious materials during the collection, handling and sorting of soiled linen, which may be contaminated with blood and body fluids or other infectious material. Also, to describe infection control standards for the laundering process to restore soiled linen to a usable condition.

REFERENCES

1. Chapter 111: Laundry, patient linens, textiles. In APIC Text of infection control and Epidemiology 2014 (4th ed.).
2. Center for Disease Control and Prevention (CDC). (2001). Guidelines for environmental infection control on healthcare facilities, pp. 88-92.

COMMENTS

1. Laundry services play a critical role in a healthcare facility's infection prevention and control program. Contaminated textiles often contain large numbers of microorganisms from body substances, thus it is important to ensure that pathogens are not transferred to patients or healthcare workers.
2. Soiled linens must be assumed to be contaminated; personnel who handle soiled linens must follow Standard Precautions at all times.
3. To reduce the possibility of occupational risks of infection transmission and/or exposure, laundry workers should focus on:
   a. Appropriate and frequent hand hygiene.
   b. Appropriate use of personal protective equipment (PPE).
   c. Removal of foreign objects from soiled linen.
4. To restore soiled linen to usable condition, washing, bleaching, rinsing, and drying are necessary.

PROCEDURES

A. Personal Protective Equipment (PPE) and Hand Hygiene

1. All staff must be trained in the collection, transport, sorting and washing of soiled linen using the appropriate infection control measures, such as hand hygiene, wearing PPE and adhering to standard precautions. Refer to **ICM–II-04** Hand Hygiene.
2. Staff must be educated in the use of PPE. Refer to **ICM–II-03** Standard Precautions:
   a. When and what is needed.
   b. How to put on correctly.
   c. Where to dispose of used PPE.
3. PPE requirements differ depending on the assigned area of the laundry.

B. Collecting Contaminated Textile/Linens

1. Nursing: The nurse should wear appropriate personal protective equipment when handling used or contaminated linen.
   a. Contaminated linen should be bagged at the site of generation in a manner that minimizes agitation and prevents contamination of the environment and personnel.

i. Do not shake contaminated linen when removing it from the bed.
ii. Place used linen in a laundry bag at the point of use.
iii. Do not place on chairs or other furniture.

b. Collect soiled linen in such a fashion as to keep the heavily soiled portion contained in the center by folding or rolling the soiled spot into the center. This action will reduce the risk of contamination and prevent leakage from soaking through.
   i. When available, bag soluble in hot water can be used for heavily soiled linen.
   ii. Roll linen as mentioned above and place it in the clear, water-soluble bag, and then into the laundry bag.

c. Care should be taken before placing soiled linen in a laundry bag to ensure that all non-textile items, including instruments, needles, or plastic single-use under pads, are removed. These items can cause extensive damage to laundry equipment.
   i. Items of this nature present the greatest risk to the HCW in acquiring blood-borne infection.
   ii. Ensure that the patient's personal items (e.g., dentures, eyeglasses, and hearing aids) are not left in the linen.

d. Laundry bags should not be filled more than ¾ full. Once full, tie off soiled linen bags in the dirty utility room or a designated area for pickup by laundry staff. Linen bags must not be placed on the floor; use a bin or rack to keep the bags 8 to 10 inches off the floor.

e. Storage of soiled linens collected from the different areas of the hospital waiting for transport to the laundry service should be kept in an area that is not accessible to the public.

f. Linen from isolation rooms is considered regular soiled linen.

2. Laundry staff:
   a. Observe Standard Precautions while moving, loading and unloading soiled linens.
   b. Linen should not be sorted or pre-rinsed in patient care areas.
   c. Care should be taken when removing laundry bags from these areas. Do not overfill the carts.
   d. Do not hold bags close to the body; this step will help prevent the possibility of sharps injury from forgotten items in the linen.
   e. If Standard Precautions are followed when handling these soiled linens, the bags do not need to be color-coded or labeled.
   f. The laundry provider must maintain functional separation of clean from soiled linens in carts and/or vehicles at all times during the collection and transportation of soiled linens.

C. Sorting Soiled Linen

1. All personnel involved in the sorting and washing of contaminated healthcare linen should:
   a. Be appropriately trained.
   b. Have adequate access to hand hygiene facilities.
   c. Use PPE (overalls, mask, head cover, heavy duty gloves, and boots).
2. The bagged linen should be delivered to the 'soiled' area of the laundry.
3. It is important to be alert for sharp objects while sorting linen. If found, sharps must be disposed of appropriately. Refer to **ICM–IX-02** Management of Infectious Waste.

D. Laundering Process (washing, rinsing, drying)

The laundering process is designed to remove organic soil and render the linen clean. The correct amount of each chemical (at an adequate dilution), the mechanical action of the equipment, the water flow, the water temperature, the timing (cycles), and drying must be optimized as part of the process.

1. High temperature: A temperature of at least 71°C (160°F) for a minimum of 25 minutes is normally recommended for the hot water wash cycle.

2. Low temperature: A lower temperature of 22°C-25°C (71°F-77°F) can satisfactorily reduce microbial contamination in the washer.
3. The washing cycles (one for bleach wash), series of rinses, and the last rinse will neutralize any residual chemicals.
4. The amount of residual chlorine (bleach) should be between 50 and 150 ppm and must be monitored and controlled.

E. Packaging and Storing

1. Maintain the linens in a clean state for delivery to the customer.
2. Wrapped linens into fluid-resistant bundles or place bundled but unwrapped linens into fluid-resistant covered carts or hampers.
3. Keep unwrapped linens into carts or hampers covered at all times. If the cart does not have a solid bottom, it must be lined with heavy plastic or impervious paper before placing clean linens inside.
4. Store bundled and wrapped linens in open racks in the laundry provided the integrity of the bundled and wrapped linens is not compromised.
5. You may store unwrapped clean linens in designated rooms, where only the appropriate personnel have access to it. Keep the door close at all times.
6. Reprocess any linens that become soiled during the packaging and storage.

F. Delivery of Clean Linens

1. Maintain functional separation of clean from soiled linens during transportation by bagging soiled linens in fluid-resistant containers.
2. Do not store clean and soiled linens in the same container.
3. Clean and disinfect properly carts, containers, covers, and liners used to collect or transport soiled linens after the cart is emptied and before any next use.
4. Clean the interior of the transport carts or containers on a regular basis or when visibly soiled.

G. Needle/Sharps Injuries

1. Instruct laundry employees to report any sharps injury occurring when handling linen as well as any improperly disposed sharps or needles.
2. Provide a sharps container in the soiled linen area to dispose of any sharps found in the linen.

H. Physical Facility

1. Separation of clean and soiled linen:
   a. Separate the areas for sorting and processing soiled linens from the areas for ironing, folding, and storing clean linen.
   b. Separate the abovementioned areas with physical barriers and ensure appropriate ventilation.
2. Ventilation: Maintain areas receiving soiled linen at negative air pressure relative to clean areas or ensure positive air flow from the clean linen area to the soiled linen area.
3. Hand hygiene facilities: The laundry areas must have hand hygiene facilities (soap, water, paper towels, or alcohol hand rub) and PPE available for workers.

TITLE/DESCRIPTION:	INDEX NUMBER
PHARMACY	**ICM -VIII- 03**

EFFECTIVE DATE:	APPLIES TO:	ISSUING AUTHORITY:
01/01/2009 **01/01/2013** **01/01/2018**	**All GCC Countries**	**GULF COOPERATION COUNCIL – CENTRE FOR INFECTION CONTROL (GCC-CIC)**

DEFINITION

To provide clear guidelines for pharmaceutical staff on the correct procedures for preparation, storage and monitoring of sterile products kept in the pharmacy and to prevent the contamination of sterile products prepared within and outside the pharmacy

REFERENCES

1. Association for Professionals in Infection Control (APIC) and Epidemiology, Inc. (2014). Chapter 30: Aseptic technique. In APIC Text of infection control and epidemiology (4th ed.).
2. Association for Professionals in Infection Control (APIC) and Epidemiology, Inc. (2014). Chapter 110: Pharmacy services. In APIC Text of infection control and epidemiology (4th ed.).
3. In 2004, the United States Pharmacopeial (USP) Convention published the first national standards and enforceable standards for compounded sterile preparations (CSP) to protect patients against preventable harm (i.e., General Chapter 797-Pharmaceutical Compounding-Sterile Preparations).

COMMENTS

1. Pharmacist and pharmacy technicians are the professionals responsible for the preparation and storage of compound sterile and non-sterile products. Failure to follow sterile compounding standards and proper aseptic technique could lead to intrinsic and extrinsic contamination, which may result in microbial colonization or infection in the patient.
2. Patient morbidity and mortality can result from contaminated pharmaceutical items. Sterile pharmaceutical products can become contaminated via two general methods:
   a. Intrinsic contamination: occurs during the manufacturing process.
   b. Extrinsic contamination: occurs subsequent to manufacturing; during the admixture process or while the infusate is used.
3. Compounding is the process of combining drug ingredients to prepare medications that are not commercially available or to alter commercially available medications to meet specific patient needs such as dye-free or liquid formulations.
4. Modes of contamination of sterile pharmaceutical products and preparations which led to several epidemics:
   a. Most IV-associated infections result from microbial contamination of the cannula.
   b. Poor aseptic technique.
   c. Poor compliance with hand hygiene and garbing.
   d. The use of contaminated single-dose vials (SDVs) and multi-dose vials (MDVs).
   e. Unsafe use of injection practices, specifically the use of the same syringe with new needles for drawing fluid from a common vial.

PROCEDURE

I. Methods for Preventing Contamination of Compounded Sterile Preparations

A. Aseptic Technique

1. Practice aseptic technique to prevent contamination of pharmaceuticals which are associated with epidemics.
2. Remove any hand/wrist jewelry and perform hand scrubbing before each procedure. Scrub nails, hands, and forearms with antimicrobial soap before handling sterile products.
3. Wear a gown closed at the collar with knit cuffs, a facemask, shoe covers, hair covers, and a cover for facial hair, when applicable, upon entering the preparation area.
4. Wear sterile gloves before preparing intravenous (IV) admixtures. Gloves should be removed when exiting the preparation area. Gloved personnel should not touch any surface outside of the hood.
5. Disinfect the rubber stoppers of containers and the diaphragms of vials with 70% alcohol wipe prior to use.
6. Use a sterile device (e.g., a needle) each time a vial is accessed and avoid touch contamination of sterile supplies.
7. Develop protocols to validate the aseptic technique for each person preparing sterile products and repeated at periodic intervals.
8. Do not eat, drink or smoke in the preparation area.

B. Use of SDVs and MDVs

1. Manufacturers' expiration dates apply to stability and sterility of unopened vials.
2. Dedicate all single-dose and single-use injectable medications and solutions for use on a single patient and entered one time.
3. Use SDVs whenever possible for compounding of parenteral preparations.
4. The use of Pharmacy Bulk Packages (PBPs) which are vials containing many single doses are intended for use in an ISO 5 environment for IV additive services. They are not intended for direct patient use or for use outside of the appropriate aseptic environment (i.e., IV hood).
5. Discard after 6 hours SDVs or PBPs (containers of many injectable single-doses) used in ISO class 5 air cleanliness conditions, unless otherwise specified by the manufacturer.
6. Dedicate the use of MDVs to a single patient whenever possible. If MDVs must be used for more than one patient, they should be kept or accessed in the immediate patient treatment area (e.g., patient rooms, operating rooms)
7. Document the date, time and initial in all MDVs once opened or reconstituted.
8. Refrigerate any opened MDVs as recommended by the manufacturer.
9. Clean the rubber diaphragm of the MDVs with 70% isopropyl alcohol before inserting a device into the vial.
10. Access the MDVs with a sterile device each time.
11. Avoid touch contamination of the MDVs.
12. Discard MDV when empty, when suspected or visible contamination occurs, or when the manufacturer's expiration date (listed on the vial, e.g., 28 days) is reached.
13. Follow manufacturer's expiration date for MDVs without preservatives listed on the vial (e.g., 24 hours at room temperature or 72 hours in the refrigerator from first vial entry).

C. Engineering Controls

It is recommended that in preparing compound sterile procedures use a primary engineering control device (e.g., laminar air flow workbench or biological safety cabinet (BSC) capable of

maintaining International Organization for Standardization (ISO) class 5 (no greater than 100 particles per cubic foot or 3,520 particles per cubic meter) air cleanliness conditions.

1. Use of the laminar air flow hood (LAFH)
   a. Operate the LAFH continuously. Before processing sterile products, the hood should be running for a period of time long enough to purge room air from the work area (at least 30 minutes or as per the manufacturer's recommendations).
   b. Do not disrupt the air flow between the HEPA filter and any sterile objects to avoid contamination.
   c. Complete all work at least 6 inches from the edge in the interior of the LAFH.
   d. Disinfect the work surfaces and all accessible interior surfaces of the hood with a hospital-approved disinfectant before beginning work.
   e. Clean the exterior surfaces of the hood daily with a hospital-approved disinfectant.
   f. Inspect the containers of the ingredients used to prepare the sterile product for defects, product integrity, and the expiration date.
   g. Do not use defective or expired products.
   h. Defective products should be reported to the Ministry of Health using the Drug Quality Report.
   i. Disinfect the entire surface of all ampoules, vials and containers with 70% isopropyl alcohol before entry into the LAFH, and allow them to air dry.
   j. Handle all ampoules, vials, needles and syringes in such a way as to maintain asepsis and avoid unnecessary turbulence within the LAFH.
   k. Ensure certification of the LAFH annually, or more frequently as needed, and maintain certification records.
2. CSPs are classified into five general categories based on risk of microbial contamination to all compound sterile preparations. These are as follows:
   a. Immediate use: CSPs prepared outside of an ISO 5 device, which are intended for immediate use.
   b. Low-risk level with 12-hour beyond–use date: CSPs prepared in ISO class 5 air cleanliness conditions in an unclassified segregated compounding area with ambient air.
   c. Low-risk level: CSPs prepared in ISO class 7 or 8 buffer areas. The compounding procedure involves simple aseptic manipulations using no more than three commercially available ingredients and not more than two entries into any one final container.
   d. Medium-risk level: CSPs prepared under batch conditions (multiple individual doses) or CSPs for individual patients using more complex aseptic manipulations (e.g., parenteral nutrition (PN) solutions and patient-controlled analgesia) prepared in ISO 5 air cleanliness conditions in an ISO class 7 or 8 area.
   e. High-risk level: CSPs prepared from non-sterile ingredients or non-sterile devices or prepared in air quality less than ISO class 5 air cleanliness.

D. Sterile Product Preparation Area

1. Separate the functional areas from other areas.
2. Should have a controlled air flow under positive pressure that should not be disrupted by air ducts, vents or excess traffic that could produce air currents, introducing contaminants.
3. Should be free of particle-shedding materials such as cardboard boxes or powdered gloves. Such materials should not be stored in any area surrounding the hood.
4. Should not have carpets, drapes or other particulate-shedding materials in the preparation area.
5. Should have minimal personnel traffic confined to those persons directly engaged in IV admixture procedures or their supervision.

E. Quality Control Monitoring

1. Use single-dose vials whenever possible for admixing parenteral preparations.
2. Monitor the temperature of refrigerators used in pharmacy to store medications continuously and set alarms to indicate excessively high or low temperatures.
3. Examine the final sterile product for any leaks, cracks, turbidity or particulate matter.
4. Label all mixed parental fluids with the following information:
   a. Patient Name (for patient-specific products).
   b. Medical record number, patient location.
   c. Solution and ingredient names and concentrations.
   d. The administration regimen names and concentrations.
   e. The expiration date and time.
   f. Storage requirements.
   g. Identification of the responsible pharmacist by badge number.
   h. Appropriate additional labeling, such as any precautionary measures that need to be taken.
   i. Device-specific instructions.
   j. Any additional information in accordance with local regulations or requirements.

F. Storage

The Pharmacy is responsible for the appropriate storage of pharmaceuticals throughout the institution. The following applies to parenteral admixtures:

1. Store parenteral admixtures according to the manufacturer's recommendations.
2. Remove expired medication from patient care areas, and ensure its proper disposal.
3. Store admixed parenteral solutions in the refrigerator for up to 1 week, provided that refrigeration begins immediately after preparation and is continuous. The stability of admixed ingredients may dictate a shorter or longer refrigeration period.
4. Check the temperature of refrigerator used to store pharmaceuticals daily (twice, if used to store vaccines). The temperature recorded electronically or on a log that is dated and signed by the person performing the temperature check.
5. Maintain room temperature between 20 to 25°C.
6. Strictly follow manufacturer's recommendation for storage and handling of medications.

G. Pharmacy Responsibilities Involving Antimicrobial Control

Concerns about antimicrobial resistance causing increased morbidity, mortality and healthcare costs have led to recommendations for controlling antimicrobial use.

1. Establish a system to control and monitor antimicrobial usage.
2. Participate in the development of programs for formulary and antimicrobial control.
3. Collaborate with physicians regarding patient-specific recommendations for optimal antimicrobial use.

II. Preparation of Compounded Sterile Preparations in Patient Care Areas Outside the Pharmacy

Preparing IV medication outside the Pharmacy do not typically use a primary engineering control device (e.g., laminar airflow workbench), thus individuals mixing CSPs must be trained and must follow the following recommendations:

1. Follow aseptic technique when preparing CSPs.
2. Use immediately any CSPs prepared outside an ISO 5 device.
3. Follow the same recommendation mentioned above regarding the use of SDVs and MDVs and for storing medications.
4. Administration of IV medications:
   a. Disinfect the IV access port prior to administration of the medication or solution.
   b. Administer medication according to the six rights of medication administration (i.e., name of medication, route, time, patient, dosage, and documentation).
   c. Do not administer any medication prepared by another practitioner.
5. Follow safety precautions when handling sharp items:
   a. Dispose needles/sharps at the point of use in a leak-proof, puncture-resistant sharp container with the biohazard label.
   b. Do not recap needles.
   c. Replace sharp container when ¾ full.

TITLE/DESCRIPTION:	INDEX NUMBER
ENDOSCOPY	**ICM -VIII- 04**

EFFECTIVE DATE:	APPLIES TO:	ISSUING AUTHORITY:
01/01/2009 **01/01/2013** **01/01/2018**	**All GCC Countries**	**GULF COOPERATION COUNCIL – CENTRE FOR INFECTION CONTROL (GCC-CIC)**

DEFINITION

To provide recommendations for cleaning, disinfecting, sterilizing, and safely transporting endoscopes and their accessories to minimize the risk of infection transmission between patients.

REFERENCES

1. Association for Professionals in Infection Control (APIC) and Epidemiology, Inc. (2014). Chapter 55: Endoscopy. In APIC Text of infection control and epidemiology (4th ed.)
2. Rutala WA and Weber DJ. Disinfection of Endoscopes: review of new chemical sterilants used for high level disinfection. Infection Control Hospital Epidemiology, 1997; 20:69-76.
3. Association for the Advancement of Medical Instrumentation AAMI ST91/CDV-1:2014, 07-17.

COMMENTS

1. Flexible endoscope has become an invaluable diagnostic and therapeutic tool. As with all diagnostic and therapeutic procedures, there are always intrinsic and extrinsic risks of complications. To minimize the risk of infection, healthcare providers must ensure that equipment is designed and maintained properly and that guidelines for reprocessing are strictly followed.
2. Reprocessing requires meticulous cleaning and high-level disinfection or sterilization of internal channels, external surfaces, openings, valves and caps. Accessory equipment used to biopsy, brush, or cut tissue must be cleaned and sterilized or discarded if it is disposable.
3. Some disinfectants are inactivated by organic material. Organic soil including blood, excretions, and embedded microbes may contribute to disinfectant failures and prevent the penetration of germicides.

TERMINOLOGIES

1. **Automated endoscope reprocessor (AER)** refers to endoscope washer-disinfector are machines designed for the purpose of cleaning and/or disinfecting endoscopes and components.
2. **Chemical sterilants** refer to liquid chemical agents cleared by the Food and Drug Administration (FDA) for reprocessing reusable medical devices. These products are considered high-level disinfectants or sterilants depending upon the recommended time, temperature and concentration and their sporicidal activity. Manufacturer's instructions must be followed.
3. **Cleaning** refers to the physical removal of organic and inorganic material from objects and surfaces.
4. **Containment device** is a reusable rigid sterilization container, instrument case, cassette, or organizing tray intended for use in healthcare facilities for the purpose of containing reusable medical devices for sterilization.
5. **Endogenous infection** (e.g., cholangitis, pneumonia) occurs when the microflora colonizing the mucosal surfaces of the GI or respiratory tract gain access to the bloodstream or other normally sterile body sites as a consequence of the endoscopy procedure.
6. **Endoscope** refers to a flexible device used to visualize the interior of a hollow organ.
7. **Endoscope accessory** refers to biopsy forceps, brushes, snares, or other devices introduced through the internal channel of the endoscope during procedures.
8. **Exogenous infection** occurs when microorganisms are transferred from previous patients or the inanimate environment via contaminated endoscopes or accessories. The most common factors associated with transmission include inadequate manual cleaning, inadequate exposure of all endoscope surfaces to the sterilant, inadequate rinsing and drying, and the use of automated endoscope reprocessors.

9. **High-level disinfection** is the elimination of all forms of microbial life with the exception of large numbers of bacterial spores.
10. **Reprocessing** refers to the cleaning and high-level disinfection or sterilization of reusable endoscope devices either by manual or automated methods.
11. **Sterilization** is the complete elimination or destruction of all forms of microbial life.

RECOMMENDATIONS

A. Processing Endoscopes and Accessories

1. If an AER is used, ensure that the endoscope and its components can be effectively reprocessed in the AER. Obtain and review model-specific reprocessing protocols from the endoscope and AER manufacturers; and, check for compatibility.
2. Reusable endoscope accessories (e.g., biopsy forceps or other cutting instruments) that break the mucosal barrier should be mechanically cleaned as described earlier and then sterilized between each patient use (high-level disinfection is not appropriate).
3. Endoscopes (and accessories) that come in contact with mucous membranes are classified as semi-critical items and should receive at least high-level disinfection after each patient use.
4. All endoscopes received for reprocessing must have the following information logged:
   a. Patient name
   b. Medical record number
   c. Procedure and endoscopist
   d. Identification number of endoscope used (serial number)
   e. Identification of the endoscope disinfector used
5. Pre-cleaning at the point of use:
   a. To prevent buildup, development of biofilms, and drying of secretions; pre-cleaning should take place at the point of use immediately following the procedure.
   b. It is imperative that written instruction for use (IFU) from both the endoscope manufacturer and the cleaning solution manufacturer are followed.
6. Transporting used endoscopes:
   a. Each endoscope should be isolated and transported with its components in a close transport container to the next stage of reprocessing, as it is considered contaminated.
   b. The carrying case used to transport clean and reprocessed endoscopes outside the healthcare environment should not be used to store an endoscope or to transport the instrument within the healthcare facility.
   c. To avoid puncture and penetration damage to the endoscope, devices such as forceps and wires used in the procedure should be transported in their own containers.
7. Leak testing
   Perform pressure/leak testing after each use according to the manufacturer's guidelines.
   a. Observe the instrument carefully for continuous bubbling. If continuous bubbling is observed from a given area, this indicates a leak. Remove the instrument from the water immediately after the leak test cycle. Do not use the instrument.
   b. Dry and clean the instrument, place it in a plastic bag and pack it into the transport case. Contact the appropriate department for repairs.
   c. Document outcome of leak testing.
8. Manual cleaning
   Manual cleaning starts after confirming that the endoscope does not have any leaks and should be conducted as soon as possible after use to prevent soil from drying on the device.

a. Prepare fresh low-foaming cleaning solution for each endoscope. The temperature of the cleaning solution should be monitored and documented.
b. Place the endoscope in the solution, keeping it below the fluid's surface level at all times.
c. Clean the endoscope's exterior surfaces with a single-use lint free cloth or sponge.
d. Clean all valves, cylinders, openings, and forceps elevator housings with a cleaning brush of the length, width, and material designated in the endoscope manufacturer's written IFU.
e. Brush all channels according to the endoscopes manufacturer's written IFU until there is no visual debris.
f. Attach a model specific cleaning adapter, flush channels, and allow for solution exposure according to the solution manufacturer's written IFU.
g. Flush all channels according to the endoscope manufacturer's written IFU and rinse exterior surfaces with potable water until all cleaning solution is visibly removed.
h. Repeat cleaning, brushing, and rinsing steps until there is no visible debris or solution residual.
i. Soak, scrub, brush, and rinse all reusable and removable parts (valves, buttons, port covers, tubing).
j. Clean reusable endoscopy accessories according to their written IFU.
k. If an automatic flushing system is used, personnel should follow the manufacturer's written IFU and ensure that it is compatible with the endoscope being processed.

9. Manual rinsing
   a. Don PPEs.
   b. Thoroughly rinse all surfaces and channels of the endoscope and its removed components in order to remove all traces of the disinfectant
   c. Use fresh water for each rinse. Follow the manufacturer's written IFU for the specified rinse water quality.
   d. After cleaning the endoscope, removed components and accessories should be thoroughly rinsed with copious amount of potable water to help ensure all cleaning solutions and loosened debris are removed.
   e. Follow the manufacturer's written IFU for the amount of water and psi and/or pressure needed to flush through each channel.
10. High-level disinfection (HLD) and liquid chemical sterilization (LCS)
   a. HLD or LCS is an important step in the reprocessing of semi-critical heat sensitive flexible and semi-rigid endoscopes. Such as upper and lower gastrointestinal endoscopes and bronchoscopes.
   b. These semi-critical devices should be sterilized or high level disinfected with FDA-cleared HLD/LCS prior to use on the next patient.
   c. High level disinfection can be performed manually or in an automated endoscope reprocessor (AER).
   d. The majority of HLD solutions are cleared by the FDA are reusable--that is the solution can be used repeatedly, until the solution has reached either its manufactured-specified minimum recommended concentration (MRC) determined by testing, or its maximum reuse life prescribed by the manufacturer.
   e. Testing of the reusable HLD solution for MRC should be performed and documented prior to each use per the manufacturer's written IFU.
11. Manual drying
   a. Effective drying can reduce the risk of microbial contamination following high level disinfection.
   b. Drying can be achieved by flowing air through all endoscopes channels for a specified period of time. Drying maybe facilitated by using 70-80% ethyl or isopropyl alcohol.
12. Automated endoscope reprocessors (AER)

a. An automated process for cleaning and disinfection may be more efficient than manual reprocessing. It may also result in less user exposure to toxic chemicals and help ensure repeatable results.
b. AER are machines designed for the purpose of cleaning and disinfecting endoscopes and components.
c. AERs automatically rinse the processed endoscopes with water to remove toxic HLD/LCS solution residues.
d. If an AER reprocessing cycle is interrupted, liquid chemical/high level disinfection of the device cannot be ensured; therefore, the cycle should be repeated.
e. Quality testing devices are available for many of the AERs to ensure that the solutions are flowing. To help ensure function of this equipment, testing should be performed at least weekly, after major repairs, or whenever there is a concern about equipment function.

13. Storage of reprocessed endoscopes
    a. Storage of high-level disinfected endoscopes
        i. The endoscope should be hung vertically with the distal tip hanging freely in a well-ventilated, clean area. Or, endoscopes can be stored in a closed cabinet with vent that allows air circulation around the endoscopes and with adequate height to allow endoscopes to hang without touching the bottom of the cabinet.
        ii. There should be sufficient space between and around scopes to prevent hitting into one another which can cause damage to the scopes.
        iii. All removable parts (e.g., valves and caps) should be detached from the endoscope. To keep the parts together with the scope, a small bag or similar device can be used to attach the parts to the scope.
        iv. Each scope should be identified with a tag or other means so that when it is pulled from storage, the user is able to verify that the scope has been processed and is ready for use.
    b. Storage of sterilized endoscopes
        i. Sterilized endoscopes should be stored in the container or packaging in which they were sterilized.
        ii. Steps should be taken to ensure that stock rotation occurs between sterilized scopes.

B. Safety and Quality Control

1. Policy and procedures on device-specific reprocessing instructions must be written and followed by all CSSD personnel.
2. Operate AEWD or automated endoscope reprocessor systems as per the manufacturer's recommendations.
3. The CSSD technician must carry out quality control testing on a regular basis.
4. Diagnostic testing must be carried out and passed prior to instruments being loaded.
5. Material and Safety Data Sheets (MSDS) must be obtained for each chemical used and stored in the department. Spill kits and respirators must be available in the cleaning area in the event of a chemical spill.
6. Use the correct amount or dilution of chemicals required for each load.
7. Filters must be changed as per the manufacturer's instructions.
8. Healthcare facilities should develop protocols to ensure that users can readily identify whether an endoscope is contaminated or ready for patient use.

C. Quality Control Sampling

The utility of routine environmental microbiological testing of endoscopes for quality assurance has not been established.

D. Design of the Endoscopy Suite

The design of the endoscope reprocessing area should facilitate both infection prevention and control, as well as, patient and employee safety. When designing an endoscope reprocessing area, considerations include, but are not limited to:

1. Workflow
   a. Workflow should be unidirectional from the decontaminated area to the clean area and then to the storage area.
   b. Workflow patterns should be designed to contain contaminants, prevent damage to endoscopes, and minimize employee exposure to blood-borne and other disease producing organisms.
   c. Work area design should allow adequate space for all functions and should promote efficiency by minimizing distances between related areas.
2. Physical separation
   a. The processing area should be physically separated from the patient procedure rooms.
   b. The processing area should be defined for endoscope reprocessing only and designed to allow for unidirectional flow of devices from the receipt of new and/or used endoscopes to storage prior to next patient use.
   c. Adequate space should be provided to allow for manual cleaning and rinsing of devices during decontamination.
   d. An area should be defined for disinfection/sterilization that is separate from the manual cleaning/reprocessing area.
   e. A separate area should also be defined and controlled for the storage of devices, either temporarily or longer-term, before patient use.
3. Traffic control
   Traffic in the reprocessing area should be restricted to authorized personnel only.
4. Physical facilities
   a. Space requirements. Considerations for space requirements include the operational systems, equipment, and anticipated workload in each functional work area.
   b. Sinks and accessories:
      i. Reprocessing area should have dedicated plumbing and drains.
      ii. Sinks should be deep enough to allow complete immersion of the endoscope to minimize aerosolization and to ensure the endoscope can be positioned without tight coiling.
   c. Electrical system should be designed to allow for safe and effective operation of the equipment (e.g., cleaning equipment, sterilization equipment, computers, telephones, lighting) used in the reprocessing area.
   d. Floors and walls
      i. Floors in the reprocessing areas should be leveled (i.e., have no ridges or bumps), monolithic or joint-free, and should be constructed of materials that will withstand daily or more frequent wet cleaning.
      ii. Walls should be constructed of materials capable of withstanding frequent cleaning. Wall protectors should be installed at the level of possible cart impacts.
   e. Ceilings: Reprocessing area ceilings should be constructed of non-particulate, non-fiber shedding materials.
   f. Doors should be made of a durable, nonporous material that can withstand frequent bumping from back tables and carts that can be cleaned frequently.
   g. Ventilation: Decontamination area should be under negative pressure in relation to the adjoining rooms, whereas the clean area should be under positive pressure.
   h. Lighting: Adequate lighting of work surfaces should be provided.

i. Hand hygiene facilities should be conveniently located and designed to allow good hand hygiene practices.
j. Emergency eyewash equipment. Suitable eyewash units must be available for immediate emergency use in all places where chemicals are used.
k. Environmental cleaning
   i. Floors and horizontal work surfaces should be cleaned at least daily at all times.
   ii. Other surfaces such as walls, storage shelves, endoscope storage cabinets, and air intake and return ducts, should be cleaned on a regular basis and more often, if needed.

E. Personnel

1. Policy and procedures
   a. Policy and procedure related to the reprocessing areas, education, training, and competency, indications for hand hygiene, immunizations, attire and PPE for reprocessing.
   b. Policies should be available and disseminated to all reprocessing personnel.
2. Education, training, and competency verification
   a. Personnel involved in endoscope reprocessing should be provided education, training, and complete competency verification activities related to their duties upon initial hire; annually; at designated intervals; or whenever new endoscopic models, new reprocessing equipment, or products such as new chemicals are introduced for reprocessing.
   b. Reprocessing activities should be supervised until competency is verified and documented.
   c. Training for personnel should include:
      i. Procedures for cleaning, disinfecting or sterilizing, packaging and storing each specific endoscope make and model, including equipment connections.
      ii. Identification of items that are single-use.
      iii. All aspects of decontamination.
      iv. The operation of the specific manual and mechanical cleaning processes and equipment.
      v. Workplace safety as it relates to endoscope reprocessing, high-level disinfection, and sterilization.
      vi. The process of leak testing when indicated.
      vii. Documentation of quality monitoring results.
3. Standard Precautions
   a. Precautions should be taken to prevent injuries from sharp objects.
   b. Sharp objects should be disposed in puncture-resistant containers.
   c. PPE should be used to prevent exposure to blood and body fluids.
   d. Hands and other skin surfaces that are contaminated with potentially infectious fluids should be immediately and thoroughly washed.
   e. Eating and drinking are prohibited in areas where there is a likelihood of occupational exposure to chemical or biological materials.
   f. Employees should receive training and education on blood-borne pathogens.
4. Hand hygiene (Refer to **ICM- II-04** Hand hygiene).
   Fingernails should be kept short and clean. Artificial nails are not allowed.
5. Attire
   a. All personnel entering the reprocessing area should change into clean uniforms provided by the facility.
   b. All head facial hair should be completely covered with surgical hair covering.
   c. Jewelry and wristwatches should not be worn in the reprocessing area.

6. Personal protective equipment
   a. Personnel working in the decontamination area should wear general purpose utility gloves.
   b. Use a type of gloves that prevents contact with contaminated water. Examination gloves should not be used for decontamination.
   c. In situations that require the highest level of protection (e.g., there is a possibility that attire can become soaked with blood or other potentially infectious materials), a level 4 gown
   (as defined by ANSI/AAMI PB70) should be used.
   d. PPE should include a fluid-resistant face mask and eye protection. PPE used to protect the eyes from splash could include goggles, full-length face shields, or other devices that prevent exposure to splash from all angles.
   e. PPE worn during reprocessing should be removed and hands should be washed.
   f. Before handling disinfected endoscopes, personnel should don clean PPE.
   g. Before leaving the cleaning area, employees should remove all protective attire.
7. Immunizations
   Hepatitis B vaccination is recommended.

F. Cleaning and Disinfection Area

1. Space used for cleaning, disinfecting, and sterilizing should have adequate ventilation to exhaust toxic vapors.
2. Air-exchange equipment (ventilation system, exhaust hoods, etc.) should be used to minimize the exposure of all persons to potentially toxic vapors released from chemical sterilants.
3. The air system should provide at least 12 air changes per hour for negative room pressure.
4. The utility sink used to clean instruments should be functionally separate from the hand hygiene sink and be large enough to accommodate the endoscope and accessories.
5. Adequate space should be designated for the storage of chemical sterilants, with consideration given to their special handling requirements as hazardous materials.
6. Cleaning/disinfection and sterilization should be carried out by trained personnel only.

G. Storage of Clean/Sterile Endoscopes

1. Examine and test the endoscope for proper angulation before storing. Hold the fiberscope with both hands when storing to prevent it from banging against cupboard, thereby damaging the fiber optic bundles.
   a. When storing the endoscope, hang it in a vertical position to facilitate drying (with caps, valves and other detachable components removed as per the manufacturer's instructions).
2. Endoscopes should be stored in a vertical manner that will protect the endoscope, minimize the potential for residual moisture accumulation and allow for proper air flow to ensure that endoscopes are kept dry.
3. Cabinets used for drying and storage of endoscopes should be constructed of a material that can be cleaned easily.
4. Endoscopes should not be stored in foam-lined cases because foam lining is impossible to clean and harbors contamination.

TITLE/DESCRIPTION:	INDEX NUMBER
OPHTHALMOLOGY SERVICES AND CLINICS	**ICM -VIII- 05**

EFFECTIVE DATE:	APPLIES TO:	ISSUING AUTHORITY:
01/01/2009 **01/01/2013** **01/01/2018**	**All GCC Countries**	**GULF COOPERATION COUNCIL – CENTRE FOR INFECTION CONTROL (GCC-CIC)**

DEFINITION

Provide the guidelines for the appropriate disinfection instruments and the use and storage of multi-dose vials in the ophthalmology clinic.

REFERENCE

Association for Professionals in Infection Control (APIC) and Epidemiology, Inc. (2014). Chapter 63: Ophthalmology Services. In APIC Text of infection control and epidemiology (4th ed.).

COMMENTS

1. Outbreaks can occur in an ophthalmology setting due to cross-contamination of tonometer tips and multi-dose vials.
2. Outbreaks of epidemic keratoconjunctivitis due to adenovirus type 8 have been documented in ophthalmology clinics and linked to inadequately disinfected tonometer tips.
3. Adherence to basic infection prevention principles is required to protect patients and healthcare workers from healthcare-associated ocular infections.

PROCEDURE

A. General recommendations

1. Hand hygiene facilities (sinks and alcohol hand rub dispensers) must be available in each patient care area. Refer to **ICM-II-04** Hand Hygiene.
   a. When hands are not visibly dirty, use alcohol-based hand rub.
   b. Wash with soap and water when hands are visibly dirty or after dealing with patients with diarrhea or patients with Clostridium difficile.
2. Healthcare workers (HCWs) must observe Standard Precautions (e.g., HH and use of personal protective equipment (PPE)) when exposure to blood or body substances is anticipated.
   a. Adequate PPE should be available to meet clinical requirements at all times.
3. Clean and sterile items may be stored in the same area.
4. Cleaning of items in preparation for disinfection/sterilization should take place the dirty utility room.
5. Food and drink is not allowed in the patient care area.
6. Personal effects (bags, books, magazines) should be stored in staff lockers and not in patient care areas.
7. All horizontal surfaces should be cleaned daily and between patient visits with a hospital-approved (tuberculocidal) disinfectant. Clean surfaces immediately when visibly soiled.
8. A hospital-approved sharps disposal container should be available at the point of care in all patient care areas.
9. Medication must be stored in a designated refrigerator or cupboard. Food items should not be stored together with medication.
10. A program for refrigerator cleaning and temperature monitoring should be established, with adequate record keeping.

B. Medication (including multi-dose vials (MDVs))

1. Medication intended for internal or external use should be labeled accordingly and stored separately. Refer to **ICM-VIII-03** Pharmacy.
2. Date, time, and initial all MDVs once opened or reconstituted.
3. Refrigerate any opened MDV as recommended by the manufacturer.
4. Clean the rubber diaphragm of the MDV with 70% isopropyl alcohol before inserting a device into the vial.
5. Access the MDV with a sterile device each time.
6. Avoid touch contamination of the MDV.
7. MDVs should be accessed with a sterile needle each time, and the needle should be removed upon completion. The needle should not be left as a means of permanent access because it will provide a point of entry for microorganisms.
8. Eye medication (drops, ointments) intended for single-patient use only should be discarded once treatment is completed.
9. Applicators for eye medications intended for single use should not come in contact with the eye or periorbital area. A separate applicator should be used for each eye and labeled accordingly.
10. Discard the MDV when empty, when suspected or visible contamination occurs, or when the manufacturer's expiration date (listed on the vial - e.g., 30 days, 24 hours, or 72 hours) is reached.

C. Disinfection of Ophthalmology Instruments

1. General recommendations
   a. Steam sterilization is not recommended for ophthalmology instruments.
   b. Instruments that are visibly soiled should be washed with a hospital-approved detergent and water with rubbing prior to disinfection. Refer to **Table 1-VIII-05**: General Infection Prevention Practices in Ophthalmic Care Facilities and **Table 2-VIII-05**: Common Ocular Healthcare-Associated Infections, Causative Agents and the Recommended Level of Disinfection.
2. Laser lenses
   Before cleaning, disconnect the power plug.
   a. Cleaning of optical surfaces (lenses):
      The lens should be cleaned and disinfected immediately after use.
      i. Wash the lens thoroughly with soap and water.
      ii. Rinse the lens.
      iii. Dry the lens with a paper towel.
      v. Apply 70% isopropyl alcohol to all surfaces of the lens. Allow to air dry.
      v. Replace the lens in a clean box.
   b. Cleaning of painted surfaces:
      Never use aggressive or abrasive cleaning agents; always use disinfectants approved by the product evaluation committee at the hospital.
      i. Clean and disinfect the entire instrument and its case.
      ii. In cleaning and disinfecting the equipment, make sure that no moisture gets into the device or the foot switch.

Table 1-VIII-05: General Infection Prevention Practices in Ophthalmic Care Facilities

Item	Storage	Before patient encounter	After each patient encounter
Dyes (Florescein)	Clean area(s)	Use single, individual strips	Discard after use in biohazard container
Dyes (ICG)	Clean area(s)	Mix with normal saline 0.9% solution draw-up in sterile syringe	Discard after use
Gloves (must be powder, latex free)	Store in box	Use gloves for all direct eye exams where hands will touch mucous membranes	Dispose of gloves immediately after use Use appropriate hand hygiene before and after using gloves
Hands		Wash hands with soapy water and / or use an approved alchol-based product before each patient exam	Remove and appropriately discard gloves Wash hands with soap and water after all examinations Wash hands with soap and water after removal of gloves An approved hand hygiene product can also be used
		Keep fingernails clean and a reasonable length Keep powder-free surgical gloves for use if hands or patient has exposed lesions	Remove jewelry Wet hands with water Apply recommended amount of product to hands Rub hands together vigorously for at least 40-60 seconds for hand washing with soap and water and 20-30 seconds for alcohol rub.
Head rest, chin rest, and brow bar		Wipe areas with 70% alcohol wipe before and after each patient Perform thorough cleaning and disinfection once daily	Wipe with 70% alcohol wipe / pad before patient and clean thoroughly daily
Eye drops (medication)	Store drops in a cool and dry area unless a certain temperature is recommended by the manufacturer	Avoid contact or contamination of dropper tip with hands, patients' lashes, eyelids, or tears Single-use eye drops are preferred and recommended	Replace cap without hand touching dropper tip Monitor and adhere to expiration dates
	Label open drops with date and initials on bottle		Discard if used on infected eye
	Discard by expiration date or 1 month after opening as recommended by your institution policy and procedure		
Screening for Retinopathy of prematurity (ROP)		Use sterile instruments for each examination, do not reuse between patients Use gloves before any direct eye examinations	Send instruments to CSSD after patient's use
Water baths			Clean at the end of the day to prevent buildup of endotoxins and other toxic materials
General environment		Basic environmental cleaning of counters, floors, chairs should be done at the end of each day with an approved hospital disinfectant	Basic environmental cleaning of chairs, floors, counters, should be done at the end of each day
		A "red eye" or contaminated room should be designated to see patients with pink eye or known infectious disease	Room should be cleaned with a hospital- approved disinfectant after each patient

Table 2-VIII-05: Common Ocular Healthcare-Associated Infections and Causative Agents

ITEM	STORAGE	LEVEL OF DISINFECTION	BEFORE EACH USE	AFTER EACH USE
Diagnostic laser lens	Dry with lint-free cloth and store in dry case	High level disinfection with approved disinfectant Manual cleaning / sterilization (ethylene oxide (EO) Do not steam autoclave or soak these lenses	Wipe clean with an alcoholic pad Inspect for damage (cracks) and evaluate function	Wipe clean with an alcoholic pad Proceed with disinfection and / or sterilization (EO) only Store in a clean, dry container at room temperature
Foreign body needles	Single use 27-gauge hypodermic needle	High-level disinfection	Do not let needle come into contact with hands	Discard in appropriate sharps container
Fundus contact lens	Store in a clean, closed container	High-level	Place lens in a contact solution Check date opened and expiration date of solution prior to use	Fundus lenses should be cleaned with a mild cleaning solution after use and then disinfected with 1:10 dilution of household bleach Lens should be immersed in solution for 25 minutes
				Rinse thoroughly with room temperature sterile water, then dry with lint-free cloth
				Store in a sterilized closed contact lens container
				Follow manufacturer's recommendations (DFU) for disinfection and care of lens and incorporate into your policy and procedure for cleaning, disinfecting ophthalmic instruments
Soft contact lenses	Individual sterile packing dry storage		Sterile one-time use	Discard lenses after use
Trial disposable contact lenses	Individual sterile packing dry storage		Sterile one-time use	Discard lenses after use
Contact lens trial cases	Dry storage		After receiving, send for sterilization before use	Discard lenses after use
Rigid contact lenses	Individual sterile packing by storage		Disinfect between patients with heat and / or a hydrogen peroxide containing disinfectant	Follow manufacturer's recommendations (DFU) and your institution policy and procedure for general care and disinfection / sterilization
Gonioscopy lenses	Store in a clean, closed container		Place lens in a contact solution Check date opened and expiration date prior to use	Gonioscopy lenses should be cleaned with a mild cleaning solution after use, then disinfected with 1:10 dilution of household bleach Lens should be immersed in solution for 25 minutes (Lakkis, Lian, Napper, and Kiely, 2007)
				Rinse thoroughly with room-temperature, sterile water; then dry with a lint-free cloth
				Store in a sterilized closed contact lens container

Table 2-VIII-05…con't.:
Common Ocular Healthcare-Associated Infections and Causative Agent

ITEM	STORAGE	LEVEL OF DISINFECTION	BEFORE EACH USE	AFTER EACH USE
				Follow manufacturer's recommendations (DFU) and your institution policy and procedure for general care and disinfection / sterilization
Lacrimal lavage probe (punctual dilator)	Central services sterile area		Keep sterile until use	Spray with an enzymatic cleaner to prevent blood and protein buildup, rinse, and place in ultrasonic cleaner, inspect, and sterilize
Lacrimal lavage needle (cannula) (single-use cannulas)	Central services sterile area		Keep sterile until use	Spray with an enzymatic cleaner to prevent blood and protein build-up, rinse, and place in ultrasonic cleaner
Occluders / eye patch (tissue)	Store in the clinical area in a close container		Wipe with 70% alcohol and use a piece of tissue as a barrier between occlude and eye patch	Discard tissue and clean occlude with 70% alcohol after use
Ophtalmoscopes (direct, mio, bio)	Store in the clinical area in a close container		Wipe with 70% alcohol between patients	Wipe with 70% alcohol
Phoropter / refractor head	Cover in a pouch and store in the clinical area		Wipe with 70% alcohol	Wipe with 70% alcohol
Scleral depresser, lid elevertors, specula forceps	Central services sterile area		Keep sterile until use	Spray with an enzymatic cleaner to prevent blood and protein buildup, rinse, and place in ultrasonic cleaner, inspect, and sterilize
Stethoscopes	Cover in a pouch and store in the clinical area		Wipe with 70% alcohol between patients	Wipe with 70% alcohol between patients
Tweezers	Central services sterile area		Keep sterile until use	Spray with an enzymatic cleaner to prevent blood and protein buildup, rinse, and place in ultrasonic cleaner, inspect, and sterilize
Tonometers	Store in a clean, closed container		Wipe with 70% alcohol after each use	General: clean with a mild cleaning solution after use, then disinfectant with 1:10 dilution of household bleach Tonometer should be immersed in solution for 10 minutes Rinse thoroughly with sterile water and dry with a lint-free cloth Manual cleaning and soaking in sodium hypochlorite (5,000 ppm) for 1 hour and / or sodium hydroxide (5%) for 1 hour to reduce retention of corneal epithelial cells and the risk of variant Creutzfeldt-Jakob disease (CJD)

Table 2-VIII-05…con't.:
Common Ocular Healthcare-Associated Infections and Causative Agent

ITEM	STORAGE	LEVEL OF DISINFECTION	BEFORE EACH USE	AFTER EACH USE
			Clean and disinfect after each patient's use	Clean with a mild cleaning solution after use and then disinfected with 1:10 dilution of household bleach Tonometer should be immersed in solution for 10 minutes Rinse thoroughly with sterile water and dry with a lint-free cloth
Pneumotonometers			Use sterile disposable tonometer probe caps on pneumotonometers	Discard probe after each patient encounter Disinfectant surface with 70% ethanol or 1:10 fresh bleach
Tonopens			Use sterile, disposable tonopen cover for each patient exam	Discard tonopen cover in appropriate biohazard bag Wipe down surface with 70% ethanol
				Store in a sterilized closed contact lens container
				Follow manufacturer's recommendations (DFU) and your institution's policies and procedures
Slit-lamp microscopes			The head rim and chin rest should be wiped with a disposable alcoholic pad between patients	Wipe down chair with environmental cleaner at the end of the day
Trial frames	Cover in a pouch and store in the clinical area		Wipe with 70% alcohol between patients	Wipe with 70% alcohol between patients

TITLE/DESCRIPTION:	INDEX NUMBER
RESPIRATORY THERAPY	**ICM - VIII - 06**

EFFECTIVE DATE:	APPLIES TO:	ISSUING AUTHORITY:
01/01/2009 **01/01/2013** **01/01/2018**	**All GCC Countries**	**GULF COOPERATION COUNCIL – CENTRE FOR INFECTION CONTROL (GCC-CIC)**

DEFINITION

To describe Infection Control standards for respiratory therapy services and to avoid any improper handling of respiratory care equipment that may lead to increased incidence of healthcare-associated infections.

REFERENCES

1. Association for Professionals in Infection Control (APIC) and Epidemiology, Inc. (2014). Chapter 67: Respiratory care services. In APIC Text of infection control and epidemiology (4th ed.).
2. Centers for Disease Control and Prevention (CDC). Guidelines for prevention of nosocomial pneumonia. MMWR 1997: 3;46 (RR-1):1-79.
3. Hess D, Burns E, Romagnoli D, and Kacmarek R. Weekly ventilator cirrhotic changes. A strategy to reduce costs without affecting pneumonia rates. Anesthesiology 1995; 82:903-911.
4. Kollef MH, Shapiro SD, Fraser VJ, et al. Medical ventilation with or without 7-day circuit changes. A randomized controlled trial. Ann Intern Med 1995; 123:168-174.
5. Vincent JL. Prevention of nosocomial bacterial pneumonia. Thorax 1999; 54 (6): 544-9.

COMMENTS

1. Certain interventions used by the Respiratory Care Service may influence infection risks to patients and HCWs.
2. Mechanical ventilation, ventilator circuit channels, handling of condensate, use of nebulizers, suction catheters and humidification methods are potential infection risks.
3. Routes of transmission of pathogens most commonly associated with respiratory care are airborne, droplet nuclei and direct contact with contaminated fluids such as secretions, saliva, sputum, blood, or condensate in aerosol tubing or a ventilator circuit.
4. Transmission of pathogens in fluid occurs when the fluid physically moves, flows, or spills from one area to another.
5. Direct contact with hands or equipment is thought to be a common mode of transmission.
6. Routes of transmission may be from practitioner or device to patient, from one patient to another, or from one body site to the lower respiratory tract of the same patient, via the hands or a device.
7. Nebulizers with reservoirs can allow for the growth of hydrophilic bacteria that can be nebulized to the patient during device use.
8. Gram-negative bacilli such as Pseudomonas spp., Stenotrophomonas spp., Flavobacterium spp., Legionella spp., and non-tuberculosis mycobacteria can multiply to substantial concentrations in nebulizer fluid and increase the risk of acquiring pneumonia.
9. Sterilization or high-level disinfection can eliminate vegetative bacteria from device reservoirs, making the reservoirs safe for patient use.
10. Improved VAP incidence has been reported when using a closed-suction versus an open-suction system. Elimination of routine closed-system suction catheter changes increases safety and reduces the costs of mechanical ventilation.

PROCEDURE

A. Standard precautions

1. Use standard precautions for all patient care. Refer to **ICM–II-03** Standard Precautions.

2. Use personal protective equipment (PPE) singly or in combination for any or all of the following procedures as indicated:
   a. Wear gloves for handling respiratory secretions and objects contaminated with the respiratory secretions of any patient.
   b. Wear face protection (mask and goggles) when contamination of the face with aerosolized particles is likely.
   c. Wear an N95 particulate mask or a power air purifying respirator (PAPR) when managing patients with suspected or confirmed pulmonary tuberculosis. Refer to **ICM–V-03** Management of Suspected/Confirmed Cases of Infectious Mycobacterium Tuberculosis.
3. Wear PPE when contact with the respiratory secretions from a patient is likely.
   a. Change the PPE after such contact and before providing care to another patient.
4. Follow the required isolation precautions when entering the rooms of patients in isolation. Refer to protocols in the following policies: **ICM–III-03** through **ICM–III-05** Contact Isolation, Droplet Isolation, Airborne Isolation Precautions.
5. Respiratory equipment (e.g., ventilator, monitors, etc.) in use should be cleaned regularly (when visibly soiled, daily, and when patient is discharged) to reduce environmental contamination.
6. All reusable respiratory items requiring disinfection and sterilization must be sent to the Central Sterile Supply Department (CSSD).

B. Hand hygiene

1. Wash or cleanse hands and dry them thoroughly before and after all contacts with the patient and the patient's environment; refer to policy **ICM-II-04** on Hand Hygiene.
2. Wash and dry or cleanse hands before and after glove use.

C. Mechanical ventilation and humidifiers

1. Use high-efficiency bacterial filters in the breathing circuit of the ventilation unit.
2. Ensure that the patient is positioned with his/her head elevated at a 30° to 45° angle, except during postural drainage procedures, to minimize aspiration of secretions.
3. Use filters on the inspiratory limb to eliminate contaminants from entering the inspired gas and contaminating the ventilator.
4. Place bacterial filters appropriately to avoid any potential interference with the operating characteristics of the ventilator by impeding high gas flow.
5. Carefully test reusable filters periodically to ensure efficient functioning.
   a. These filters must be reprocessed by CSSD.
6. Use closed continuous-feed humidification on all ventilator circuits to minimize/prevent aerosols, thus preventing the transmission of bacteria from the humidifier reservoir to patients.
7. Use sterile water to fill humidifiers. Heated humidification systems often operate at temperatures that reduce or eliminate bacterial pathogens. Tap or distilled water may harbor Legionella spp. that is more heat-resistant than other bacteria.
8. Sterilization or high-level disinfection of reusable circuits, humidifiers and nebulizers between patients is recommended.
9. Disinfect in-line temperature sensors properly according to the manufacturer.
10. The ventilator circuit, including the ventilator tubing and filter, exhalation valve and humidifier, should be changed when visibly soiled or mechanically malfunctioning.
    a. No maximum time between changes has been recommended for use of ventilator circuits with non-aerosol-generating humidifiers.
    b. Circuits should not be routinely changed for infection control purposes. Increased VAP infection rates are associated with 48-hour circuit changes.
    c. HMEs should be changed if there is gross contamination or mechanical malfunction.

D. Artificial Airways

1. Elevate the patient head's between 30° and 45°, during the use of artificial airways, especially during feedings and for one hour following feedings, when not contraindicated.
2. Do not routinely deflate the cuff of the endotracheal tube to determine the filling volume of the cuff. Alternative techniques to assure proper cuff pressure (such as minimal leak or minimal occluding pressure) should be used.
3. Ensure proper cuff pressure with minimal leak or minimal occluding pressure.
4. Perform a tracheostomy when indicated using sterile technique. Elective tracheostomy should be performed in the operating room.
5. Use aseptic technique to change the airway tube.
6. Replace the tube with one that has undergone sterilization or high-level disinfection.

E. Condensate

1. Drain and discard any condensate that collects in the tubing of the ventilator to prevent it from draining toward the patient.
2. Use water traps to minimize spillage.
3. Place traps appropriately in the ventilator circuits so as to allow gravity to drain condensate continuously away from the patient.
4. Treat contaminated condensate as waste and properly dispose of it through the standard hospital waste system.
5. Use heated wire circuits to reduce/eliminate condensate formation in the ventilator circuit.
6. Set heated wire circuits so that a small amount of condensate forms on the inspiratory limb of the circuit, indicating 100% relative humidity.
7. Adjust the heated wire circuit properly to deliver the appropriate humidity to the patient.

   N.B: Heat and moisture exchanger (HME) can increase dead space and resistance to breathing and, at the same time, provide less humidity than the active systems previously discussed, resulting in thick and obstructive secretions in some patients. To be effective, >70% of the gas entering the airway must be exhaled through the HME. Place HME between the ventilator circuit and the patient's airway.

   a. If the humidity is decreased, it will result in damage to the epithelium of the respiratory tract, with potential occlusion of artificial airways, especially in infants and small children.
   b. There is no CDC recommendation for preferential use of HME rather than heated humidifiers to prevent healthcare-associated pneumonia.
   c. The HME should be changed when grossly contaminated or mechanically malfunctioning.
   d. Vent circuits should not routinely be changed when using an HME.

F. Nebulizers

1. Large-volume nebulizers and mist tents:
   Room humidifiers that create aerosols have been associated with nosocomial pneumonia secondary to contamination of their reservoirs. The CDC recommends that aerosol-generating room humidifiers not be used unless they can be filled only with sterile fluids and be sterilized or undergo high-level disinfection every 24 hours.
   a. Reusable large-volume nebulizers, mist tents, and hoods should be subject to sterilization or high-level disinfection between patients and after every 24 hours of use on the same patient.
   b. Change disposable large-volume nebulizers every 72 hrs.
2. Small-volume medication nebulizers - handheld and inline:
   a. Use only sterile fluids that are dispensed aseptically.
   b. Disinfect or sterilize nebulizers between patients.
   c. Single-dose vials are preferred over multi-dose vials.

d. Disinfect and rinse nebulizers with sterile water and air dry after each treatment on the same patient.
e. Aseptically remove inline nebulizers from the ventilator circuit and disinfect or rinse nebulizers with sterile water, air drying between treatments.

G. Suction Catheters

Use standard precautions, including eye and face protection during aerosol-generating procedures, should be taken with all patient care activities.

1. **Open suctioning systems** require:
   a. The use of a sterile catheter, sterile disposable gloves, and sterile normal saline if instillation is desirable.
   b. Personal protective equipment when contact with respiratory secretions is anticipated.
2. **Closed suctioning systems** may offer better control of lung volume and lead to fewer arrhythmias and desaturation episodes at the expense of increased tracheal colonization.
   a. Use only sterile fluid to remove secretions from the suction catheter.
   b. Change inline suction catheters no less frequently than every 72 hours.
3. Change the suction collection tubing and canisters between patients.

H. Medication (including multi-dose vials (MDVs)

1. Medication intended for internal or external use should be labeled accordingly and stored separately. Refer to **ICM-VIII-03** Pharmacy.
2. Date, time, and initial all MDVs once opened or reconstituted.
3. Refrigerate any opened MDV as recommended by the manufacturer.
4. Clean the rubber diaphragm of the MDV with 70% isopropyl alcohol before inserting a device into the vial.
5. Access the MDV with a sterile device each time.
6. Avoid touch contamination of the MDV.
7. MDVs should be accessed with a sterile needle each time, and the needle should be removed upon completion. The needle should not be left as a means of permanent access because it will provide a point of entry for microorganisms.

I. Specimen Collection

1. Sputum/tracheal aspiration/bronchoscopy
   a. The patient should clean his/her teeth, gargle, and rinse his/her mouth with water just prior to collection.
   b. The best specimen is an early morning collection. Refer to hospital microbiology laboratory policies.
   c. For tracheal aspiration, follow the nursing procedure guidelines that pertain to patient preparation and specimen collection.
   d. Wear appropriate PPE (**ICM–II-03** Standard Precautions) during sputum induction.
   e. Perform sputum inductions in a private room with 6 air exchanges per hour if possible.
   f. Keep the door closed during the procedure.
   i. Ask the patient's visitors to leave the room during sputum induction.
2. Percutaneous blood gases
   a. Perform hand hygiene and use gloves.
   b. Perform adequate skin preparation on the patient with hospital-approved antiseptic.
   c. Use sterile supplies.
   d. Do not precool syringes by submerging them in ice water.
   e. Avoid repeating unsuccessful arterial punctures with the same needle or cannula.
   f. Handle all body fluids as if contaminated.
   g. Dispose and transport specimens as appropriate.

J. Respiratory Devices

1. Resuscitation bags
   a. Sterilization or high-level disinfection of bags between patients is recommended.
   b. When using a bag on the same patient, rinse it clear with sterile water immediately when the bag valve is visibly soiled with secretions.
   c. Reusable bags must be sent to CSSD for reprocessing.
2. Oxygen masks and cannulas
   a. Change tubing and any device, such as a cannula and mask, used to deliver oxygen from a wall outlet between patients.
   b. Restrict the use of bubble type humidifiers (BTHs) to appropriate situations. Humidifiers arenot indicated for oxygen flow less than 4 L/min in adult patients under normal conditions. When operated at a flow above 10 L/min, a standard unheated BTH designed for oxygen delivery is less efficient than a humidifier and may create aerosols that can transmit bacteria.
3. Pulse oximetry
   a. Disinfect probes immediately between patients according to the manufacturer's recommendations.
   b. Avoid the use of clip-on probes over edematous areas.
   c. Check the site frequently, repositioning the probe as necessary.
   d. Reposition all probes at appropriate time intervals in accordance with the manufacturer's recommendations.
4. Pulmonary function testing (PFT)
   a. Disinfect the surfaces of any device that comes into patient contact after each patient.
   b. Do not routinely disinfect the internal machinery of PFT machines between uses.
   c. Sterilize or disinfect any external devices (e.g., nose clips and mouthpieces) between patients according to the manufacturer's recommendations.
   d. The use of low-resistance, high-efficiency filters has been advocated for use between the mouthpiece and the spirometer to minimize contamination between device and patient. This filter may also reduce HCW exposure to droplet nuclei generated by the patient during forced expiratory maneuvers.

K. Reprocessing Respiratory Care Services

1. Respiratory care devices have been classified as semi-critical because they come into contact with mucous membranes but do not ordinarily penetrate body surfaces.
2. All single-use disposable devices must be discarded immediately after use.
3. Do not reprocess equipment and devices that are manufactured "for single use only"; refer to **ICM – IX-03** Single Use Devices.
4. Proper cleaning and sterilization or high-level disinfection of reusable equipment is important to reduce infection.
5. All reusable equipment or devices must be sent to CSSD for reprocessing.
6. The manufacturer's recommendations must be made available to CSSD to efficiently and effectively clean, disinfect and sterilize these items.

TITLE/DESCRIPTION:	INDEX NUMBER
REHABILITATION SERVICES	**ICM - VIII - 07**

EFFECTIVE DATE:	APPLIES TO:	ISSUING AUTHORITY:
01/01/2009 01/01/2013 01/01/2018	**All GCC Countries**	**GULF COOPERATION COUNCIL – CENTRE FOR INFECTION CONTROL (GCC-CIC)**

DEFINITION

To provide clear guidelines on infection control issues for patients, healthcare workers, and equipment to prevent the transmission of infections during the delivery of service.

REFERENCES

1. Association for Professionals in Infection Control (APIC) and Epidemiology, Inc. (2014). Chapter 66: Rehabilitation services. In APIC Text of infection control and epidemiology (4th ed.).
2. Australian Guidelines for Aquatic Physiotherapist working in and/ or managing hydrotherapy pools (2nd ed.) 2002.

COMMENTS

1. The rehabilitation patient may have one or more impairments or disabilities at the time of admission that increase the risk of infection.
2. Factors such as incontinence, skin breakdown, co-morbidity, immobility, and age are all associated with increased risks of infection in the rehabilitation population.

PROCEDURE

A. Rehabilitation Standards

1. Treatment may require many different types of equipment to increase movement and mobility, heal wounds, and treat neurological and sensory impairments. Many patients also have secondary medical conditions that can affect the outcome of their rehabilitation.
2. Prevention begins before admission. The infection control needs of the patient must be known (whether for in-patient or out-patient procedures) before he/she is treated. Questions should include the following:
   a. Does the patient have non-intact skin, open wounds, stasis ulcers, open burn wounds, or indwelling devices?
   b. Does the patient have loose stools/diarrhea?
   c. Does the patient have fecal or bladder incontinence?
   d. Does the patient have any excretions or secretions that cannot be contained?
   e. Did the patient have an extended ICU stay or surgery?
   f. Is the patient willing or cognitively able to cooperate in strategies to contain his or her own body secretions?
   g. Does the patient have an active or colonized infection of multidrug-resistant organisms?
   h. Has the patient been intubated? Do they have swallowing strategies or aspiration risks?
3. The rehabilitation department must evaluate the numerous factors that influence transmission risks and their unique settings to develop and implement policies and procedures that apply to the type of patients they treat and the services they provide, thereby, managing and minimizing the risk of infection transmission.

B. Rehabilitation Personnel

Staff should be able to apply the infection control principles and practices described in the Infection Control Manual during patient care activities. Basic infection control practices include the use of

Standard Precautions with all patients receiving care regardless of their diagnosis or presumed infectious status. These practices are important for reducing the risk of disease transmission among patients and HCWs.

Rehabilitation Services staff are expected to:

1. Use Standard Precautions for all patient care. Refer to **ICM–II-03** Standard Precautions.
2. Use personal protective equipment (PPE) individually or in combination for any/all procedures that require close contact with the patient and the patient's environment regardless of whether the patient is in isolation.
3. Change PPE before providing care to another patient.
4. Wash or cleanse hands before and after all contact with the patient and the patient's environment. Refer to **ICM-II-04** Hand Hygiene. Wash and dry or cleanse hands before and after glove use.
5. Follow required isolation precautions when entering the rooms of patients in isolation. Refer to Isolation Precautions, protocols **ICM–III-03** through **ICM–III-05** Contact Isolation, Droplet Isolation, and Airborne Isolation Precautions.

C. Disinfection and sterilization protocols for therapy and patient care

Equipment used to provide rehabilitative services to patients may present an increased risk of infection to the patient, other patients, and HCWs. Written policies are needed to ensure that equipment is cleaned and disinfected between patients.

1. The department must have written guidelines for:
   a. Routine cleaning and disinfection of equipment (canes, walkers, wheelchairs, weights, lifts, etc.) and toys following each patient use. Use only hospital-approved disinfectants to wipe down equipment.
   b. Cleaning and disinfecting equipment after body fluid contamination (including whirlpools and hydrotherapy baths).
   c. A method for documenting and validating that equipment has been cleaned and disinfected.
2. Some examples of cleaning in the therapy area are:
   a. Disinfect treatment mats between uses and inspected for any cracks and tears that compromise the integrity of their covers.
   b. Change paper pillow covers between patients.
   c. Change daily pillow cases or as needed when body fluids are present (i.e., they are visibly soiled).
   d. For types of equipment that cannot be cleaned, such as paraffin or therapy putty, instruct patients to wash their hands or feet before use. Cover patients wounds with occlusive dressing or therapy must be delayed until the wounds are healed.
3. The water in hydrotherapy, whirlpools, and aquatic therapy pools can be a source of and vehicle for transmission of infectious organisms. Some patients may have to be excluded from these types of therapies due to open wounds or the inability to contain fecal matter.
   a. Preventive measures to decrease the risk of microbial contamination of hydrotherapy pools:
      i. Educate the patients and sitters about basic infection control measures prior to the start of therapy to ensure compliance.
      ii. Ensure pre-swim hygiene such as showering before therapy to remove traces of sweat, urine, fecal matter, cosmetics, oil and other potential contaminants.
      iii. Do not allow bathers to use the pool if with open infected wounds, severe skin fungal infections, with herpetic lesions, vomiting, diarrhea, conjunctivitis and fecal incontinence.
      iv. Patients known to be positive for blood-borne pathogens such as Hepatitis B, Hepatitis C and HIV are allowed entry provided if there are no open wounds.

b. Water testing, frequency of testing and disinfection
   i. Maintain the proper levels of disinfectant in pools to control organic load.
   ii. Test the level of free available chlorine, pH, total alkalinity and temperature on a daily basis. The results should be recorded and posted in the area. Acceptable chlorine levels are 1.5 to 2.0 ppm with pH ranging from 7.5 to 7.8.
   iii. Collect microbiological samples before chemical samples to avoid accidental contamination of the pool water with microorganisms and from the sampler.
   iv. Schedule routine sampling for microbiological testing. Additionally, sampling should also be considered in the following situations: before a pool is use for the first time; before it is put back to use after repairs; if there are problems with the disinfection system and as part of any outbreak investigations (i.e., diarrheal illness).
   vi. Document outcome of water testing.
   vii. Clean immersion tanks and whirlpools with the appropriate disinfectant and follow the manufacturer's recommendations.
   vi. Intermediate level disinfection is required for treatment tanks used with patients with non-intact skin between each patient use.
   vii. Disinfect equipment with agitator jets with the solution covering the jets and the jets in circulation while disinfecting.
   viii. Discard single-use disposable patient care items immediately after use and are not to be reprocessed or reused (refer to **ICM–IX-03** Single Use Devices).
   ix. Refer to **ICM–IX-01** Sterile Supplies and Equipment Management for most items/equipment in this area are typically non-critical; except, for any semi-critical or critical reusable patient care items which will require reprocessing.

c. Recommended microbiological testing of hydrotherapy pool--microorganisms that are used to assess the microbial quality of hydrotherapy pool include:
   i. HPC (Heterotrophic plate count): a general measure of non-specific microbial levels, which gives a measure of the overall general quality of the pool water, and whether the filtration and disinfection systems are operating satisfactorily. Refer to **ICM–X-01** Water Quality Monitoring Program and Requirements.
   ii. Fecal indicators (such as thermo tolerant coliforms, E. coli) is a normal inhabitant of the intestinal tract of human and is almost exclusively of fecal origin, so its detection in the water samples indicates recent fecal contamination.
   iii. Non-fecally derived microorganism (e.g. P. aeruginosa) is an opportunistic pathogen commonly found in water, soil and vegetation, but can also be found in human feces. It can cause diseases like ear and eye infections and folliculate skin infections. Although slightly resistant to a range of disinfectants, chlorination of swimming pools should be sufficient to kill bacterium.

Table 1-VIII-07: Microbiological Parameters

Type of Test	Limit
E. coli	<1 cfu/100 ml. of water sample
Pseudomonas aeroginosa	<1 cfu/100 ml. of water sample

D. Infection Control Issues for the Patient

Basic principles of infection control must be included in the delivery of service for all patients whether in inpatient or outpatient settings:

1. For all patients:
   a. Standard precautions (**ICM-II-03**) must be used when providing care.
   b. All drainages, wounds, and excretions must be contained before a patient can schedule therapies and activities.
   c. The patient must be able to control secretions or excretions.
   d. Equipment (rehab or physiotherapy equipment, stretchers, wheelchairs, etc.) must be cleaned and disinfected after each patient use. Only use hospital-approved disinfectants.
2. For a patient known to be infected or colonized with a multidrug-resistant organism (MDRO) (e.g., MRSA, VRE, or multidrug-resistant gram-negative organisms such as Acinetobacter) in the outpatient setting:
   a. Use PPE individually or in combination for any/all procedures that require close contact with the patient
   b. Change PPE before providing care to another patient
   c. Designate equipment if available and possible
   d. Schedule patient at the end of the day if therapy equipment cannot be designated.
   e. Clean and disinfect equipment (rehab or physiotherapy equipment, stretchers, wheelchairs, etc.) after each patient use. Only use hospital-approved disinfectants
   f. The patient can participate in group activities only if he/she can:
      i. Understand and follow basic hand hygiene practices.
      ii. Assist HCWs in containing his/her secretions and excretions.
      iii. Remain fully dressed.
3. Inpatients on contact isolation precautions:
   A patient known to be infected or colonized with a MDRO (e.g., MRSA, VRE, or multidrug-resistant gram-negative organisms such as Acinetobacter) will be placed in contact isolation. Rehabilitation Service staff is expected to:
   a. Follow the procedure described in **ICM-III-03** Contact Isolation Precautions.
   b. Observe Standard Precautions (**ICM-II-03**) when providing care to all patients.
   c. Consider the following factors when preparing care plans for patients with multidrug-resistant organisms are:
      i. How much care the patient needs.
      ii. Anticipation of the amount of contact with body fluids.
      iii. The patient's ability to control secretions or excretions.
      iv. The level of activity and mobility.
      v. Skin integrity and wounds.
   d. Use barrier protection to contain wounds, drainage, urine, feces, and other excretions or secretions whenever possible to allow for patient independence and participation in therapeutic sessions or if patient has to leave his/her room. For example:
      i. The patient must have occlusive wound dressings, anchored urine bags, etc.
      ii. The patient must be able to comply with hand hygiene protocols and stay fully dressed.
   e. Use PPE individually or in combination for any/all procedures that require close contact with the patient and the patient's environment. Change PPE before providing care to another patient.
   f. Recommend dedicated equipment. Equipment (rehab or physiotherapy equipment, stretchers, wheelchairs, etc.) taken into the room and used with a patient must be cleaned and disinfected after use. Use only hospital-approved disinfectants to wipe down equipment.

4. Inpatient on airborne isolation precautions:
   A patient suspected or confirmed to be infected with an airborne transmissible disease such as pulmonary TB, chickenpox, measles, or viral hemorrhagic fever will be placed in airborne isolation.
   a. Follow the procedure in **ICM-III-05** Airborne Isolation Precautions.
   b. Observe Standard Precautions **ICM-III-03** when providing care to all patients.
   c. Consider the following factors to consider when preparing care plans for patients with airborne transmissible diseases are:
      i. How much care the patient needs.
      ii. The amount of contact with body fluids (respiratory).
      iii. The patient's ability to control secretions or excretions.
      iv. The level of activity and mobility.
   d. Use barrier protections to contain wounds, drainage, urine, feces, and other excretions or secretions whenever possible to allow for patient independence and participation in therapeutic sessions or if patient has to leave his/her room. For example:
      i. The patient must have occlusive wound dressings, anchored urine bags, etc.
      ii. The patient must be able to comply with wearing a surgical mask, practice proper hand hygiene and stay fully dressed.
   e. Use PPE individually or in combination for any/all procedures that require close contact with the patient and the patient's environment. Wear an N95 mask for patients in airborne isolation. Immunity is the best protection for prevention of chickenpox transmission.
   f. Change PPE before providing care to another patient.
   g. Recommend dedicated equipment. Equipment (rehab or physiotherapy equipment, stretchers, wheelchairs, etc.) taken into the room and used with the patient must be cleaned and dis-infected after each use. Only use hospital-approved disinfectants.
   h. Consider rescheduling therapy sessions at the end of the day or until patient is non-infectious and acceptable. Consult the Infection Preventionist (IP) if needed.

E. Prevention of Infections in Rehabilitation Settings

Factors such as incontinence, skin breakdown, co-morbidity, and age are all associated with increased risk of infection in rehabilitation patients.

Failure to maintain skin integrity may cause increased infection and may extend the length of stay for the patients.

1. Treating burn patients
   a. Treatment of the wound consists of meticulous cleansing and debridement of dead tissue.
   b. Apply topical ointments.
   c. Use sterile technique and sterile dressings to control wound sepsis.
   d. Use showers with hand-held spray for hydrotherapy. Use of a hydrotherapy tub or bath is discouraged due to the potential for contamination of the equipment and water.
2. Bladder and bowel issues
   a. Care of patients who are unable to control their bladder or bowel has to be a priority.
   b. Keeping the patient's skin clean and dry is essential for good skin care.
      i. Good perineal care.
      ii. Intermittent catheterization may be used (example for neurogenic bladder).

c. Recommendation for urinary tract infection prevention:
   i. Follow the established guidelines for catheter use, insertion, and maintenance.
   ii. Maintain asepsis for urinary catheter insertion.
   iii. Maintain a sterile, closed drainage system and do not disconnect the catheter and drainage tube unless necessary.
   iv. Utilize a condom catheter or in-and-out catheters when appropriate.
   v. Keep the collection bag below the level of the bladder.
   vi. Provide good catheter care on a regular basis.

F. Spill Management

The steps described below should be taken when cleaning and decontaminating spills of blood or other potentially infectious materials; refer to **ICM–IX-02** Management of Infectious Waste.

When an infectious/medical waste spill has been identified, perform the following steps:
1. Control access to the area.
2. Contain the spill with paper towels or other absorbent materials.
3. Contact housekeeping to disinfect the area.

TITLE/DESCRIPTION:	INDEX NUMBER
DENTAL CLINIC AND DENTAL LABORATORY	**ICM - VIII - 08**

EFFECTIVE DATE:	APPLIES TO:	ISSUING AUTHORITY:
01/01/2009 01/01/2013 01/01/2018	**All GCC Countries**	**GULF COOPERATION COUNCIL – CENTRE FOR INFECTION CONTROL (GCC-CIC)**

DEFINITION

To provide guidelines on proper infection control practices in dental care settings.

REFERENCES

1. American Dental Association. Infection control recommendations for the dental office and the dental laboratory. J Am Dent Assoc (Suppl), August 1992.
2. Association for Professionals in Infection Control (APIC) and Epidemiology, Inc. (2014). Chapter 53: Dental services. In APIC Text of infection control and epidemiology (4th ed.).
3. Centers for Disease Control and Prevention (CDC). Recommended infection-control practices for dentistry, 1993. MMWR 1993;42 (No. RR-8):1-12 Revised 2003.

COMMENTS

1. Patients and dental healthcare workers (DHCWs) may be exposed to a variety of infectious, viral, and bacterial agents in dental care settings via blood and other oral / respiratory secretions. Multiple potential sources for microbial cross-contamination and infection exist during treatment and instrument reprocessing.
2. Routes of microbial transmission:
   a. General Routes:
      i. Direct contact with a lesion, organisms or potentially infectious secretions when performing intraoral procedures (e.g., practicing without wearing gloves).
      ii. Indirect contact via contaminated instruments or disposable items (e.g., accidental percutaneous exposure from used needles).
      iii. Airborne or droplet via aerosolization of microorganisms from patients' blood or saliva while using devices that can generate droplet spatter (e.g., air water devices, dental hand pieces).
   b. DHCWs and patients as modes of transmission during patient care:
      i. Patient to DHCW transmission of potentially infectious microbes can occur through breaks in the skin or through airborne exposure.
      ii. DHCW to patient transmission of potentially infectious microbes can occur as a result of DHCW bleeding into a patient's mouth after sharps exposure or through respiratory droplets passed from DHCW to the patient.
      iii. Patient to patient transmission can occur if instruments are improperly reprocessed or due to improper hand hygiene or improper glove wearing on the part of DHCWs.
3. Recognizing the potential for microbial cross-transmission is essential before applying appropriate infection prevention and control precautions during the provision of dental care.

PROCEDURE

Treat every patient and contaminated instrument as potentially infectious with a life-threatening blood-borne pathogen.

A. Hepatitis B Vaccination

All susceptible DHCWs should be vaccinated against Hepatitis B.

B. Standard Precautions (refer to **ICM–II-03**)

1. Practice standard precautions (i.e., hand hygiene and use of mask, gloves, goggles, face shield, gowns or aprons).
2. Dispose of sharps properly in puncture-proof containers; do not bend or recap (refer to **ICM–IX-02** Management of Infectious Waste).
3. Use paper with impervious backing, aluminum foil, or plastic covers to protect items and surfaces (e.g., light handles or X-ray unit heads) that may become contaminated by blood or saliva during use and that are impossible to clean and disinfect.
4. Remove these covers (while still gloved), discard them, and replace them (after ungloving and washing hands) with clean materials between patients.

C. Pre-procedural Mouth Rinsing

Patient should rinse with an antimicrobial mouth rinse before a dental procedure to reduce oral flora.

D. Unit Dose Concept

Preparing or dispensing a sufficient amount of material for a particular procedure before patient contact and discard any excess at completion. Single dose solutions or medications are recommended to prevent cross-contamination.

E. Patient Screening and Evaluation

Always obtain and determine the current health status of the patient, and always perform a thorough head, neck and oral examination to identify previously undiagnosed medical problems (examination may indicate a need for medical referral for the patient, e.g., for diagnosis of active tuberculosis).

F. Management of Needlestick injuries/blood and body fluid exposure

Refer to **ICM–VII-04** Management of Sharps Injury and Exposure to Bloodborne Pathogens.

G. Work Restriction for DHCWs

Refer to **ICM–VI-04** Work Restrictions for Infected Healthcare Workers.

H. Barrier Techniques

The use of barriers is important for reducing tissue contact with potentially infectious pathogens and materials, ultimately reducing cross-contamination and cross-infection between DHCWs and patients.

1. DHCWs must wear protective attire when performing treatment procedures capable of causing splashes, spatter, contact with body fluids, or contact with mucous membranes or when touching items or surfaces that maybe contaminated with these fluids.
2. The type of protection depends on the dental procedure.

I. Instrument Reprocessing: cleaning, disinfection and sterilization

1. General principles

   All dental and medical instruments can be classified into three categories: critical, semi- critical or non-critical, depending on the potential risk for infection associated with their intended use and how they are reprocessed. Refer to **Table 1-VIII-08**.

2. Dental instruments
   a. Wear heavy-duty (reusable utility) gloves when cleaning and reprocessing to lessen the risk of injury.
   b. Clean the instruments thoroughly to remove debris prior to delivery to the Central Sterile Supply Department (CSSD) for disinfection and sterilization.
   c. Place the instruments into a container of water or disinfectant/detergent as soon as possible after use to prevent organic material from drying on their surfaces, thus making cleaning easier.

3. Dental units and environmental surfaces can be divided into
   a. Clinical surfaces
      i. Clean countertops and dental unit surfaces that may have become contaminated with patient material after treatment of each patient and at the completion of daily work activities. Use paper towels, an appropriate cleaning agent, and water for cleaning.
      ii. After cleaning an environmental surface contaminated with patient material, disinfect it with a "hospital-approved" disinfectant chemical germicide labeled "tuberculocidal." Examples of such intermediate-level disinfectants include phenolics, iodophors, and chlorine-containing compounds such as diluted household bleach (sodium hypochlorite). The manufacturer's recommended contact time (kill time) should be used.
      iii. To prepare a fresh solution of a 1:100 dilution of sodium hypochlorite as an inexpensive intermediate-level disinfectant, add ¼ cup of household bleach to 1 gallon of tap water. This solution is active for only 24 hours and must be prepared fresh each day. Caution should be exercised because chlorine solutions can corrode metals such as aluminum.
   b. Housekeeping surfaces
      Clean floors, walls, and other housekeeping surfaces a hospital-approved low-level disinfectant such as a quaternary ammonium compound.
4. Dental laboratory
   a. Clean and disinfect laboratory materials and other items that have been used in the mouth (e.g., impressions, bite registrations, fixed and removable prostheses, and orthodontic appliances) before manipulating them in the laboratory. After manipulation, clean and disinfect these items again before placing them in the patient's mouth.
   b. Use an intermediate-level disinfectant with a "hospital-approved disinfectant" that is labeled "tuberculocidal" to disinfect laboratory materials.

J. Use and care of handpieces, antiretraction valves, and other intraoral dental devices attached to air and water lines

1. Heat-sterilize all high-speed dental handpieces, low-speed handpiece components used intraorally, and reusable prophylaxis angles. Acceptable methods of sterilization include steam under pressure (autoclaving), dry heat, or heat/chemical vapor. It is NOT acceptable to reprocess high-speed dental handpieces, low-speed handpiece components used intraorally, and reusable prophylaxis angles by wiping or soaking these instruments in liquid chemical germicides.
2. Follow the manufacturer's instructions for cleaning, lubrication, and sterilization of handpieces and reusable prophylaxis angles to ensure effective sterilization and longevity of the instruments.
3. Install antiretraction valves (one-way flow check valves) in dental unit water lines to prevent fluid aspiration and to reduce the risk of the transfer of potentially infectious material. Ensure routine maintenance of antiretraction valves.
4. Run high-speed handpieces to discharge water and air for a minimum of 20 to 30 seconds after use on each patient. If possible, use an enclosed container or high-velocity evacuation during discharge procedures to minimize the spread of spray, spatter, and aerosols.

5. Remove handpieces and allow water lines to run and discharge water for several minutes to reduce overnight microbial accumulation at the beginning of each clinic day
6. Use sterile water or saline as a coolant/irrigator when surgical procedures involve cutting bone.
7. Clean and sterilize reusable intraoral instruments attached to, but removable from, the dental unit air or water lines (e.g., ultrasonic scaler tips and their component parts and air/water syringe tips) in the same manner as hand pieces after treatment of each patient. Follow the manufacturer's instructions for reprocessing.
8. Some dental instruments have components that are heat sensitive or are permanently attached to dental unit water lines. Other instruments (e.g., handles or dental unit attachments of saliva ejectors, high-speed air evacuators, and air/water syringes) that do not enter the patient's mouth can become contaminated with oral fluids during treatment procedures. Cover these instruments with impervious barriers that are changed after each use or, if possible, clean and then disinfect them with a "hospital disinfectant" that is labeled "tuberculocidal".
9. Flush all water lines to all instruments thoroughly after the treatment of each patient and at the beginning of each clinic day.
10. Advise patients not to close their lips tightly around the tip of the saliva ejector to filter oral fluids.

K. Water Quality

Use water that meets the EPA regulatory standards for drinking water (i.e., <200 CFU/mL of heterotrophic water bacteria) for routine dental treatment output water. Scheduled water sampling must be done to monitor water quality.

L. Single Use Disposable Instruments

Use single-use disposable instruments (e.g., prophylaxis angles, prophylaxis cups and brushes, tips for high-speed air evacuators, saliva ejectors, and air/water syringes) for one patient only and discard after use.

M. Handling of Biopsy Specimens

1. Place each biopsy specimen in a sturdy container with a secure lid to prevent leaking during transport.
2. Avoid contaminating the outside of the specimen container. If the outside is visibly contaminated, clean and disinfect it or place it in an impervious bag.

N. Disposal of Infectious Waste Materials

1. Pour blood, suctioned fluids, or other liquid waste into a drain connected to a sanitary sewer system.
2. Place solid waste contaminated with blood or other body fluids in sealed, sturdy impervious bags that are leak proof; refer to **ICM–IX-02** Management of Infectious Waste.

O. Practices for the Dental Laboratory

1. Separate the receiving area from the production area. Clean and disinfect countertops and work surfaces daily.
2. Disinfect all incoming cases as they are received. Sterilize or disinfect containers after each use. Discard packing materials to avoid cross-contamination.
3. Production area:
   a. Wear a clean uniform or laboratory coat, a face mask, protective eyewear, and disposable gloves.
   b. Clean debris from work surfaces and equipment and disinfect them daily.

c. Separate instruments, attachments, and materials to be used with new prostheses/appliances from those to be used with prostheses/appliances that have already been inserted in the mouth.
d. Wash and autoclave rag wheels after each case.
e. Disinfect brushes and other equipment at least daily.

4. Disinfect each outgoing case before it is returned to the dental clinic.

P. Dental Radiography Asepsis

Wear gloves when taking radiographs and when handling contaminated film packets. Other PPE (e.g., mask, protective eyewear, protective clothing) is required when spatter or splashes of blood or other potentially infectious materials is anticipated.

APPENDICES

Table 1-VIII-08: Modified CDC/Spaulding Classification of Contaminated Patient Care Items and Environmental Surfaces

Table 2-VIII-08: Guide for the Selection of Appropriate Disinfection Methods for Items Transported to or from the Dental Laboratory

Table 1-VIII-08: Modified CDC/Spaulding Classification of Contaminated Patient Care Items and Environmental Surfaces

Classification	Description	Dental Clinic/Laboratory Examples	Relative Risk of Disease	Surface Recycling Processes
Patient Care Items				
Critical	Penetrates tissue; contacts open tissue	Cutting instruments; surgical burs, files, and needles; handpieces and scaler tips	High	Heat sterilization; sterile, single-use disposables.
Semi-critical	Contacts mucosa	Hand instruments (non-cutting); mouth props; plastic prophy angles; rubber dam frames	Intermediate	Heat sterilization; single-use disposables; chemical sterilization.
Non-critical (no intraoral contact)	Contacts unbroken skin	Blood pressure cuffs; radiograph head cone; pulse oximeters	Low	Clean with detergents (no blood or saliva); intermediate-level disinfection if visibly contaminated with blood; disposable barriers.
Environmental Surfaces				
Clinical contact	Usually contacts dental personnel, but not patients	Dental unit surfaces; laboratory equipment	Very low	Clean with detergent (no blood or saliva) and low-level disinfection (HIV/HBV label claim); intermediate-level disinfection if visibly contaminated with blood; disposable barriers.
Housekeeping	Rarely contacts dental personnel or patients	Floors; walls; countertops	Minimal	If no obvious blood, sanitize with detergent; intermediate-level disinfection if visibly contaminated with blood.

Table 2-VIII-08: Guide for the Selection of Appropriate Disinfection Methods for Items Transported to or from the Dental Laboratory

Item	Method	Recommended Disinfectant(s)	Comments
Articulators, facebows	Spray, wipe, spray	Chlorine compounds or iodophors	Facebow forks should be heat-sterilized before reuse.
Cast	Spray until wet or immerse	Chlorine compounds or iodophors	Disinfectant can be prepared using slurry water (saturated calcium sulfate).
Custom impression trays (acrylic)	Immerse or spray until wet	Chlorine compounds, iodophors, or phenolics	Do not reuse, discard.
Impressions	Immersion disinfection preferred		Heat-sterilized reusable impression tray Discard plastic trays after use
Irreversible hydrocolloid (alginate)	Disinfect by immersion with caution. Use only disinfectants with short-term exposure times (no more than 10 min for alginates)	Chlorine compounds or iodophors; phenolics sprays may be used on alginates	
Reversible hydrocolloid	Disinfect by immersion with caution. Use only disinfectants with short-term exposure times	Chlorine compounds, iodophors	Do not immerse in alkaline glutaraldehyde.
Polysulfide rubber Silicone rubber	Disinfect by immersion	Glutaraldehyde, chlorine compounds, iodophors, phenolics	Disinfectants requiring more than 30-min exposures are not recommended.
Polyether	Disinfect by immersion with caution. Use only disinfectants with short-term exposure times (no more than 10 min)	Chlorine compounds or iodophors	ADA recommends any of the disinfectant classes; however, short-term exposures are essential to avoid distortion.
ZOE impression paste	Disinfection by immersion is preferred. Spraying can be used for bite registrations	Glutaraldehyde or iodophors	Not compatible with chlorine compounds. Phenolic sprays can be used.
Impression compound	Disinfection by immersion is preferred. Spraying can be used for bite registrations	Iodophors or chlorine compounds	Phenolic sprays can be used.
Prostheses	Immerse in disinfectant. Use caution to avoid corrosion of metal. NEVER expose unglazed porcelain to any disinfectant (must handle as contaminated)		Clean “old” prostheses by scrubbing with handwash antiseptic or sonification before disinfection.
Removable (acrylic/porcelain)		Chlorine compounds or iodophors	Rinse thoroughly after disinfection; store in diluted mouthwash.
Removable (metal/acrylic)		Chlorine compounds or iodophors	Rinse thoroughly after disinfection; store in diluted mouthwash.
Fixed (metal/acrylic)		Glutaraldehydes, chlorine compounds or iodophors	Rinse thoroughly after disinfection.
Shade guides	Immerse or spray, wipe, spray	Iodophors or phenolics	Final wipe with water or alcohol to avoid discoloration.
Wax rims, wax bites	Rinse, spray, wipe spray	Iodophors or phenolics	Rinse again after disinfection.

TITLE/DESCRIPTION:	INDEX NUMBER
BURN UNIT	**ICM - VIII - 09**

EFFECTIVE DATE:	APPLIES TO:	ISSUING AUTHORITY:
01/01/2009 01/01/2013 01/01/2018	**All GCC Countries**	**GULF COOPERATION COUNCIL – CENTRE FOR INFECTION CONTROL (GCC-CIC)**

DEFINITION

To provide infection control guidelines on the practices required to prevent infection and sepsis in burn patients.

REFERENCE

Association for Professionals in Infection Control (APIC) and Epidemiology, Inc. (2014). Chapter 38: Burns. In APIC Text of infection control and epidemiology (4th ed.)

COMMENTS

1. Burn patients have a higher incidence of sepsis compared to patients with other forms of trauma because of extensive skin barrier disruption and an alternation in the cellular and humoral immune responses.
2. The dysfunction of the immune system, a large cutaneous bacterial load, the possibility of gastro-intestinal bacterial translocation, prolonged hospitalization and invasive diagnostic and therapeutic procedures all contribute to sepsis. Therefore, infections in burn patients are a leading cause of morbidity and mortality.
3. Reservoirs of microorganisms that cause infections in burn patients include the surfaces of burn wounds on all burn patients, the hands of healthcare workers (HCWs), inanimate environmental objects (hydrotherapy equipment and associated plumbing, cooling blankets, mattresses, etc.), raw fruits and vegetables, and the colonic flora of the patients themselves.
4. The mode of transmission is primarily direct or indirect contact.

PROCEDURE

A. Healthcare workers

1. Perform strict hand hygiene ("5 moments"). Refer to **ICM–II-04** Hand Hygiene.
2. Strictly follow standard precautions to minimize or prevent exposure to blood-borne and other microorganisms when caring for all patients. Refer to **ICM–II-03** Standard Precautions.
3. Wear personal protective equipment (PPE) to prevent the transmission of infection during patient care.
   a. Don gowns beore each patient contact and discarded immediately after completing the task at hand.
   b. Change gloves when soiled and before continuing with care at another site on the same patient.
4. Practice aseptic technique for all patient care procedures requiring asepsis (e.g., catheter insertion and dressings).
5. Initiate isolation precautions for patients infected or colonized with multidrug-resistant organisms and notify the Infection Preventionist (IP).
6. Place in a single room or physically separate from other patients through an enclosed bed space for patients with larger burns (>25% total body surface area (TBSA) as an additional precaution.
7. Comply with Employee Health (EH) guidelines. Report to EH for any of the following:
   a. Any suspected infections.
   b. Exposure to any communicable disease.
   c. Any significant exposure to body fluids through sharps injuries, splashes, and/or non-intact skin contact.

B. Patient

1. Use topical antimicrobial agents such as silver nitrate, mafenide acetate, and silver sulfadiazine on burn wounds to reduce the multiplication of microorganisms on the wound surface.
2. Clean and disinfect hydrotherapy equipment between patients and at the end of the day using a hospital-approved disinfectant per the manufacturer's instructions to prevent infection transmission.
3. Restrict plants and flowers at the bedside of patients because they harbor gram-negative organisms such as Pseudomonas spp. as well as fungi.
4. For pediatric patients, in addition to the recommendations mentioned above, eliminate non-washable toys (stuffed animals, cloth objects, etc.).

C. Sitters/Visitors

1. Sitters/visitors must adhere to the burn unit personnel's recommendations/instructions regarding infection prevention requirements (e.g., visiting other patients, PPE use, hand hygiene).
2. Visitors must be excluded from the patient care area during wound care. If a visitor is needed during dressing (usually for small children), full protective equipment must be worn.
3. Patients/sitters/families must be instructed regarding the infection prevention measures.

D. Housekeeping

1. Unit Charge Nurse strictly monitors housekeeping practices to ensure maximum cleaning of common nosocomial reservoirs, such as mattresses, hydrotherapy equipment, soap dispensers, sinks and floors.
2. Use only hospital-approved disinfectants.
3. Designated cleaning equipment (e.g., mops, pails, and a wet vacuum) for use in the unit.
4. Provide training to housekeeping personnel on the special needs for environmental sanitation in the unit.

E. Equipment and Devices

1. Send all reusable semi-critical and critical items to the Central Sterilization and Supply Department for reprocessing (cleaning, disinfecting and sterilizing).
2. Clean with a hospital-approved disinfectant all other patient care equipment when visibly soiled, between patients, daily, and upon patient discharge. A cleaning schedule should be used to monitor equipment cleaning.

F. Medical Waste Management

Medical waste is waste that is potentially infectious to healthcare workers, housekeepers and the public and must be placed in a yellow bag. Refer to **ICM-IX-02** Management of Infectious Waste.

1. Any vessel, bag, or tubing that contains more than 20 ml blood/blood product.
2. Bandages and dressings soaked with more than 20 ml blood/blood product.

G. Operating Room

Refer to your institutional policy in the Operating Room for guidelines regarding proper surgical attire, traffic control and reprocessing of contaminated instruments, among other guidelines.

TITLE/DESCRIPTION:	INDEX NUMBER
MORTUARY CARE	**ICM - VIII- 10**

EFFECTIVE DATE:	APPLIES TO:	ISSUING AUTHORITY:
01/01/2009 **01/01/2013** **01/01/2018**	**All GCC Countries**	**GULF COOPERATION COUNCIL – CENTRE FOR INFECTION CONTROL (GCC-CIC)**

DEFINITION

To provide clear infection control standards and guidelines on the appropriate care of the body following death to protect healthcare workers (HCWs), morgue staff and families from potential infectious exposures.

REFERENCES

Association for Professionals in Infection Control (APIC) and Epidemiology, Inc. (2014). Chapter 65: Post-mortem care. In APIC Text of infection control and epidemiology (4th ed.).

COMMENTS

1. Preparing the deceased for the morgue always involves the handling of blood, body fluids, and biological agents and may also involve exposure to life-threatening biologicals, chemicals, radiation, or electrical current.
2. Refer to hospital policies on safe management of dead bodies and body parts.

PROCEDURE

A. Nurses

1. Adhere to standard precautions and use appropriate personal protective equipment (PPE) at all times.
2. After the physician declares death, perform the following tasks to prevent exposure to blood and body fluid during transportation to protecting morgue personnel:
   a. Remove all disposable tubes and lines appropriately.
   b. Dress all wounds with impervious material to prevent oozing of body fluids or bleeding from wounds or previous catheter sites.
   c. Request an appropriately sized body bag and place the body in the bag.
3. Follow the proper identification of the body, transportation, and documentation in the morgue.
4. Identify patients with known infectious diseases and they should have body tags labeled with the appropriate category (**see Appendix A-VIII-10**).
5. The nurse in charge or dedicated personnel will inform the morgue supervisor if the deceased was known to harbor an infectious agent. (This information will also be confirmed in writing on the identification tag attached to the body bag.)
6. Body parts (including placentas, stillborns, products of miscarriage, etc.) must be place in a red bag, labeled clearly, and stored in the refrigerator until delivery to the morgue.

B. Morgue Staff

1. Orient and train all morgue staff and especially body washers through in-service training annually regarding the proper infection control practices (i.e., hand hygiene, modes of disease transmission, and the importance of PPE) and how to apply these practices.
2. Observe always standard precautions and use appropriate personal protective equipment (PPE) at all times. Refer to **ICM–II-03** Standard Precautions.
   a. Avoid direct contact with blood and body fluids.

3. Use PPE (mask, goggles, latex/vinyl gloves, boots, waterproof full-length apron) to prevent splashing and contamination with body fluids.
   a. Remove disposable PPE and discard immediately after the task is completed.
   b. Reusable aprons and boots must be cleaned between patients and at the end of each shift.
4. Place contaminated linen in a laundry bag and send to the laundry.
5. Ensure that the body bags (which are plastic) are appropriately disposed of when the body is removed (in a yellow bag).
6. Do not drink or eat inside the morgue.

C. Needlestick or Body Fluid Exposure

1. Evaluate all morgue staff in the Employee Health Clinic on a yearly basis for regular checkups and at any other time as deemed necessary (such as after an exposure to body fluid or blood; refer to **ICM–VI-02** Pre-Employment Assessment and **ICM–VI-03** Immunization Guidelines for Healthcare Workers).
2. Ensure that the death log book is available in the morgue.

D. Morgue Facility and Maintenance

1. Keep the morgue clean at all times.
2. Monitor the temperature of the refrigerators (4°C) and record the temperature on the temperature chart on a daily basis.
   a. Any temperature failure (temperature out of range) must be reported to the Utilities and Maintenance (U&M) Department.
3. Clean and disinfect all equipment, table and counter surfaces, and transport trolleys after every patient and at the end of the day.
   a. All tabletops, stretchers, and body boards must be made of washable material (plastic, vinyl, or
   b. Use hospital-approved disinfectants.
4. Store all flammable chemicals and materials appropriately to avoid accidental exposure

Appendix A-VIII-10:
Infectious Disease Category

Categories	Diseases	Precautions	Bagging	Viewing	Washing in the hospital
I	Pathogens not listed under category II.	Standard[1] Precautions	Yes	Allowed	Upon family request*
II	Anthrax Plague Rabies Smallpox Yellow Fever Hepatitis B Hepatitis C HIV SARS Emerging Avian influenza viruses Viral Hemorrhagic Fever (VHF) Creutzfeldt-Jacob disease with necropsy Other infectious disease as advised by the Infection Prevention & Control Department	Standard[2] Precautions	Yes	Not allowed	Required**
	***VHF	Droplet and Contact precautions with impermeable PPEs	Double bagging not less than 150 um thick	Not allowed	Avoid body washing as per *Fatwa*

1 Hand hygiene, gloves, surgical mask, water resistant gown, boots/shoe cover.
2 Hand hygiene, gloves, N95, water resistant gown, boots/shoe cover.
* Washing can be done outside of the hospital setting.
** No washing can be done outside of the hospital setting.
*** Certain VHF disease will be exempted from body washing under the guidance of IP&C Department. Minimum handling of dead bodies will be mandated.

TITLE/DESCRIPTION:	INDEX NUMBER
ANIMAL RESEARCH	**ICM - VIII - 11**

EFFECTIVE DATE:	APPLIES TO:	ISSUING AUTHORITY:
01/01/2009 01/01/2013 01/01/2018	All GCC Countries	GULF COOPERATION COUNCIL – CENTRE FOR INFECTION CONTROL (GCC-CIC)

DEFINITION

To be implemented when using animals or animal tissues in biomedical research and/or teaching activities. To prevent exposure and transmission of pathogenic organisms that are naturally carried by animals or that have been introduced to the animals as part of the research or teaching.

REFERENCES

1. Association for Professionals in Infection Control (APIC) and Epidemiology, Inc. (2014). Chapter 121: Animal research and diagnostics. In APIC Text of infection control and epidemiology (4th ed.).
2. Guidelines for environmental infection control in healthcare facilities. (2003).
3. GCC unified regulations for management of hazardous materials. (2006).
4. The Guide for the Care and Use of Laboratory Animals, NIH. (8th ed.) 2011.
5. Occupational Health and Safety in the Care and Use of Research Animals (1997).

COMMENTS

1. The animal research facility must develop standard operating policies and procedures to include pathogen containment, decontamination, sterilization of equipment and instruments, employee training for laboratory safety, and specific procedures.
2. The animal research facility should establish a program for the proper veterinary care and treatment of animals used in research along with guidelines for the appropriate use of tranquilizers, analgesics, anesthetics, paralytics and euthanasia.
3. The Animal welfare act mandate standards for the humane handling, care, treatment, and trans - portation of dogs, cats, guinea pigs, hamsters, rabbits, nonhuman primates, marine mammals, and other regulated warm-blooded animals. The regulations require that each research facility appoint an institutional animal care and use committee (IACUC) to ensure compliance with the act.
4. The IACUC inspect all animal facilities and reviews the institution's animal care and use program regularly. The IACUC must approve all research activities involving animals before the work can be conducted.
5. Work practices, personal protective equipment (PPE), and engineering control specific for each of the four animal biosafety levels (ABSL 1-4) have been published in the Biosafety in Microbiological and Biomedical Laboratories, 5th edition, 2007, U.S. Department of Health and Human Services (Chapter G).
6. Use disposable, single-use items whenever possible. A designated/segregated area within the animal research facility is required for reprocessing instruments and equipment used on animals or animal tissues. These instruments and equipment must never be introduced into the human patient supply system.
7. No items shall be used on both humans and animals.

PROCEDURE

A. Reprocessing reusable medical/surgical instruments and equipment

1. Each research facility should have policies and procedures on the reprocessing of medical/surgical instruments and equipment in place. These instruments must not be removed from the facility.

2. Refer to the International Association of Healthcare Central Service Material Management (IAHCSMM) and the Association for the Advancement of Medical Instrumentation (AAMI) for the development of standards for policies and procedures.
3. Single-use disposable instruments and equipment must be discarded appropriately immediately after use.
4. Reusable instruments and equipment must be received, cleaned, disinfected, and sterilized in the designated/segregated area within the animal research facility. Adequate storage is required.
5. Instruments used on animals shall not be sent for disinfection and sterilization at any of the CSSD centers for patients.

B. Animal quality and infection risks

1. Purpose-bred animals are bred specifically for use in research (rats, guinea pigs, hamsters, gerbils). Some species are rederived (delivered by cesarean section and raised in a disease-free environment to eliminate all naturally occurring pathogens), commonly rodents. Dogs and cats are rarely rederived because vaccination and strict isolation are used to eliminate naturally occurring pathogens.
2. Conventional animals are those that have varying and uncontrolled health backgrounds. They are generally healthy, and most are subject to measures to control the incidence of disease (e.g., vaccination, treatment of a specific disease).
3. Wild animals are acquired from their natural habitat (non-human primates, squirrels, groundhogs, marsupials). They pose the greatest risk to humans.
4. Some non-human primates are produced in domestic colonies; these animals are more like conventional animals.
5. Some dogs or cats are purpose bred or acquired from animal dealers or animal control facilities and shelters. These animals have been exposed to and may incubate diseases common to the species.
6. Conventional and wild animals pose the greatest risk to personnel working in animal research. All personnel should take the appropriate precautions.
7. Zoonoses are diseases transmitted from animals to humans. Zoonoses can be transmitted from animals to humans via bites, scratches, aerosols, ectoparasites, accidental ingestion, and contact with contaminated soil, food, and water.

C. Activities performed by personnel engaged in animal and research activities that increase the risk of infection

1. Husbandry procedures performed by support personnel include feeding, watering, removal of soiled bedding containing urine and feces, and sanitizing and disinfecting cages, equipment and facilities.
2. For research personnel and veterinary medical staff, procedures performed that increase risk include handling of restrained animals, injections, collection of blood, urine, feces and other body fluids, surgery, necropsy, pipetting, and preparing infectious agents and hazardous compounds.
3. Infection risks are associated with animal bites and scratches, lacerations, needle sticks, aerosol exposure to infected tissues during surgery and necropsy, splashes and mucosal exposure. Animals given radioactive chemicals or infectious agents also pose risks to staff.

D. Infection Prevention Measures that Reduce the Risk of Infection

1. Animal facility:
   a. The animal research unit should be engineered to provide adequate containment of animals and pathogens.

b. Daily decontamination and transport of equipment and waste, proper ventilation and air filtration to prevent recirculation of air in the unit to other areas of the facility should be completed.
c. Engineering control specific for the animal biosafety level in use must be strictly followed, including negative pressure in animal rooms relative to the corridor.
d. Adequate security and containment, with no through traffic to other areas of the healthcare facility, should be maintained, and access should be restricted to animal care staff, researchers, environmental services, maintenance, and security personnel.

2. Animal Care:
   a. Vaccinate all animals as a requirement.
   b. Use specialized containment cage or facilities according to the required Biosafety levels (1-4).
   c. Quarantine incoming animals to detect incubating zoonotic pathogens.
   d. Treat infected animals or remove them from the facility. Euthanize them by humane and safe methods.
3. Employee health and education:
   a. Standard operating procedures must include:
      i. Daily animal husbandry
      ii. Pathogen containment and decontamination
      iii. Sterilizing equipment and instruments
      iv. Employee training for laboratory safety
      v. Procedures specific to animal research site.
   b. Employees should be trained in the handling and restraint of animals as well as in the use of anesthetics and tranquilizers to manage wild animals and animals that resist handling.
   c. Employees should be trained in using PPE (lab coats, surgical gowns, gloves, masks, eye protection), and hand hygiene. Personnel should not eat, drink, or apply cosmetics in animal rooms.
   d. Implement an occupational health program for personnel working with animals to protect personnel from and to monitor exposure to hazards from animals such as zoonoses, animal bites, allergies, radiation, and toxic chemicals. This program should include the following:
      i. Educational programs that provide staff with information about zoonoses, personal hygiene, animal bites, allergies, and precautions to be taken by pregnant women (occupational hazards).
      ii. Immunization against selected diseases such as tetanus and pre-exposure immunization against rabies and hepatitis B virus.
      iii. Regular screening for TB if nonhuman primates are used.
      iv. Post-exposure prophylaxis and treatment involving zoonoses.

E. Waste Management

1. Waste segregation is necessary for various types of wastes generated from cadaver operations:
   a. Black bags shall be used for general waste
   b. Red bags shall be used for human parts
   c. Yellow bags shall be used for infectious waste
2. Animal carcasses and animal tissues are to be collected in yellow bags and preserved isolated in a special freezer (-20 °C) until they are treated and disposed of.

F. Facility Design

1. Rooms used for surgical procedures involving cadavers shall have negative pressure that would blow out the odor and smell, with a minimum of 15 air changes per hour, single-pass air, humidity between 30% and 60%, and temperature from 20-23 °C.

2. Rooms for surgical procedures involving cadavers shall have large sinks attached to proper sewer lines.
3. Sufficient freezers shall be provided to house dead bodies until used.
4. Walls shall be smooth, washable, and easily cleanable.
5. Ceiling shall be impervious, washable, and smooth structure.
6. Floor tiles shall be smooth, easily cleanable, and washable.
7. Floor drains shall be installed.
8. Environmental hazard signs and other identification signs shall be posted on the door and in applicable areas; such signs will include biohazard signs, flammable signs, and compressed gas cylinder signs.
9. Lockers or changing rooms shall be provided for the staff.
10. Only trained medical or paramedical teams shall handle or transport cadaver at any time.
11. Air curtains can be used in the entrances well as to the area.
12. Training rooms that are involved with cadaver anatomy must be cleaned by proficient housekeepers using approved disinfectant(s) (refer to cleaning policy).
13. All contaminated and medical items that require sterilization must be sterilized in coordination with CSSD in the animal research center.

G. Agents of Zoonoses

1. Herpesvirus 1 (B virus: herpesvirus simiae)
   a. B virus is the most significant infection health hazard in nonhuman primate research and is carried by Asian and African monkeys of the genus Macaca. The agent has been found principally in rhesus monkeys (M. mulatta).
   b. Initially, infection in macaques is usually asymptomatic. Lesions may be found in the oral, ocular, and genital regions.
   c. Transmission to humans occurs through exposure to contaminated animals (scratches, bites, splashes onto mucous membranes, and contact with animal tissues) or contaminated equipment (needlestick, sharp cage parts).
   d. The incubation period from exposure to symptomatic disease ranges from days to five weeks.
   e. Early symptoms include flu-like symptoms that may progress to encephalitis.
   f. All macaque monkeys should be treated as though they are infected, and their body fluids and soiled cages should be handled as if they are contaminated.
2. Macaque monkeys should be used for research purposes only when clearly indicated and have a negative serology test twice, two months apart.
   a. Access to areas where macaques are housed or used should be limited to those who are trained in the following:
      i. Procedures to avoid the risk of infection, including protective clothing (long-sleeved gowns or lab coats, eye goggles or face shields, surgical masks). Restraining or handling fully awake macaques is not recommended. Fully awake macaques should be handled only with arm-length leather gloves, and animals should be removed from their cages with the use of pole and collar restraints.
      ii. Bites or scratches from macaques should be immediately and thoroughly scrubbed with antiseptic soap and water and reported to a supervisor and to employee health.
      iii. Place a first-aid kit in the primate housing facility; employees working with macaques should receive training in first-aid procedures.
      iv. Wounds sustained from working with monkeys or equipment contaminated with monkey saliva or wounds should be scrubbed vigorously for 15 minutes with gauze sponges soaked in antiseptic soap.
      v. If eye splashes occur, rinse the eye immediately with water at an eye station or sink for 15 minutes.

vi. Post-exposure prophylaxis with valacyclovir (1 gram per orem every 98 hours for 3 weeks in adults or non-pregnant women) or acyclovir (800 mg five times a day for 21 days in pregnant women) should be instituted immediately and within 72 hours of exposure by the employee health clinic physician. Blood samples should be drawn for detecting B virus, and wounds should be cultured for B virus. Staff should seek immediate medical attention for skin lesions, itching, or numbness around the wound. The wound should be examined every other day for the first week and then weekly through the end of the fourth week for vesicles, pain, numbness and itching. A second serum sample should be drawn in the 2nd to 3rd week.

vii. The monkey associated with the human injury should be evaluated by a veterinarian for the presence of lesions and evaluated serologically for the presence of antibodies and viral cultures. The results should be reported to the treating physician and research staff.

viii. Animals diagnosed as infected with B virus or seropositive for B virus should be killed and incinerated.

3. Hantavirus
   a. Hantavirus is associated with rodent hosts, including rats, mice and other wild animals.
   b. Hantavirus has not been reported in personnel working with commonly used laboratory rats Rattus norvegicus) and mice (Mus musculus).
   c. The virus is shed in the saliva, urine, and feces of infected rodents.
   d. Transmission occurs through inhalation of infectious aerosols, wounds, contamination, conjunctival exposure and ingestion. The virus may be present in the blood and organs of infected mice. Rat cell lines have been demonstrated to be a source of infectious virus.
   e. Two syndromes have been associated with Hantavirus infections: hemorrhagic fever with renal syndrome and Hantavirus pulmonary syndrome.
   f. Potentially infected tissues samples should be handled in a BSL-2 facility in accordance with BSL-3 practices.
   g. Prevent exposure to rodents and their tissues by using proper PPE.
4. Lymphocytic choriomeningitis virus (LCMV)
   a. Wild mice are the principal reservoir of infection for LCMV.
   b. The virus is transmitted by direct skin or mucous membrane contact with infectious secretions (urine, feces, saliva) or by ingestion or inhalation of aerosolized virus particles from animal rooms or cages. Parenteral exposure can result from contact with contaminated bedding material. Tissue culture cell lines can become contaminated and harbor the virus.
   c. Infection causes aseptic meningitis in humans.
   d. Proper hygiene, hand washing, and gloves are important preventive measures.
   e. Animal biosafety level 3 (ABSL-3) practices are recommended for activities with high potential for the production of aerosols, manipulation of infectious materials or working with infected animals.
5. Rabies
   a. Rabies is caused by Rhabdovirus and can infect dogs, cats, parrots, and nonhuman primates. Verify that rabies vaccinations for dogs, cats, and nonhuman primates are up to date.
   b. Transmission is sustained by a bite from a rabid animal or inoculation of infectious saliva into the mucous membrane or a fresh wound.
   c. No cases of rabies have been reported in animal facility personnel; however, it is important to monitor for these zoonoses in facilities that use animals of unknown health background.
   d. Pre-exposure prophylaxis is recommended for personnel at high risk for potential exposure to rabid animals such as:
      i. Veterinarians and veterinary technicians
      ii. Personnel handling high-risk animals (simians, animals in quarantine) or their tissues.

e. Inactivated vaccine should be given IM (1 ml on days 0, 7, 21, and 28), with boosters for persons with continuous or frequent risk of infection (1 ml IM) based on antibody titer.
f. All bites from animals that can be infected with rabies virus carry a risk of rabies transmission.
g. Cases of rabies from presumed non-bite exposures are extremely rare, unless the exposure is to the person's mucous membranes or open wounds and the animal fluid/tissue making contact is potentially infectious (saliva, neural tissue); contact with blood, urine, or feces of a rabid animal does not constitute an exposure. Probable aerosol exposure to rabies virus in laboratories has resulted in two cases.
h. Dogs, cats, and parrots with up-to-date vaccinations are unlikely to become infected with rabies.
i. Suspected animals should be quarantined for 10 days after any bite injury or high-risk exposure.
j. Post-exposure prophylaxis includes:
   i. Wound care through washing bite wounds and scratches with soap and water. Povidone iodine should also be used.
   ii. Tetanus prophylaxis and antibiotics as indicated.
   iii. Administration of rabies immunoglobulin (RIG) and rabies vaccine; refer to policy and algorithm **ICM-IV-07** Rabies Exposure Management.

6. Cat scratch fever
   a. Bartonella henselae is the etiologic agent of cat scratch fever. Cats and occasionally dogs are the reservoir of this agent.
   b. Infection occurs following bites or scratches from healthy young cats and occasionally dogs, usually pet animals.
   c. Personnel handling cats should use protective clothing to prevent bites and scratches. Wounds sustained should be thoroughly cleaned.
7. Q fever
   a. Coxiella burnettii is the etiologic agent of Q fever. Sheep, goats, and cattle are the most important reservoirs.
   b. Transmission to humans follows exposure to fetal membranes, birth fluids and stillborn animals. Inhalation of infectious agents may occur during parturition.
   c. To prevent exposure, obtain only male sheep or non-pregnant female sheep for experimental purposes. Employees should wear PPE (surgical masks, disposable gloves, shoe covers, gowns, or lab coats).
   d. Ensure adequate ventilation in ruminant housing areas.
   e. An N95 mask is recommended when working with animals during parturition and lactation or when performing surgery.
8. Tuberculosis
   a. Nonhuman primates are the animals most likely to be infected with mycobacteria, and transmission can occur between monkeys with a secondary spread to humans. Macaques are the most susceptible. Pulmonary disease is a common presentation among nonhuman primates.
   b. Laboratory animals are routinely tested for tuberculosis upon arrival at the facility, every two weeks in quarantine, and quarterly in established colonies. The intradermal skin test (Mantoux) is used.
   c. Animals suspected of having tuberculosis are generally euthanized.
   d. Transmission of tuberculosis occurs primarily by infective aerosols. Individuals working with nonhuman primates have an increased risk for the development of a positive tuberculin skin test. Personnel with tuberculosis pose a high risk for nonhuman primates.
   e. Personnel working with nonhuman primates should have a baseline tuberculin skin test and be tested annually if negative. Personnel with positive skin tests should be evaluated for active disease and reassigned to other work until active TB is ruled out. Only employees with positive skin tests should be evaluated by employee health for treatment.
   f. Staff working with nonhuman primates should receive training in PPE use and TB education.

9. Other zoonoses
   Laboratory personnel and animal care staff are exposed to other zoonotic infections such as campylobacteriosis, chlamydiosis, capnocytophagosis, pasteurellosis, shigellosis, leptospirosis, and rat bite fever. For other list of zoonotic disease please refer to the references (APIC and Occupational Health and Safety in the Care and Use of Research Animals, National Academy of Sciences, 1997).

H. Allergic Reactions to Laboratory Animals

Allergic reactions to animals are among the most common conditions that adversely affect the healthcare workers involved in the care and use of animals in research. Refer to **Table 1-VIII-11** for four risk groups based on the history of allergic disease and sensitization to animal proteins.

Table 1-VIII-11: Risk of Developing Allergy to Laboratory Animals

Risk group	History	Risk of allergic reactions to laboratory animals	Comment
Normal	No evidence of allergic disease	10%	90% of normal group will never develop symptoms in spite of repeated animal contact
Atopic	Pre-existing allergic disease	Up to 73%	Workers who become sensitized to animal proteins will eventually develop symptoms on exposure
Asymptomatic	Immunoglobulin E antibodies to allergenic animal proteins	Up to 100%	Risk of developing allergic symptoms of rhinitis, asthma, or contact urticarial with continued exposure is high
Symptomatic	Clinical symptoms on exposure to allergenic animal proteins	100%	33% with chest symptoms; 10% of group might develop occupational asthma; even minimal exposure can lead to permanent impairment

TITLE/DESCRIPTION:	INDEX NUMBER
AMBULATORY CARE	**ICM - VIII - 12**

EFFECTIVE DATE:	APPLIES TO:	ISSUING AUTHORITY:
01/01/2018	**All GCC Countries**	**GULF COOPERATION COUNCIL – CENTRE FOR INFECTION CONTROL (GCC-CIC)**

DEFINITION

To establish infection control principles adapted for the outpatient care services to minimize infection risks to patients, healthcare personnel, and family members. This policy addresses infection prevention and control in ambulatory care settings except ambulatory surgery, dialysis, and oncology centers.

REFERENCE

Association for Professionals in Infection Control (APIC) and Epidemiology, Inc. (2014). Chapter 48: Ambulatory Care. In APIC Text of Infection Control and Epidemiology (4th ed.).

COMMENTS

1. Ambulatory care is defined as any care provided in a setting where individuals do not remain overnight (e.g., hospital and non-hospital clinics, ambulatory, physician offices, urgent care centers, oncology clinics, and ambulatory surgery clinics).
2. Standard Precautions are the key approach to preventing healthcare-associated infections (HAIs) and improving patient safety in all ambulatory care settings.
3. The risk of infection in an ambulatory setting increases with increased patient density in a given area, increased in the number and complexity of procedures, and with the increased of the number of invasive procedures.
4. The administration is accountable to provide proper resources and equipment to maintain safe and effective infection prevention practices.
5. At least one healthcare personnel should be educated and trained in infection prevention practices and accountable to maintain safe, effective policies and procedures in the ambulatory care setting.
6. Assessment for the introduction of new equipment and procedures should be ongoing to ensure that there are no gaps in effective cleaning and disinfection of equipment/instruments.
7. Multidrug-resistant organisms (MDROs) for epidemiologic purposes are defined as microorganisms, predominantly bacteria, that are resistant to one or more classes of antimicrobial agents. Although the names of certain MDROs describe resistance to only one agent (e.g., MRSA, VRE), these pathogens are frequently resistant to most available antimicrobial agents.

PROCEDURE

1. To apply consistent infection prevention principles, designate an Infection Preventionist (IP), develop formal policies and procedures, implement comprehensive educational program for all healthcare workers.
2. Provide a physical environment that is conducive to preventing infections and with sufficient equipment and supplies.
3. The IP needs to conduct an annual infection prevention assessment to establish priorities regarding high risk, high volume, and problem prone activities.
4. Implement respiratory hygiene stations including barrier masks, disposable tissues, waterless hand sanitizers, and cough etiquette instruction at entrances to the ambulatory care facility and place strategically throughout the facility based on size and need.
    a. Post signs at entrances with instructions to patients with symptoms or respiratory infection to:
        i. Cover their mouths/noses when coughing or sneezing.

ii. Use and dispose tissues.
iii. Perform hand hygiene after hands have been in contact with respiratory secretions.

b. Provide tissues and no-touch receptacles for disposal.
c. Provide resources for performing proper hand hygiene, hand hygiene observations and feedback.
d. Offer mask to coughing patients and other symptomatic persons upon entry to the facility.
e. Provide proper spacing between patients in the waiting area and ensure rapid triaging of patients with respiratory illness in order to limit transmission of respiratory pathogens in the waiting area. If available, facilities shall provide separate waiting areas for patients with respiratory illness.

5. Additional recommendations for preventing infections:
Specific syndromes involving diagnostic uncertainty (i.e. diarrhea, productive cough, febrile respiratory illness, or febrile rash) are routinely encountered in the ambulatory settings. Facility should develop and implement systems for early detection and management of potentially infectious patients at initial points of entry to the facility. The following recommendations should be considered for patients who may be contagious:
   a. Screen patients at the time the office visit is scheduled.
   b. Make an effort to see these patients at the end of the day or when the waiting area is least busy.
   c. Place a barrier mask on patients who exhibit signs of respiratory illness. Ensure that patients understand respiratory hygiene.
   d. Quickly triage patients out of common waiting areas and into a private examination room.
   e. Close the door of the examining room and limit access to the patient by visitors and staff members who are not immune to the suspected disease.
   f. Triage patients who exhibit signs and symptoms of respiratory illness into a negative pressure room if available or use a portable HEPA filter if available.
6. Adhere to basic infection prevention standards such as:
   a. Observe Standard precautions regardless of the setting or the suspected or confirmed infectious status of the patient. Refer to **ICM-II-03** Standard Precautions.
   b. Perform hand hygiene using the five moments as per World Health Organization standards specific to outpatient settings. Refer to **ICM-II-04** Hand Hygiene.
   c. Use personal protective equipment (PPE) and make it accessible to healthcare workers through - out the facility.
   d. Follow safe injection practices:
      i. Use aseptic technique when preparing and administering injectable medications.
      ii. Cleanse the access diaphragms of medication vials with 70% alcohol before inserting a device into the vial.
      ii. Never administer medications from the same syringe to multiple patients, even if the needle is changed.
      iv. Never reuse a syringe to enter a medication vial or solution.
      v. Do not administer medications from single-dose vials, ampoules, or bags or bottles of intravenous solution to more than one patient.
      vi. Do not use fluid infusion or administration sets (i.e., intravenous tubing) for more than one patient.
      vii. Dispose used syringes and needles at the point of use in a sharp container that is closable, puncture-resistant, and leak-proof.
      viii. Adhere to policy **ICM-II-03** on Standard Precautions for protection of HCWs from exposure to blood-borne pathogens. Employ the use of needleless or safety engineered devices.

7. Observe safe handling of potentially contaminated environmental surfaces and contaminated noncritical equipment. General guidelines include:
   a. Establish policies and procedures for routine cleaning and disinfection of environmental surfaces. Prioritize those surfaces in close proximity to patients and those that are frequently touched.
   b. Select hospital-approved detergents/disinfectants for use in healthcare and follow manufacturer's recommendations for use (i.e., amount, dilution, contact time, safe use, and disposal).
   c. Clean the frequently touched surfaces of offices, office equipment and examination rooms daily and or at the end of each shift or when visibly soiled.
   d. Cover the examination table with disposable paper or linen that is changed between patients. More thorough cleaning and disinfection should be done if contamination with any type body fluids or non-organic material is visible.
   e. Clean floors in the waiting area and examination rooms at least daily and/or at the end of each shift or whenever visibly soiled.
   f. Clean and disinfect the healthcare worker's restrooms at least daily and/or at the end of each shift or whenever visibly soiled.
   g. Clean and disinfect patients restrooms at least daily and/or at the end of each shift or whenever visibly soiled; to be inspected every few hours to ensure cleanliness. The frequency of cleaning will be determined by the volume and frequency of use.
   h. Supply a diaper changing area with disposable paper, disinfectant wipes, and instructions for wiping after each use. Clean and disinfect routinely at least once daily and or at the end of each shift and whenever visibly soiled.
   i Refer to **ICM-IX-02** Management of Infectious Waste for cleaning and disinfecting spills of blood or body fluids onto floors and other surfaces.
   j. Clean and disinfect stethoscope tubing and diaphragm after each use with a hospital-approved disinfectant.
   k. Clean and disinfect noncritical reusable equipment that is visibly soiled and before reuse.
   l. Dispose contaminated sharp items immediately at "point-of-use" puncture-resistant sharp containers.
   m. Supply the staff with mouthpieces and resuscitation bags for staff performing cardiopulmonary resuscitation (CPR). Clean and disinfect if reusable before use on another patient. Dispose immediately if equipment is single use.
   n. Place blood pressure cuffs on intact skin to prevent the risk of transmission of infectious agents.
   o. Use disposable plastic sleeves for reusable electronic thermometers. Clean the thermometer body and disinfect regularly (at least daily) and whenever soiled.
   p. Do not share glucometers and finger stick devices.
8. Management of multi-drug resistant organisms (MDROs)
   The risk of transmission in outpatient facilities is reduced because of short stays, lower intensity of care, and relatively healthy patients.
   a. Use Standard Precautions for patients known to be infected or colonized with target MDROs, making sure that gloves and gowns are used for contact with uncontrolled secretions, pressure ulcers, draining wounds, stool incontinence, and ostomy tubes and bags.
   b. Develop an antibiotic stewardship program to educate physicians on the proper use of antibiotics.
9. Education
   The IP assigned in the ambulatory care should coordinate with the Nursing Educators and Patient educators and emphasize the importance of ongoing education in maintaining effective and up-to-date infection prevention practices. Topics include hand hygiene, respiratory hygiene, MDROs, cleaning, disinfection and sterilization, waste management procedures, and infection prevention practices (i.e., patient preparation before invasive procedures or line access, appropriate barrier use, and aseptic technique).

a. Create and use online educational module.
b. Use posters with brief messages which can be effective reminders on topics including hand hygiene, influenza vaccine, and respiratory cough etiquette.
c. Educate patients on hand hygiene, immunization, antibiotic use actively or through passive means (i.e., use of posters and pamphlets).

10. Communication
The IP responsible for ambulatory care services should network among IPs at local, hospitals, other ambulatory care settings, professional organizations, and local and state health department.

11. Reprocessing
Most ambulatory care settings perform some level of semi-critical or critical instrument reprocessing. Refer to **ICM-IX-01** Sterile Supplies and Equipment Management.
a. Monitor items that are reprocessed to ensure that the process is safe, cost effective, and follows manufacturer's instructions to avoid damage.
b. Develop written procedures for cleaning and disinfection or sterilization of all reusable instruments and medical devices.
c. Maintain written records for tracking the disinfection/sterilization process and results.
d. Outsource reprocessing instruments and equipment to another facility or employ the use of disposable if there is no available facility for reprocessing onsite.

12. Laundry services
Laundry service needs are usually minimal in outpatient settings.
a. Use disposable exam gowns and drapes.
b. Develop policies and procedures addressing the handling, processing, and storage of clean and dirty linen wherever it is reuse. Refer to **ICM-VIII-02** Laundry.

13. Occupational health
HCWs are frequently exposed to persons with communicable diseases. Additionally, HCWs can pose a risk to patients and other office staff if they have a communicable disease. Write policies that would include detailed criteria for exclusion from work, screening for TB, exposure to blood and body fluids protocol and vaccinations of HCWs. Refer to **ICM-VI-04** Work Restrictions for Infected Healthcare Workers.

14. Construction, renovation, and water damage
Outpatient building codes may not be able to meet the same strict infection prevention standards as hospitals. During planning for new construction and renovation, the IP can provide guidance and serve as a champion for inclusion of infection prevention design elements.
a. IP evaluates items such as sink, soap, towel and alcohol-based hand rub dispensers, floor coverings, adequate space, and facilities for medication preparation and storage, including refrigerators/freezers, adequate space for and practical placement of storage, and instrument reprocessing.
b. IP need to involve himself/herself in the planning stages of a new facility. He/she needs to complete a risk assessment to determine the potential for exposure to an infectious patient or infectious substance during a procedure.
c. For potential flood or water damage, IP must develop procedures that include emergency contacts and maintenance services for remediation for the administrator on-call, should a water damage situation occur during non-business hours.

15. Emergency planning and disaster management
Emergency planning is vital across all levels of healthcare. If a disaster or widespread outbreak occurs, it is likely that initial cases will arrive at clinics involving healthcare delivery across the continuum of care.

IPs can play a crucial role in ensuring that the emergency plan addresses the following issues specifically for ambulatory care:

a. Provide an administrative action list including key phone numbers (i.e., on-call administrators, local emergency department, microbiology laboratory, infection prevention) and emails for effective communication during the event and expectations for the outpatient site.
b. Make a list of pertinent external agencies with phone numbers and circumstances for contacting them.
c. Develop a respiratory hygiene program for emergencies.
d. Provide a flow sheet for triaging patients who arrive on-site as well as telephone triage.
e. Provide instructions on routine screening and assessment for patients with potentially high communicable diseases and who to call if there is a suspicion of one of these diseases. Include definitions and descriptions of high-risk syndromes/ symptoms.
f. Provide enough barriers such as gown, gloves, and mask in case of emergency and make a plan on how to restock these items during emergency.
g. Make an inventory list of gowns, gloves, mask, respirators, waterless hand sanitizers, and other important equipment on hand.
h. Develop procedures for acquiring and maintaining supplies of ABHR and bottled water in the event of loss of clean water for drinking and hand washing.
i. Develop a system for tracking exposure to other patients, visitors, or HCWs.
j. Develop a protocol to obtain vaccines, immunoglobulin, antibiotics, or antitoxin from health departments.
k. Establish a protocol for the efficient evaluation and release of patients, visitors, and healthcare staff.
l. Provide clear instructions for the role of ambulatory care site during an event. Will the site serve as a neighborhood alternative site? Will the site close? Will the site continue to see non-infectious patients? Does the site have an air-handling system that can serve as an "isolation" unit?

TITLE/DESCRIPTION:	INDEX NUMBER
EMERGENCY MEDICAL SERVICES / AMBULANCE SERVICES	**ICM - VIII - 13**

EFFECTIVE DATE:	APPLIES TO:	ISSUING AUTHORITY:
01/01/2018	**All GCC Countries**	**GULF COOPERATION COUNCIL – CENTRE FOR INFECTION CONTROL (GCC-CIC)**

DEFINITION

This document provides Emergency Medical Service (EMS) providers in implementing best infection prevention and control recommendations and practices in their daily routines and work environment, and protect EMS providers, patients, and other healthcare workers from potential infections.

REFERENCE

1. Association for Professionals in Infection Control (APIC) and Epidemiology, Inc. (2014). Chapter 54: Emergency and other Pre-hospital Medical Services. APIC Text of Infection Control and Epidemiology (4th ed.).
2. Metropolitan Chicago Healthcare Council. Clinical Services, Infection Prevention and Control Forum. Infection Prevention and Control Guidance for EMS Providers 2012. Downloaded from http://centegra.org/wp-content/uploads/2013/06Infection-Control-Guidance-for-EMS-Providers.pdf.
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5. McCallion T. How clean is your ambulance? Journal of Emergency Medical Services. 2012. Downloaded from http://www.jems.com/article/ems-inside/how-clean-your-ambulance.

COMMENTS

1. Emergency Medical Service (EMS) is at the front line of medical care, having high risk of exposure to patients with known or unknown infectious diseases.
2. Emerging pathogens and antimicrobial-resistant strains are major problems facing all healthcare providers, including EMS providers.
3. The ambulance is a mobile patient care environment. It is generally divided into two spaces: the driver area and the patient care area. Patient care equipment are stored in enclosed compartments in the ambulance. Air circulation in the vehicle is generally rapid, low-velocity airflow. Some ambulances have built-in high-efficiency particulate air (HEPA) filters which vary among ambulance manufacturers. There is also an exhaust fan to assist in air exchange. These air handling systems basically place EMS providers at low-risk for Mycobacterium Tuberculosis (MTB). The floor and walls of the ambulance are constructed for ease of cleaning.

PROCEDURE

A. En Route Communication

1. As part of the initial response protocol, most communication dispatch centers will provide basic incident information to the responding units. Instruct all providers to adhere to Standard Precautions, which include treating all patients and body fluids as potentially infectious. Transmit information suggestive of an airborne/droplet disease.
2. EMS personnel will give the Emergency Department (ED) the patient history, physical assessment, vital signs, medication listing, and all elements of care provided during the transport.

B. Field Care

Care is frequently in the outdoors and in all types of weather and circumstances. Such circumstances may increase the risk for patient infection because of wound contamination or equipment contamination at the location. Due to the environment in which care must be rendered, Intravenous (IV) starts and wound care may be undertaken in less-than-ideal (aseptic) conditions.

1. Exert all efforts in properly preparing the insertion site for IV start.
2. Instruct field personnel to communicate to the ED when circumstances of IV access have been particularly difficult.
3. Generally, remove IV lines and dressings placed in the field in the ED and replace within 24 hours.
4. ED staff need to assess each patient carefully for wound contamination (i.e., oil, chemical, debris) in all patients transported from an accident scene.
5. Endotracheal tubes and laryngoscopes are used under difficult conditions in most cases. Blades and scopes are stored in a variety of ways:
   a. Employ a method of storing and carrying equipment in a way that would minimize potential contamination and compromise of aseptic field.
   b. Clean and disinfect non-disposable blades using high level disinfection. Refer to **ICM-IX-01** Sterile Supplies and Equipment Management.
6. Follow safe injection practices.
7. Consider newer airway management equipment and procedures that reduce the complications of infections, such as the use of non-invasive ventilators like the continuous positive airway pressure (CPAP) devices.

C. Use of personal protective equipment (PPE)

(Refer to **ICM-II-03** Standard Precautions)

1. Gloves
   a. Wear gloves when anticipating any contact with blood or other potentially infectious materials, mucous membranes, and non-intact skin; when performing patient care procedures; or when handling or touching contaminated items.
   b. Use heavy-duty utility gloves when cleaning contaminated equipment or surfaces or when disposable gloves are insufficient.
   c. Use leather gloves for extrication and urban search activities.
2. Mask
   a. Wear mask when there is suspicion that a patient may have airborne- or droplet-transmissible disease. The basic rule is “fever and a rash, use a mask”.
   b. Make all efforts to contain aerosolized particles exhaled from patients.
   c. Place a mask on patient suspected or having or diagnosed with MTB.
   d. Administer oxygen via a non-breather facemask for patients exhibiting acute respiratory distress. For those who are not in distress, place a surgical mask.
3. Eyewear
   a. Wear protective eyewear in conjunction with masks when it is reasonably anticipated that there may be the opportunity for gross splatter of blood and other potentially infectious materials into the eyes, nose, or mouth.
   b. Use full respiratory protection (i.e., surgical mask, eye protection, and gloves) when examining or treating potentially high-risk respiratory patients. Wear all these three items as an ensemble to qualify as full respiratory protection.
4. Protective clothing
   Wear appropriate protective clothing, such as cover gowns in exposure situations.

5. Pocket mask
   Train all EMS personnel in the application of cardiopulmonary resuscitation (CPR) using either a latex free bag valve mask device or a pocket mask.

D. Multi-patient or mass casualty incidents

When faced with a multi-patients or mass casualty incident, providers should attempt to adhere to the basic principles of infection prevention: prevent contamination and exposure of the provider to the body fluids of the patient(s).

Infection prevention consideration should stress steps that providers can implement to deal with the need to rapidly change gloves as follows:

1. Place additional spare gloves in a fanny pack or pants.
2. Make sure that any open areas on hands or arms are covered with an occlusive dressing.
3. Apply three or four pairs of gloves and use a shedding process of removing the top layer as it becomes overly soiled with liquefied body fluids or the structural integrity of the glove is recommended.
4. Use 4x4 in. gauze to wipe the accumulated fluid from the gloves to decrease cross-contamination to the next patient.

E. Bioterrorism

EMS providers play an important role in identifying potential outbreaks, by raising the index of suspicion as early as possible upon contact with a patient and upon recognizing an increased number of patients with similar response so isolation can begin.

1. Apply appropriate use of PPEs, proper patient packaging, and early facility notification.
2. Plan to maintain a large-volume contingency inventory of PPEs and ensure that PPE is used appropriately for patient.
3. Train EMS personnel to assess patients for signs and symptoms of biological illnesses by focusing on obtaining a good patient history, including travel history.
4. Have a heightened level of suspicion to the signs and symptoms of communicable disease, particularly when other cases present with similar symptoms.
5. Develop a mechanism to ensure that information is shared with the transporting unit, the receiving medical facility, and the appropriate health department.
6. On arrival at the medical facility, the EMS providers should disembark the patient only when it is clear where the patient will be taken.

F. Ambulance Cleaning and Disinfection

Cleaning is the physical removal of foreign and organic materials on objects or surfaces with the use water, soap or detergents, and mechanical friction (scrubbing action).

Disinfection is the process that kills and prevents microbial growth on surfaces and equipment using appropriate disinfectants.

1. After the patient has left and prior to cleaning, exhaust the air within the patient care compartment by opening the doors and windows of the vehicle while ventilation system is running. This should be done outdoors and away from pedestrian traffic.
2. Wear PPEs prior to start of cleaning session.

3. In decontaminating an ambulance, thorough cleaning must be performed first before effective disinfection can take place.
   a. Remove visible soil, blood, and other organic debris from the item or surface before applying disinfectant.
   b. Clean and disinfect items and surfaces as soon as possible after use.
   c. Focus on high-risk (frequently-touched) items/surfaces in the patient-care compartment that have been directly or potentially contaminated with blood or body fluids during patient care, followed by low-risk (non-frequently touched) surfaces.
   d. Clean and disinfect non-patient care areas of the vehicle (driver's compartment) may become indirectly contaminated as per vehicle manufacturer's recommendations.
   e. Wear gloves when using disinfectants and immediately perform hand hygiene after glove removal.
   f. Place in a clearly marked biohazardous bags contaminated reusable patient care equipment and devices for appropriate cleaning, disinfection and/or sterilization. Clean and disinfect these items according to manufacturer's recommendations.
   g. Manage spills of blood or bodily fluids as per institutional policy (see **ICM-IX-02** Management of Infectious Waste).
   h. Contaminated linen should be appropriately bagged and sent to laundering facility.
   i. After cleaning, remove and dispose PPE in a leak-proof bag or waste container. Immediately perform hand hygiene. Avoid touching face with gloved or unwashed hands.
4. High-risk objects/surfaces are frequently touched with hands (both gloved and ungloved), therefore are the most contaminated parts of the ambulance. They require cleaning and disinfection between every patient encounter or use at most. Examples are, but not limited to:
   a. Stretchers / railings;
   b. Door handles;
   c. Stethoscopes;
   d. Electronic patient care equipment and control panels;
   e. Steering wheels;
   f. Radios/Cellphones;
   g. Light switches;
   h. Adjacent flooring, walls, and ceilings; and
   i. Handles, outer surfaces of cabinets/compartments where medical equipment are stored.
5. Low-risk objects/surfaces are minimally contacted with hands. They require cleaning and disinfection on a regular basis or when contamination occurs. Examples are, but not limited to:
   a. Other floor, walls, ceiling surfaces;
   b. Windows; and
   c. Inner surfaces of cabinets/compartments where medical equipment are stored.
6. Wipe down equipment that was in contact with a patient before the next call, focusing on what was used or what was in contact with the patient during care.
7. Clean the entire ambulance at the end of the day. The entire vehicle may be emptied on regular intervals (i.e., weekly).
8. Use disinfectants according to manufacturers' instructions. Adhere to recommended contact/kill times (length of time the disinfectant must remain on object/surface). Adhere to safety precautions (PPE use, adequate ventilation, proper disposal, etc.) as directed.
9. Clean and dry reusable cleaning equipment after use, disposable items such as wipes can be disposed as general waste.
10. Maintain a cleaning plan, schedule log, or checklist.

G. Infection Prevention and Control Recommendations for Patients Hands-off or Transfer

The primary objective of a hand-off is to provide accurate information about a patient's current conditions, care and treatment received to prevent transmission of infection.

1. Develop an inter-facility transfer procedure that establishes practical and effective measures for isolating the disease organisms, not the patient.
2. Communication between EMS and hospital/facility staff.
   Safe and effective transport of patients on isolation precautions begins with identification and communication of these precautions to all healthcare workers involved in the transfer process.
   a. Determine if a patient is on isolation precautions prior to patient contact. This may require requesting additional information from facility staff.
   b. Request as much information as possible related to the patient's isolation status, including information related to:
      i. Presence of the following signs and symptoms: cough (especially productive), bowel and urinary incontinence, vomiting, rashes, open or weeping wounds, fever.
      ii. Special isolation precautions and recommended PPEs.
      iii. Additional information related to patient's condition.
      iv. When transporting a patient with suspected or confirmed infection, EMS providers should ALWAYS convey the above information to the receiving facility immediately upon arrival.
3. Transport of patients on Isolation Precautions.
   a. In order to reduce spread of infection, observe Standard Precautions at all times, regardless of the patient's infection status. Refer to **ICM-II-03** Standard Precautions.
      i. Alcohol-based hand rub must be made available to ensure proper hand hygiene on events at which water is not readily available.
   b. In some cases, Isolation Precautions are required in addition to Standard Precautions. Refer to **ICM-III-06** Isolation System: A Quick Reference Guide.
   c. If patient to be transported can tolerate a face mask, its use can help minimize spread of infectious droplets in the patient care compartment. Patients exhibiting acute respiratory distress should be administered oxygen via a non-rebreather mask.
4. Infection prevention and control transport tools
   To promote effective communication between the facility and EMS providers, provide guidelines for the identification or flagging patients on isolation precautions and the appropriate PPEs needed for patient transport. EMS can request a facility staff to complete this tool prior to patient contact. This tool can be modified to meet organizational needs.

H. EMS Provider Vaccination and Testing Recommendations

Due to frequent contact with many patients, EMS providers are at risk for exposure to, and possible spread of, vaccine-preventable diseases. Therefore, it is imperative that EMS providers participate in a comprehensive healthcare personnel immunization and TB screening program. Refer to **ICM-VI-03** Immunization Guidelines for Healthcare Workers and **ICM-V-02** Contact Tracing, Screening and Treatment of MTB in Healthcare Workers.

I. Staff Education

EMS personnel should undergo regular infection prevention and control education sessions for continuing education and skills appraisal. EMS personnel must have basic knowledge on preventing and controlling spread of infectious agents, as well as the ability to implement them during the course of their duty. Records of staff attendance must be documented and filed.

TITLE/DESCRIPTION:	INDEX NUMBER
HOME CARE	**ICM - VIII -14**

EFFECTIVE DATE:	APPLIES TO:	ISSUING AUTHORITY:
01/01/2018	**All GCC Countries**	**GULF COOPERATION COUNCIL – CENTRE FOR INFECTION CONTROL (GCC-CIC)**

DEFINITION

To provide guidelines needed for health services be provided to individuals and families in a manner that would achieve the desired outcomes while protecting the health and safety of the patient, healthcare personnel, and community.

REFERENCE

Association for Professionals in Infection Control (APIC) and Epidemiology, Inc. (2014). Chapter 56: Home Care. In APIC Text of Infection Control and Epidemiology (4th ed.)

COMMENTS

1. Home healthcare (HHC) is defined as healthcare provided to individuals and families in their places of residence for the purpose of promoting, maintaining, or restoring health or for maximizing the level of independence while minimizing the effects of disability and illness, including terminal illness.
2. The complexity of the patients may be very high, as the incidence of chronic diseases is increasing and the care needed may include advances in technology.
3. The focus of HHC is to provide not just patient care but also preventive care (i.e., promoting vaccine-preventable diseases such as influenza) and to prevent complications of chronic diseases.
4. The home environment must be assessed to determine whether the HHC agency can safely provide the services needed. The setting should be assessed for cleanliness, temperature control, running water, toilet facilities, and infestation with insects or rodents.
5. To reduce the risk of infection, patient and family education should include information about hand hygiene and infection prevention practices specific to the patient's care (i.e., wound care, indwelling urinary catheters, intravenous lines, etc.).
6. In addition, education should be provided on the signs and symptoms of infection and what to do if infection or other poor outcome is suspected.

PROCEDURE

A. Precautions for preventing the transmission of infectious agents in the home

1. Practice Standard Precautions refer to **ICM-II-03**.
   a. Use PPE (i.e., gloves, gowns, face mask, eye protection) when dealing with blood and/or body substances of any patient.
   b. Use gowns and gloves for patients with uncontrolled secretions, pressure ulcers, draining wounds, stool incontinence, and ostomy tubes/ bags to prevent transmission of MDROs.
2. Observe proper hygiene (refer to **ICM-II-04** Hand Hygiene). Use alcohol-based hand rubs in the home care setting but if hands are visibly soiled or contaminated with proteinaceous materials such as blood or feces, then hand wash with soap and water is recommended.
3. Observe respiratory cough etiquette to prevent droplet and fomite transmission of respiratory pathogens especially during seasonal outbreaks of viral respiratory tract infections.

4. Handle waste in the home setting as if it could transmit infectious agents. Dispose sharps according to applicable laws and regulation. Suggest the use of hard plastic container such as bleach container for disposal of sharps to improve safety in dealing with sharps.
5. Supply and equipment
   a. Transport and store clean and sterile supplies in the home in a manner that will keep them dry and protected from contamination.
   b. Use plastic storage containers in a heavily soiled environment.
   c. Assess the integrity of an item stored at home before each use.
   d. Discard an item purchased as clean or sterile if the packaging/wrapper is no longer intact or has water stains.
   e. Store and handle supplies kept in the provider's home care bag or vehicle without compromising the integrity of the supplies.
   f. Perform hand hygiene before reaching into the home care bag to prevent contamination of the supplies kept in the home care bag.
   g. Clean all non-disposable patient care equipment or items per manufacturer's guidelines, regardless of the patient's infectious status.
   h. Limit the amount of non-disposable patient care equipment brought into the home if patient is known to be infected or colonized with MDROs. Whenever possible, leave this equipment in the home until the patient is discharged from home care services.
   i. If noncritical patient care equipment (i.e., stethoscope) cannot remain in the home, clean and disinfect items before taking them from the home using a low-to intermediate-level disinfectant. Alternatively, place contaminated reusable items in a plastic bag for transport and subsequent cleaning and disinfection.
6. Environment
   Educate patient and family on maintaining a clean environment especially high touch areas.
7. Prevention of occupational-related infections
   a. HHC agencies should provide education and safety needle devices to their employees.
   b. Provide appropriate immunization to HCWs for their protection and prevention of HAIs.
   c. HHC agencies must ensure that there are arrangements for TB screening with appropriate follow up for positive results, provision of recommended immunizations, health and safety education, surveillance for occupational exposures and management of exposures to communicable disease.
   d. Follow policy for work restrictions for infected or exposed HCWs refer to **ICM-VI-04** Work Restrictions for Infected Healthcare Workers.
8. Managing infectious disease disasters: bioterrorism, emerging infections, and pandemics.
   In the event of an infectious disease disaster, the resources of HHC agencies will be overwhelmed. Planning for such a disaster is essential to ensure sustainable healthcare response.
   a. HHC agencies should contact patients and families before the home visit to determine whether anyone in the household has an influenza-like illness. If anyone does, then non-essential services planned for the home visit should be postponed.
   b. If this is not feasible, then assign a personnel who is not at an increased risk for complication of pandemic influenza to care for these patients.
   c. HHC providers must wear appropriate respiratory protection to prevent transmission.
   d. Environmental controls when planning a scheduled visit to a patient in the home setting:
      i. Open windows to increase air exchanges and dilute the concentration of organisms.
      ii. Place the patient in a separate room with closed door.
      iii. Minimize contact with others in the home.
      iv. Have patient follow respiratory hygiene and cough etiquette. Mask a patient at a minimum, cover cough with tissue or elbow.
      v. Request patient to perform frequent hand hygiene and place alcohol hand rub within reach of the patient.

TITLE/DESCRIPTION:	INDEX NUMBER
INTERVENTIONAL RADIOLOGY AND RADIATION ONCOLOGY	**ICM - VIII - 15**

EFFECTIVE DATE:	APPLIES TO:	ISSUING AUTHORITY:
01/01/2018	**All GCC Countries**	**GULF COOPERATION COUNCIL – CENTRE FOR INFECTION CONTROL (GCC-CIC)**

DEFINITION

To establish guidelines in order to prevent any potential transmission of infection which can either be patient or procedure related both in an acute care setting or ambulatory setting.

REFERENCE

1. Association for Professionals in Infection Control (APIC) and Epidemiology, Inc. (2014) Chapter 58: Imaging Services and Radiation oncology. In APIC Text of infection control and epidemiology (4th ed.).
2. Association for Professionals in Infection Control (APIC) and Epidemiology, Inc. (2014). Chapter 60: Interventional Radiology. In APIC Text of infection control and epidemiology (4th ed.).

COMMENTS

1. Radiology departments, whether hospital-based or ambulatory, encompass a wide range of specialized procedures and accommodate large, diverse patient populations. Advances in medical technology have paved the way for increasingly complex services involving both diagnostic and therapeutic aspects. Infection risks are patient- or procedure-related and range in severity from minimal with procedures performed on intact skin to high with invasive procedures.
2. Radiology departments that see hospitalized inpatients and ambulatory outpatients need to consider the potential for disease transmission from infected patients to healthcare personnel, from infected/colonized patients to other patients, and from healthcare personnel to patients.
3. Evaluation of the services provided in these areas should be considered during the infection prevention risk assessment process. Infection Preventionist (IP) needs to assess the potential infection issues relative to the services provided by the department and the patient population receiving services.
4. The field of interventional radiology encompasses a broad range of both diagnostic and therapeutic techniques. An appropriately designed and staffed intervention room is vital for adequate infection prevention.

PROCEDURE

A. Basic Principles Applicable in Imaging Services and Radiation Oncology

In diagnostic radiology, the scope of procedures performed range from basic radiographs to more complex studies such as ultrasound or computed tomography (CT) with varying contact times. Many imaging studies involve the administration of contrast agents through an intravenous, enteral, or percutaneous route. While radiation oncology procedures are delivered in dedicated facilities with additional shielding to protect staff from the high levels of ionizing radiation involved. For prevention of infection transmission:

1. The Radiology Department will be notified about the isolation status of the patient by the referring department prior to transport.
2. Screen patients with illness that can be spread thru airborne route (e.g., Mycobacterium tuberculosis (MTB) patients) and identified to the radiology department. Train the staff to recognize symptoms that may put them at risk (e.g., patient with a cough) and be knowledgeable regarding appropriate infection control procedures, including isolation and barrier precautions. Refer to **ICM-II-03** Standard Precautions.

3. Evaluate to determine if patients with illness needing airborne isolation can be seen in the radiology department versus portable examination that can be performed in the patient's room.
4. If transport to the radiology department is necessary, provide patients with surgical mask to wear for transport to and from the department.
5. Instruct the patients to cover their nose and mouth with a tissue when coughing or sneezing and to be separated as much as possible from other patients. Refer to cough etiquette in **ICM-II-03** Standard Precautions.
6. Evaluate promptly patients who manifest symptoms suggestive of pulmonary tuberculosis and do not allow then to congregate in common waiting areas.
7. In Radiology Departments where patients with MTB are frequently treated, a negative pressure ventilation room is recommended. But in ambulatory settings, where such patients are infrequently seen, additional engineering controls, such as a portable HEPA filter may be needed to supplement the general ventilation in commonly used areas.
8. Reserve certain times of the day for accommodating patients with active TB to prevent exposing patients infected with human immunodeficiency virus (HIV) or other immunocompromised persons to MTB.
9. Observe basic infection control precautions and isolation precautions between inpatient and ambulatory care areas. Isolation procedures must be able to follow the patient across the continuum of care and at the same time be appropriate for the environment.
10. Clean and disinfect surfaces that come in direct contact with patients with clean sheets or table paper and/or clean and disinfect between patients.
11. Clean and disinfect the surrounding regularly with hospital-approved disinfectants at the end of each day or shift or more frequently if visibly soiled/contaminated.
12. Practice standard precautions when performing invasive procedures such as angiography to prevent the risk for exposure to blood-borne pathogens via injuries from contaminated sharps. Refer to **ICM-II-03** Standard Precautions.
13. Adhere to strict aseptic technique whenever invasive procedures are performed. Refer to **ICM-II-05** Aseptic Technique.
14. To prevent sharp injury, employ engineering controls such as procedures to minimize handling of contaminated sharps, especially not recapping used sharps, and using safety vascular access devices.
15. Dispose contaminated sharps and used syringes appropriately in puncture-resistant disposable containers. In the nuclear medicine department, where unsealed radioisotopes are used, emphasize safe handling of the radiologic materials and contaminated sharps.
16. The potential exist for procedure-related transmission of microorganisms if sonographic probes are not cleaned in between uses. Endo cavitary ultrasound probes, including vaginal ultrasound probes, require cleaning and high-level disinfection between uses because of contact with mucosal surfaces. Use of condom-type covers is important adjunct in preventing gross contamination of such items.
17. Clean and disinfect reusable equipment use for invasive sterile procedures. For radiology centers who perform their own sterilization using table top sterilizers, IP must make sure that they have \ well-documented processes for training personnel and monitoring sterilization results.

B. Radiation Oncology Services

Radiation treatment causes a variety of local and systemic side effects that can predispose the patient to infection. Infection control issues are primarily related to side effects of treatment. Thus, find below list of adverse effects from radiation therapy and recommendations:

1. Local effects: The patient's skin is frequently affected by radiation treatments which include erythema, vesiculation, desquamation, and hyperpigmentation. Infection prevention measures are an integral part of the management of both early- and late-onset effects on the skin. Recommendations for reducing damage to irritated skin include:

a. Developing goals of patient care and infection prevention aimed to promote and maintain skin integrity, promote and maintain nutritional status, and protect from further injury/irritation.
b. Minimize mechanical (friction), chemical (soaps and detergents), and thermal (sun exposure) irritants.

2. Systemic Effects: Systemic effects of radiation on the body are determined by the proportion of body are involved, the dose received, and the specific organs involved.
3. Head and neck cancer: Significant oral and nutritional problems are reported in approximately 80% of patients undergoing radiation therapy for head and neck cancers. Mucositis, xerostomia (dry mouth), loss of taste, dental caries, osteoradionecrosis, and trismus are seen in this patient population.
   a. Develop oral care and treatment guidelines for patients with oral and gastrointestinal mucositis.
4. Bacteremia is a risk for patients treated for Hodgkin or non-Hodgkin lymphoma and may be treatment for disease related. Recommend Pneumococcal vaccination and possibly Haemophilus influenza vaccines before the start of treatment.
5. Radiation-induced Colitis-radiation directed at the colon generally induces mucosal inflammation and cellular damage. Maintain adequate hydration to prevent diarrhea associated dehydration.
6. Pelvic Radiation Therapy - effects on skin breakdown in the perineal area because of location, local factors (increased warmth, moisture, lack of ventilation) and amounts of skin folds in the perineum with dry and wet desquamation.
7. Brachytherapy uses catheter or applicator-placed radioactive sources near to the tumor to deliver localized radiation for treatment. High dose brachytherapy is associated with significant complications ranging from tissue irritation to ulceration and hemorrhage. Follow aseptic technique when performing such procedures to prevent infection.

C. Interventional Radiology

One of the advantages of interventional radiology over a more invasive surgical procedure is the reduced risk of infection, which stems from the use of smaller access points to the body. However, by its very nature, interventional radiology breaks the natural defense of the patient's skin.

1. Laboratory setting

   The interventional radiology suite is located with the radiology department. Some specific requirements need to prevent the risk of infection:

   a. Adopt similar standard as the surgical operating room, provide a one-way system of patient and staff movement within the interventional area.
   b. Design the procedure rooms into two: one for non-sterile procedures such as drain insertion and the other room for sterile procedure such as central venous catheter insertion.
   c. Size of the room should be at least 400 square feet; and in some cases, particularly if the room is to function as a specialized suite for endovascular stenting, commentators suggested a minimum size of 600 square feet.
   d. Ensure a smooth surface in the intervention room, including electrical cabled to allow easy cleaning and disinfection according to hospital-approved disinfectants.
   e. Provide seamless floors and washable ceilings.
   f. In terms of air quality, employ similar standards to those used in the operating room. Positive pressure exists in the intervention room and air should be renewed by filter between 20 and 35 times per hour. Ambient air should have a temperature of 20°C (68°F) to 25°C (73°F) and a humidity of 20 to 60%.
   g. Adjoining rooms should allow waiting areas for both inpatients and outpatients.
   h. If anesthetic facilities are available, an anesthetic preparation room and a recovery room are needed.
   i. Provide a soiled utility room adjacent to the intervention room where contaminated materials can be stored is important to allow controlled disposal of waste material.

2. Staffing
   Ensure enough staffing which is generally composed of radiologist, anesthetist, nursing staff, and radiographic technicians.

3. Standard Precautions
   a. Adhere to standard precautions in any setting in which exposure to contaminated bodily fluid may occur. The interventional operator should wear a surgical scrub suit, a lead coat with a minimum of 0.5 mm lead, and a sterile surgical tunic that is changed between cases.
   b. Wear surgical cap, facemask, and eye protection (should be lead lined).

4. Procedural preparation
   Most interventional techniques are performed using a conscious sedation technique. Anesthetic support is available for major interventional cases. Infection control recommendations:
   a. Preparation of the patient's skin prior to surgery with clipping for hair removal.
   b. Perform a surgical hand wash prior to an interventional procedure. Provide automatic controls and elbow-operated liquid disinfectant dispensers over a deep sink.
   c. Clean and disinfect the interventional room after each procedure. Perform terminal cleaning at the end of each operating day to minimize the degree of environmental contaminants by microorganisms, dirt and dust. This process should start at the highest level from the ceiling and lighting fixtures to all room equipment and progress to ground level fixtures and the floor.

TITLE/DESCRIPTION:	INDEX NUMBER
LABORATORY SERVICES	**ICM - VIII - 16**

EFFECTIVE DATE:	APPLIES TO:	ISSUING AUTHORITY:
01/01/2018	**All GCC Countries**	**GULF COOPERATION COUNCIL – CENTRE FOR INFECTION CONTROL (GCC-CIC)**

DEFINITION

To establish guidelines that would assist in minimizing or preventing the transmission of infectious agents in the laboratory.

REFERENCE

Association for Professionals in Infection Control (APIC) and Epidemiology, Inc. (2014) Chapter 108: Laboratory Services. In APIC Text of infection control and epidemiology (4th ed.).

COMMENTS

1. The laboratory is a unique work environment that may pose infectious disease threats to those who work there.
2. Biosafety levels were established to ensure that the laboratory environment is adequately equipped with measures to ensure safety of those working in them or the surrounding environment.
3. Special procedures are used to ensure the safe handling and transport of biohazardous waste.
4. Being one of the largest generators of infectious waste in the healthcare setting, specific procedures exist for laboratory infectious waste management.
5. Laboratorians should be an integral part of an infection prevention program. The microbiology laboratory helps detect and identify microorganisms so that the infection control team can monitor, prevent, and control infection transmission.

PROCEDURE

A. Biological Risk Assessment

Each clinical laboratory should perform a biological risk assessment on an annual basis or any time a new risk is identified. It is a process used to identify the hazardous characteristics of known infectious or potentially infectious agent or materials; the activities that can result in a person's exposure to an agent; and, the likelihood that such exposure will cause laboratory acquired infections (LAIs).

The primary factors in the risk assessment and selection of precautions fall into two broad categories: agent hazards and laboratory procedure hazards. Although there is no standard approach for conducting s biological risk assessment, the Biosafety in Microbiological and Biomedical Laboratories (BMBL) documents suggest a five-step approach to prevent LAIs.

1. Identify agent hazards and perform an initial assessment of risk:
   a. Review potential biological agents and their hazardous characteristics. Hazardous characteristics include their capability to infect and cause disease in a susceptible human host, severity of disease, the availability of preventive measures.
   b. Implement regulations that govern the possession, use, and transfer of these types of biological agents and toxins that have the potential to pose a severe threat to public health and safety.
2. Identify laboratory procedure hazards
   Procedure hazards often found in a clinical lab include agent concentration, suspension volume, equipment and procedures that generate small-participle aerosols and larger airborne particles (droplets), complexity of lab procedures, and use of sharps.

3. Make a final determination of the appropriate biosafety level and select additional precautions indicated by the risk assessment.
4. Evaluate the proficiencies of staff regarding safe practices and the integrity of safety equipment.
   a. Evaluate the laboratorian's training and experience in handling infectious agents.
   b. Proficiency in the use of sterile techniques and Biological Safety Cabinet (BSC).
   c. Ability to respond to emergencies and willingness to accept responsibility for protecting one's self and others.
5. Review the risk assessment with a biosafety professional subject matter expert and the institutional biosafety committee.

Once the risk assessment is completed it should be reviewed by site-specific, and if necessary, local experts in biosafety. This review should include the Infection Preventionist (IP), laboratory safety, and infection prevention and control committee, as well as, Safety Committee.

B. Standard Microbiological Practices, Safety Equipment, and Facility Safeguards

1. Standard microbiological practices
   a. The laboratory supervisor must enforce the institutional policies that control access to the laboratory.
   b. Personnel must wash their hands after working with potentially hazardous materials and before leaving the laboratory.
   c. Do not permit eating, drinking, smoking handling contact lenses, applying cosmetics, and storing food for human consumption in laboratory areas.
   d. Prohibit mouth pipetting; use mechanical pipetting devices.
   e. Develop and implement policies for the safe handling of sharps (e.g., needles, scalpels, pipettes, broken glassware). Whenever practical, laboratory supervisors should adopt improved engineering and work practice controls that reduce risk of sharp injuries. Follow precautions below when dealing with sharps:
      i. Do not bend, shear, break and recap needles nor remove from disposable syringes, or otherwise manipulate by hand before disposal.
      ii. Place used disposable needles in conveniently located puncture-resistant sharp containers.
      iii. Do not handle broken glassware directly by hands; it must be removed using a brush and dustpan, tongs or forceps. Substitute plastic ware for glassware whenever possible.
   f. Perform all procedures to minimize the creation of splashes and/or aerosols.
   g. Decontaminate work surfaces after completion of work and after any spill or splash of potentially infectious material with appropriate disinfectant.
   h. Decontaminate all cultures, stocks, and other potentially infectious materials before disposal using an effective method. Depending on where the decontamination be performed, the following methods should be used prior to transport:
      i. Place in durable, leak proof container all materials to be decontaminated outside of the immediate laboratory and secure for transport.
      ii. Pack materials in accordance with local and state regulations.
   i. Post the universal sign symbol at the entrance to the laboratory when infectious agents are present. Posted information must include the laboratory biosafety level, the supervisor's name (or other responsible personnel), the telephone number, and required procedures for entering and exiting the laboratory.
   j. Develop an effective pest management program.
   k. The laboratory supervisor must ensure that laboratory personnel receive appropriate training regarding their duties, the necessary precautions to prevent exposures, and exposure evaluation procedures.

2. Special practices
   a. Advise all persons entering the laboratory of the potential hazards and meet specific entry/exit requirements.
   b. Provide laboratory personnel with medical surveillance and offer appropriate immunizations for agents handled or potentially present in the laboratory.
   c. Store a baseline serum sample.
   d. Prepare and adopt as a policy a laboratory-specific biosafety manual. The biosafety manual must be available and accessible.
   e. The laboratory supervisor must ensure that laboratory personnel demonstrate proficiency in standard and special microbiological practices before working with Biosafety Level (BSL-2) agents.
   f. Place potentially infectious materials in a durable leak-proof container during collection, handling, processing, storage, or transport within a facility.
   g. Decontaminate laboratory equipment routinely, as well as after spills, splashes, or other potential contamination.
   h. Evaluate and treat immediately any incidents that may result in exposure to infectious materials according to procedures described in the laboratory biosafety manual. All such incidents must be reported to the laboratory supervisor. Provide medical evaluation, surveillance, and treatment and maintain appropriate records.
   i. Do not permit animals and plants not associated with work being performed in the laboratory.
   j. Conduct all procedures involving the manipulation of infectious material that may generate an aerosol within a biosafety cabinet (BSC) or other physical containment devices.

C. Safety Equipment (primary barriers and PPE)

1. Use properly maintained BSCs (preferably Class II), other appropriate PPEs, or other physical containment devices whenever:
   a. Procedures with potential for creating infectious aerosols or splashes are conducted. These may include pipetting, centrifuging, grinding, blending, shaking, mixing, sonicating, opening containers of infectious materials, inoculating animals intra-nasally, and harvesting infected tissues from animals or eggs.
   b. High concentrations or large volumes of infectious agents are used. Such materials may be centrifuged in the open laboratory using sealed or rotor heads or centrifuge safety cups.
2. Wear protective laboratory coats, gowns, smocks, or uniforms designated for laboratory use while working with hazardous materials. Remove protective clothing before leaving for non-laboratory areas (e.g., cafeteria, library, administrative offices).
3. Wear eye and face protection (goggles, mask, face shield, or other splatter guard) for anticipated splashes or sprays of infectious or other hazardous materials when handling microorganisms outside the BSC or containment device. Persons wearing contact lenses should also wear eye protection.
4. Wear gloves to protect hands from exposure to hazardous materials. Select gloves based on an appropriate risk assessment. Alternative to latex gloves must be available. Do not wear gloves outside the laboratory. In addition, BSL-2 laboratory workers should:
   a. Change gloves when contaminated or when integrity has been compromised.
   b. Remove gloves and wash hands when work with hazardous materials has been completed and before leaving the laboratory.
   c. Do not wash or reuse disposable gloves.
   Use eye, face and respiratory protection in rooms containing infected animals as determined by the risk assessment.

D. Laboratory Facilities (secondary barriers)

1. Laboratory doors should be self-enclosing and have locks in accordance with institutional policies.
2. Laboratory must have sink for hand washing. The sink may be manually, hands free, or automatically operated. It should be located near the exit door.
3. The laboratory should be designed so that it can be easily cleaned and decontaminated. Carpets and rugs are not permitted.
4. Laboratory furniture must be capable of supporting anticipated loads and uses. Spaces between benches, cabinets, and equipment should be accessible for cleaning.
   a. Bench tops must be impervious to water and resistant to heat, organic solvents, acids, alkalis, and other chemicals.
   b. Hairs used in laboratory must be covered with a nonporous material that can be easily cleaned and decontaminated with appropriate disinfectant.
5. Laboratory windows that open to the exterior are not recommended. However, if a laboratory does have windows that open to the exterior, they must be fitted with screens.
6. BSC must be installed so that fluctuations of the room air supply and exhaust do not interfere with proper operations. BSC should be located away from doors, windows that can be opened, heavily traveled laboratory areas, and other possible airflow disruptions.
7. Vacuum lines should be protected with HEPA filters or their equivalent. Filters must be replaced as needed. Liquid disinfectant traps may be required.
8. An eyewash station must be readily available.
9. Clinical laboratories must maintain proper handling according to the procedures they are performing. Typically, a clinical lab has negative airflow to the adjacent areas. Specialized areas such as rooms where polymerase chain reaction (PCR) may need positive air pressure to limit potential RNA contamination of the reagents. Facilities should consider mechanical ventilation systems that provide an inward flow of air without recirculation to space outside laboratory.
10. HEPA-filtered exhaust air from a Class II BSC can be safely recirculated back into the laboratory environment if the cabinet is tested and certified at least annually and operated according to manufacturer's recommendations.
11. A method for decontaminating all laboratory wastes should be available in the facility (e.g., autoclave, chemical disinfection, incineration, or other validated decontamination method).

E. Laboratory Equipment

There are three general types of BSCs: Classes I, II, and III. All BSCs must be recertified annually by an independent professional.

1. **Class I BSC** – this cabinet is similar to a chemical fume hood and has an inward airflow through the front opening. Exhaust air from the BSC is passed through a HEPA Filter so that the equipment protects both worker and the general public. However, the specimen and other materials are potentially subject to contamination. Class I are not generally recommended for work that involves biohazardous material.
2. **Class II BSCs** - designed to protect the worker, the general public, and the specimen. Airflow velocity at the face of the work opening is at least 75 linear ft/min (lfpm). Both the supply air and exhaust air are the HEPA-filtered. There are four types of Class II BSCs (IIA, IIB2, and IIB3). They differ in the amount of recirculation, down flow, and inflow. Usually, all but IIA are considered satisfactory for biohazardous and toxic agents.
3. **Class III BSCs** – are totally enclosed, ventilated cabinets of gas-tight construction that offer the highest degree of protection from infectious aerosols. They also protect research materials from biological contamination. Class III BSCs are most suitable to work with hazardous agents that require containment at BL-3 or BL-4. All operations in the work area of the cabinet are performed through

attached rubber gloves. The cabinets are operated under negative pressure. Supply air if HEPA iltered, and the cabinet exhaust air is filtered by two HEPA filters in series or HEPA filtration followed by incineration before discharge outside of the facility. The CLASS II BSC must be connected to double-door autoclaves and chemical dunk tanks to permit sterilization or disinfection of all materials before leaving the cabinet and also to allow supplies to enter the cabinet.

4. Centrifuges are commonly used in the clinical laboratory as part of specimen processing. Hazards associated with centrifuging include mechanical failure (e.g. rotor failure, tube or bucket failure) and the creation of aerosols. Use safety precautions to decrease the risk and associated with centrifugation. Examples of these precautions include:
   a. Use sealed tubes and safety buckets that seal with O-rings.
   b. Filling open centrifuge tubes, rotors, and accessories in a BSC.
   c. Always balance buckets, tubes, and rotors properly before centrifugation.
5. Phlebotomy in most hospital setting, the laboratory is responsible for most phlebotomy procedures. Handle all body fluids using standard precautions.
   a. Wear gloves when performing venipuncture.
   b. Wear other protective equipment such as goggles, mask or lab coat for a procedure based on the risk of exposure (i.e., arterial punctures).
   c. Use safe needles at all times.
   d. Use only single-use disposable tube holders.
   e. Dispose all phlebotomy needles promptly in a puncture-resistant container to prevent their reuse or accidental injury to a handler.

F. Transporting Biohazardous Waste Materials

Laboratories often need to transport biohazardous materials offsite. This transport may be across campus, cross town to another laboratory. Personnel who package and ship these specimens must be concerned with their safety and the protection and safety of those who receive the material.

1. Meet packaging standards for samples transported by local carriers such as cabs, hospital, and clinical vehicles, or personal cars.
2. The requirements for shipping biohazard materials interstate or intrastate depend on the type and volume of specimen. The regulations define three types of specimens:
   a. Biological products – are finished biological substances for veterinary or human use such as vaccines and reagents. These products must meet public health standards (9 CFR Parts 102-104 and 21 CFR Parts 312 and 600-680).
   b. Diagnostic (clinical substances) – comprises excreta, secretions, blood and its components, as well as tissue and tissue fluids that are being shipped for diagnostic purposes.
   c. Infectious (etiological) substances – include organisms known to be pathogenic to humans and clinical samples with a high likelihood of being infectious. Infectious substance could include clinical specimens such as enzyme immunoassay (EIA), HIV-positive serum submitted for Western blot analysis, and sputum samples from patients known to be culture-positive for tuberculosis.
3. The essential element for protection is the triple-containment packaging, which is required for shipping each of these substances. In all categories and volumes, there must be a primary container accompanied by enough absorbent material to contain the whole sample, a waterproof container, and an outer container. The packaging is expected to able to withstand rough handling and passage through cancellation machines, sorters, and conveyors throughout the transport. The sample identification document must be located outside the secondary containment. Additionally, labels clearly marking the biohazard level must be prominently displayed on the outside container. Depending on the level of biohazard, additional labels and information may need to be displayed, as well.

G. Infectious Waste Management

Steam autoclave is the method of choice for decontaminating discarded cultures. If laboratory wastes must be stored before disposal, storage should be as brief as possible. The site must be properly identified with a biohazard label, have restricted access, and be located near the site of generation. Clean the areas thoroughly each time it is emptied of waste contents. Refer to **ICM-IX-02** Management of Infectious Waste.

H. Infection Prevention and Occupational Exposures

The goal of occupational health in a clinical lab and in university research laboratories is to promote a safe and healthy workplace. Educate laboratory workers about the biohazards to which they may be occupationally exposed.

1. Provide workers who may be exposed to highly pathogenic agents such as in a clinical research lab a pre-placement medical evaluation. The workers' supervisors should provide his staff a description of the requirements for the position and an understanding of the potential hazard present in the work environment.
2. The healthcare provider should review the worker's previous and ongoing medical problems, current medications, allergies to medicines, animals, and other environmental proteins, and prior to immunizations.
3. Provide vaccines to workers to protect them against infectious agents to which they may be occupationally exposed.
4. Encourage workers to seek medical evaluation for symptoms that they suspect may be related to infectious agents in their work area without fear of reprisal. A high index of suspicion for potential occupational exposures should be maintained during any unexplained illness among workers or visitors to worksites containing biohazards.
5. Report all occupational injuries to Employee Clinic or Occupational Health Department.

Section 9: SUPPORT SERVICES

TITLE/DESCRIPTION:	INDEX NUMBER
STERILE SUPPLIES AND EQUIPMENT MANAGEMENT	**ICM - IX - 01**

EFFECTIVE DATE:	APPLIES TO:	ISSUING AUTHORITY:
01/01/2009 **01/01/2013** **01/01/2018**	**All GCC Countries**	**GULF COOPERATION COUNCIL – CENTRE FOR INFECTION CONTROL (GCC-CIC)**

DEFINITION

To provide guidelines on the appropriate use of Central Sterile Supply Department (CSSD) services for the reprocessing of reusable items, proper storage, and event-related shelf life of all sterile items and equipment.

REFERENCES

1. Association for Professionals in Infection Control (APIC) and Epidemiology, Inc. (2014). Chapter 108: Laboratory safety. In APIC Text of infection control and epidemiology (4th ed.).
2. Association for Professionals in Infection Control (APIC) and Epidemiology, Inc. (2014). Chapter 107: Environmental services. In APIC Text of infection control and epidemiology (4th ed.).
3. Hospital's administrative policy on management of spills of hazardous material.
4. Comprehensive guide to steam sterilization and sterility assurance in healthcare facilities, Amendment 4. ANSI/AAMI ST79:2010/A4:2013.

COMMENTS

All reusable devices requiring in-house reprocessing will be reprocessed by CSSD in accordance with the Spaulding Classification system that segregates medical devices and places them in categories based on the risk of infection related to their use. The categories are as follows:

A. Critical Items

1. This category includes objects and items entering the vascular system and sterile tissue.
2. Examples of critical items are surgical and dental instruments, cardiac and blood catheters, implants and needles, blood compartments of hemodialysis equipment, laparoscopes, arthroscopes, and other scopes that are introduced into sterile tissues.
3. These items present a high risk of infection and require sterilization after each patient use.
4. All reusable items in this category must be processed by the CSSD.

B. Semi-critical Items

1. This category includes objects and items that come in contact with intact mucous membranes and non-intact skin but do not penetrate body tissues or the vascular system.
2. Examples of semi-critical items are non-invasive medical equipment, flexible and rigid fiber optic endoscopes, respiratory therapy and anesthesia equipment, endotracheal tubes, and cystoscopes.
3. These items require high level disinfection after each patient use.
4. Any reusable items in this category must be processed by CSSD.

C. Non-critical Items

1. This category includes items and objects that come in contact with intact skin only.

2. Examples of non-critical items are bedpans, blood pressure cuffs, tourniquet cuffs, and crutches.
3. These items could potentially contribute to secondary transmission of microorganisms to healthcare workers' hands; therefore, they require cleaning with hospital-approved disinfectant at the point of use.
4. These items do not require CSSD service.

TERMINOLOGIES

1. **Biological indicators (BIs)** - test systems containing viable microorganisms providing a defined resistance to a specified sterilization process.
2. **Chemical indicators** - devices used to monitor the presence or attainment of one or more of the parameters required for a satisfactory sterilization process, or used in specific tests of sterilization equipment.
3. **Containment device** - reusable rigid sterilization container, instrument case, cassette, or organizing tray intended for use in health care facilities for the purpose of containing reusable medical devices for sterilization.
4. **Contaminated** - state of having been actually or potentially in contact with microorganisms.
5. **Decontamination** – according to OSHA, "the use of physical or chemical means to remove, inactivate, or destroy bloodborne pathogens on a surface or item to the point where they are no longer capable of transmitting infectious particles and the surface or item is rendered safe for handling, use, or disposal."
6. **Decontamination area** – area of health care facility designated for collection, retention, and cleaning of soiled and/or contaminated items.
7. **Dust cover** – protective plastic bag used to protect sterile items from environmental contamination such as moisture, dust, and lint; also known as a sterility maintenance cover.
8. **Instructions for Use (IFU)** – manufacturer's written instruction for use..
9. **Labeling** – any legend, work, or mark attached to, included in, belonging to, or accompanying any medical device or product.
10. **Reusable medical device** – device intended for repeated use on different patients, with appropriate decontamination and other processing between uses.
11. **Shelf life** – term is used with respect to a sterilized, medical device and the period of time during which the item is considered safe for use.
12. **Sterile storage area** – area of a healthcare facility designed to store clean and sterile items and protect them from contamination.

PROCEDURE

A. General Guidelines

1. The delivery of sterile healthcare products for use in patient care depends not only on the efficacy of the sterilization itself but also on the following factors:
   a. Efficient facility design in terms of functional, controlled, one way traffic flow with defined work zones. Specific utility requirements per work zone must be in place and function as intended consistently.
   b. Efficient trained personnel who are competent to perform the function of CSSD with the knowledge of the Department's reporting structure.
   c. Effective and monitored infection prevention and control practices.
   d. Effective quality control including process improvement systems that encompass all

aspects of device reprocessing from point of use through sterilization to reuse.
Relevant and effective documentation and reporting practices that enable traceability of each facility-sterilized medical device to the patient on whom it was used.

2. Cleaning and decontamination is the first important step of the sterilization process.
3. Observe standard precautions when handling contaminated items and instruments.
4. CSSD reprocess in accordance with the manufacturer's published IFU in conjunction with the IFU for the chemicals in use and the operator's manual for equipment in use.
5. Discard disposable single use devices (SUDs) at the point of use by the end user, since it will not be reprocessed by CSSD. Refer to **ICM-IX-03** Single Use Devices.
   a. Consult Infection Prevention & Control (IP&C) for any unused SUDs which have expired.
6. End users spray reusable devices after use with a hospital-approved transport medium immediately at the point of use.
   a. Place used devices in a covered receptacle in the soiled utility room.
   b. Segregate these devices per set with the heavier items on the bottom, and must be transported immediately to CSSD in a covered receptacle. Never leave these items unattended.
7. End user is responsible to transfer to the main CSSD any new devices delivered to the organization with the original packaging, product insert, the most recent IFU, and the "transfer memo" form. Refer to attached document.
8. Reprocess or handle all devices whether loaned or owned by the organization in the same manner.
9. Sterility is "event-related" based on handling, storage practices, and packaging degradation.
10. Provide hand hygiene facilities in convenient locations.

B. Packaging

1. An effective packaging material for steam sterilization processing should:
   a. Allow for adequate air removal;
   b. Provide an adequate barrier to microorganisms or their vehicles;
   c. Resist tearing and can withstand normal handling;
   d. Allow for a method of sealing that results in a complete seal that is tamper-evident and provides seal integrity;
   e. Allow for ease of aseptic presentation;
   f. Be free of toxic ingredients and non-fast dyes;
   g. Be non-linting; and
   h. Capable to withstand high temperature.
2. During storage, transport, and prior to use in CSSD, packaging materials should be held at room temperature (20°C to 23°C) and at relative humidity ranging from 30% to 60%.
3. Examine regularly all packaging materials, woven or non-woven, for defects and extraneous matter prior to use.
4. Keep wrappers snug to prevent low spots that could collect condensate on the exterior of the package; however, care should be taken not to wrap too tightly, because strike-through could occur.
5. Package labels (e.g., process indicators, labels for product identification, lot number, and expiration labels) should be capable of remaining securely affixed to packages throughout the course of their handling from sterilization to the point of use.
   a. If a marking pen is used to label paper/plastic pouches, the labeling information should be written only on the plastic side of the pouch.

b. If a marking pen is used to label any device to be sterilized in the hospital, the ink should be non-toxic, and the labeling information should be written on the indicator tape or affixed labels.

6. Package closures must allow the steam sterilization process to occur, avoid constriction of the package, and maintain package integrity.

C. Handling and Inspection

1. Minimize handling of all sterile items.
2. Inspect all sterile packages for tears, punctures and abrasions prior to storage and use. If your inspection reveals any of the above, do not use this package.
4. Notify and return to CSSD any sterile packs found to be wet. CSSD will recall all other packs sterilized in that particular load.
5. Return to the decontamination area for reprocessing if an item is dropped on the floor or place on a patient's bed but were not use.
6. Return all recalled items to the decontamination area for decontamination prior to re-sterilization.

D. Sterile Storage Area

1. Store sterile supplies in a way that sterility will not be compromised. Maintain a clean and dry storage area with low traffic volume.
2. Covered or closed shelving is preferred in a clean area with limited access, positive air pressure, and effective ventilation.
3. Storage shelves or cabinets must be 18 inches from the ceiling, 8 to 10 inches from the floor, and 2 inches from the outside wall. They must be away from sprinklers and air vents; and temperature and humidity must be controlled.
4. Do not store sterile packs under sinks, exposed pipes, floors, or window sills.
5. Minimize the handling of sterile items to reduce and prevent the risk of packages from being crushed, bent, compressed or punctured. Utilize the first in, first out principle.
6. Affix sterilization date and sterilization load number to each package prior to issuing supplies sterilized in-house.
7. Inspect all sterile items for package integrity and/or expiration dates prior to storage.
8. Use sterility maintenance covers (dust covers) to protect sterilized devices/items that are used less than once a month to maintain sterility.
9. Cover sterile packs with dust covers at the CSSD prior to distribution.
10. Consult with IP&C with regards to the use of items beyond the expiration use by date.

E. Shelf Life of Devices Sterilized In-house by CSSD and/or Commercially

The shelf life for all sterile items is 'event-related'.

1. Event-related sterility refers to the sterility based on the proper handling, storage, and packaging degradation. The items or supplies are considered sterile only if the following are met:
   a. No barrier tears, compressions, abrasions, punctures, moisture, dirt, bending, or damage in any way.
   b. Each package must have not been opened and/or resealed.
   c. The package must be properly opened without contaminating the contents.
2. If the packaged item does not have an expiration date and does not contain fluids,

antimicrobial agents, special coating or other materials, medication, or movable tips/parts that are subject to deterioration or degradation over time, which reducing the effectiveness or quality of the product, the event-related expiration date applies.

3. Consider any package that is not intact (i.e., with compromised integrity) as contaminated and must not be used. These items must be returned in their original packaging to CSSD office for reprocessing.
4. Inspect the integrity of sterile packs regularly, prior to storage and use.
5. CSSD must conduct an annual hospital-wide audit and contacts each unit to ensure compliance in sending reusable devices that have not been used within the parameters of their existing packaging degradation. Refer to CSSD hospital policy.

F. Distribution

1. Handling and inspection
   a. Handle sterile supplies in such a way as to avoid compromising or contaminating the package.
   b. Care should be taken to avoid dragging, sliding, crushing, bending, compressing, or puncturing the packaging, or otherwise compromising the sterility of the contents.
   c. Inspect packaging for integrity and labeling before an item is stored and/or issued.
2. Distribution containers and/ or carts
   a. Cover all clean or sterile items being transported in uncontrolled environments or use an enclosed cart with a solid bottom shelf
   b. Arrange items that are placed inside plastic or paper bags or boxes for transport within the containers so as to prevent them from being crushed, damaged or contaminated.
   c. Reusable carts should have an enclosable opening. Clean reusable covers for carts after each use.
   d. Decontaminate and dry transport carts after each use and before they are used for transporting another load of sterile supplies.
   e. Follow manufacturer's written IFU on distribution and decontamination procedures for automated cart distribution systems and pneumatic systems.

G. Quality Assurance Testing

1. Perform quality assurance testing of reprocessed items on an ongoing basis.
2. Provide effective decontamination protocols.
3. Include chemical indicators (CIs) in each package and must be sterilant specific. These are read by the end users after opening the sterile pack but before use.
   a. In textile packs wrapped in woven or non-woven materials, the CIs are placed in between the layers of a folded surgical gown within the pack, between multiple layers of draping material or between layers of surgical towels.
   b. In an instrument set, the CIs should be placed among the instruments that are placed on stringers.
   c. In containment devices, the CIs should be placed in the areas recommended by the containment device manufacturer.
   d. In multilayered instrument sets in containment devices, the CIs should be placed in the locations determined by the product manufacturer.
4. Place biological indicators (BI) that are sterilant specific near the drain as per the manufacturer's IFU and run in every load.
5. Incubate and read BI that has been run/ processed in the sterilizer in accordance with the manufacturer's published instructions.

Appendix A-IX-01:
Instructions for Use (IFU) Transfer Memo

Ref.#: ☐

Date: _____

TO: Supervisor, CSSD

FROM: _____

_____

* all 3 parts- first time received
* 2nd & 3rd parts- manuf. changes & end user info
* 3rd part - end user info only
* email to CSSD - use one click e/m button only!.
* 3rd part - end user info only
* email to CSSD - use one click e/m button only!.

Name of Device : _____

_____

Manufacturer: _____

☐ **S.U.D.** ☐ **Item** ☐ ***System*** → ***# trays*** ☐

I am transferring:

Part 1 ☐ **Information For Use- IFU** *(formerly known as "Manufacturer's Instructions"):*

- ☐ information for use re: care, cleaning & sterilization *(document must relate on paper to the item)*
- ☐ IFU Date: _____
- ☐ relevant catalogue for the above mentioned item(s)
- ☐ original product insert from the original packaging & packaging itself

via: ☑ **CSSD SPT1pgr XXXX.** _____ CSSD will pick up *(MOR only)*, with vendor still available!
(verifies vendor inventory w/ vendor checklist, reviews IFU provided, identifies issues at the time with end user and vendor- provides status if required)

- ☐ Other: (Palace use only) _____

Part 2 ☐ **Vendor Details:** *(photocopy or attach business card here)*

- Name _____
- Company _____
- E/mail _____
- Cell _____
- Office _____

Part 3 ☐ **End User Info:**

- Contact details : Name: _____ Ext. _____ Pgr. _____
- Service :
- Owned : ☐
  - ◇ Loaner : ☐ J.I.T. ☐ Long Term
  - ◇ Demo : ☐ for demo only

Current location of item: _____

DATE required: _____ **TIME required:** _____

Thank you ☐ ☐

CSSD office use only

1		Pick up Point	8	Vendor inservice
a		verify actual instr. w/vendor list	9	CRN inservice
b		review IFU	10	Instr. to _____ for processing
c		initiates feedback end user/vendor.	11	Info scanned onto computer
d		trays appropriate?	12	Computer named & filed
2		AA3 notified *[Log#]*_____	13	SPT to link Q.R. to the scanned IFU.
3		CRN notified	14	Hard copy filed *[memo & attachments from vendor & original IFU]*
4		SPT notified		
5		SPT completes checklist-*[refer to vendors's initial list]*	15	Comments: _____
6		Quick reference complete		
7		CRN reviews checklist, IFU		

"Sterility is Event Related" dependent upon:

1. Appropriate & effective handling and storage [end user responsibility] and
2. Packaging degradation [CSSD responsibility- every 4 years even if the packaging is intact]

CSSD reprocesses items stored sterile but not utilized in 4 years, based on Event Related Sterility (ERS) guidelines.

All end users must use the form provided to log your items returned to CSSD this week for reprocessing.

re: OR areas only, the tray inventory provided will be utilized for this purpose. Peel items will need to be listed by hand on the form provided.

1. All items must be returned to the CSSD office in the original packaging.
   * Do NOT open the item at source.
   * Do not return to CSSD via the main CSSD decontamination window.

2. All items requiring reprocessing will be returned to you within 2- 3 days.
   * Please remember you have not used them in 4 years.
   * Please reconsider the need to have this item sterile on the shelf since it has not been used in 4 years

3. Should there be any items no longer required to be kept sterile on your units, CSSD will require an e-mail from the Nurse Manager asking CSSD to remove them from circulation.

4. Should the packaging integrity be compromised in any way it must be returned to CSSD for reprocessing at the time.
   * This would include the item being bent, crushed, torn, stained, wet, having a visible foot print on it, abraded, resealed with scotch tape etc.
   * When in doubt page the CSSD for point of use consultation. Do not open it until we arrive!

5. When this annual process has been completed, it is the end user responsibility to notify the CSSD via e-mail that the process is complete.
   * This includes units who do not require inventory reprocessing for that year.

TITLE/DESCRIPTION:	INDEX NUMBER
MANAGEMENT OF INFECTIOUS WASTE	**ICM - IX - 02**

EFFECTIVE DATE:	APPLIES TO:	ISSUING AUTHORITY:
01/01/2009 **01/01/2013** **01/01/2018**	**All GCC Countries**	**GULF COOPERATION COUNCIL – CENTRE FOR INFECTION CONTROL (GCC-CIC)**

DEFINITION

To define themet hods for handling, transporting, and disposing infectious waste to ensure cost reduction and the safety of healthcare workers (HCWs), sanitation workers, and the general public.

REFERENCES

1. Association for Professionals in Infection Control (APIC) and Epidemiology, Inc. (2014). Chapter 113:Waste Management. In APIC Text of infection control and epidemiology (4th ed.).
2. Association for Professionals in Infection Control (APIC) and Epidemiology, Inc. (2014). Chapter 107: Environmental services. In APIC Text of infection control and epidemiology (4th ed.).

COMMENTS

1. Infectious waste (also called medical, biomedical, regulated or biohazard waste) is defined as materials generated as a result of the diagnosis or treatment of a patient and that is capable of producing an infectious disease.
2. Infectious waste should always be segregated, collected, transported and stored in a safe manner with consideration of the risk , occupational safety rules and should be in accordance with local regulations.
3. Staff should be knowledgeable about the risks and safety operating procedures of the waste they are handling.
4. The risk of acquiring an infection from medical waste is extremely remote. No waste disposal worker or member of the general public has ever acquired an infection from medical waste.
5. In general, the microbial load of hospital waste is less than that of residential waste.
6. Careless designation and disposal of all hospital waste as "infectious waste" by HCWs leads to unnecessary consumption of hospital resources to manage such waste.
7. Infectious waste has been specifically defined by regulatory authorities such as the Centers for Disease Control (CDC) and the Environmental Protection Agency (EPA). For any infectious waste to be capable of causing infection, a susceptible host must be exposed to a pathogen in the waste and must have a portal of entry, and the pathogen must be of sufficient virulence and quantity.
8. General hospital waste is categorized as items not soaked in blood or body fluids.
9. Infectious waste is categorized as:
    a. Blood and blood products: Bulk blood, blood-tinged suctioned fluids, excretions, secretions are considered infectious waste.
    b. Pathology waste: includes human or animal tissues such as placenta, uteruses, organs, and body parts that are collected at autopsy or during surgery.
    c. Microbiological cultures, stocks and microbiological waste: items containing blood or other potentially infectious materials, as well as, discarded live and attenuated vaccines.

d. Sharps: used or unused sharps (e.g., hypodermic, intravenous or other needles; auto-disposable syringes; syringes with attached needles; infusion sets; scalpels; pipettes; knives; blades; broken glass).
e. Contaminated items: items that would release blood or other potentially infectious materials in a liquid or semi-liquid state if compressed; items that are caked with dried blood or other potentially infectious materials and are capable of releasing these materials during handling.
f. Animal waste: discarded material originating from animals inoculated with infectious agents during research, production of biological, or pharmaceutical testing should be considered infectious waste.
g. Selected isolation waste: discarded waste materials contaminated with excretions, exudates, and secretions from patients with highly communicable diseases (classification 4 by the CDC in Classification of Etiologic agents on the Basis of Hazards, i.e., Ebola) treated in isolation.

10. Isolation and operating rooms: waste is considered general hospital waste unless it meets the criteria of infectious waste.
11. Waste containers:
    a. Sharps containers
        i. Must be rigid, puncture-proof, leak-proof and closable.
        ii. Equipped with a hermetical seal with an opening aperture which allows insertion of sharp items (e.g., needles and lancets).
        iii. Has a biohazard logo and labeled as "Sharp Items" which must be printed in both Arabic and English.
        iv. Size must be adequate in order to be carried in one hand and be provided with a handle if not wall mounted type.
    b. Plastic bags
        i. Should be tear-resistant and leak proof.
        ii. Must not contain Polyvinyl Chloride (PVC).
        iii. Thickness must not be less than 70 microns thick.
    c. All designated infectious waste containers should have a biohazard symbol or labeled with the word "Infectious" both in Arabic and English or be color-coded (i.e., yellow bags), rendering them identifiable by hospital staff.
12. Storage
    a. There could be 2 types of storages in the hospital:
        i. Temporary storage area: storage in the wards located in the dirty utility which are used to hold infectious waste temporarily to be collected and transported to the central storage area every after end of the shift or as needed.
        ii. Central storage area: used to hold infectious waste for not more than 24 hours to be eventually collected and transported off-site for treatment. The room must have a concrete floor and be well-sealed to protect it from water leakage, rain, spread of odor, from rodents, insects, birds and stray animals.
    b. Dispose infectious waste as soon as possible after generation.
    c. Minimize the storage time to reduce the risk of potential exposure and reduce odor.
    d. Limit access to storage areas and have a biohazard symbol labeled with the word "storage area" in both Arabic and English; and posted where it is readily visible to anyone.

PROCEDURE

A. Four (4) methods of waste segregation must be followed at the point of generation (i.e., by the end user).

1. **BLACK** bags
   a. Used to dispose of general hospital waste.
   b. Items that would not release (drip) blood or other potentially infectious materials in a liquid or semi-liquid state if squeezed.
   c. Place solid waste not grossly contaminated with potentially infectious blood or body fluids from isolation rooms or operating rooms in black bags.
   d. Laboratory solid waste, not included in the infectious waste category.
2. YELLOW bags
   a. Used to dispose of infectious waste. Refer to categories of infectious waste.
   b. Containers with blood/body fluids that cannot be emptied.
   c. All microbiological waste (specimens, cultures, and stocks of etiologic agents).
   d. Items moderately or heavily soaked (dripping) in blood or body fluids.
   e. Chemotherapy waste: Trace amounts of cytotoxic liquid waste (e.g. contaminated PPEs and empty IV bags).
   f. Place infectious waste in the appropriate designated container, lined with yellow disposal bags.
   g. One designated infectious waste garbage bin lined with a yellow disposal bag can be kept in the dirty utility room of non-ICU units or areas.
3. SHARPS containers
   a. Used to dispose all used and unused sharps (e.g., Hypodermic, intravenous or other needles, auto-disable syringes, syringes with attached needles, scalpels, glass pipettes, knives, blades, broken glass).
   b. Do not disassemble blades or needles from equipment.
   c. Discard sharps so that they do not protrude from the opening of the container.
   d. Replace the sharps container promptly when the sharps container is ¾ filled (and reaches the fill line) (Housekeeping Services).
4. RED bags
   a. Use to transport body parts, organs, or fetuses for burial.

B. Healthcare Workers

1. Discard all waste generated in your area into the appropriate bin.
2. Wearing the appropriate protective apparel, carefully pour potentially infectious liquid waste down the drain (if local regulations allow or if there is a waste treatment plant available in the healthcare facility).
3. Care should be given not to generate splashes that may contaminate yourself and the surrounding environment.
4. Hand hygiene sinks should not be used to dispose of such fluids.
5. Place empty bulk blood and blood product containers in black bags.
6. Perform hand hygiene immediately after body fluid exposure.

C. Environmental Services (Housekeeping Services)

1. Pick up waste at least once per day and as needed.
2. Handle bags at the top so that the bags do not come in contact with your body. Do not use your hands to compress (squeeze) waste in containers/bags.

3. Tie bags using a self-lock plastic tie and securely before placing them in a temporary holding area such as a dirty utility room. Do not store waste bags in hallways or corridors.
4. Replace the sharps container promptly when it is ¾ full or reaches the fill line.
5. Fasten the cover of a full sharps container securely before removing.
6. Label the infectious waste bags or sharp containers with the following information:
   a. Generating department
   b. Date collected
   c. Time
   d. Weight
7. Decontaminate disposal bins/containers or frames when visibly soiled. These items should be cleaned weekly or as needed with hospital-approved disinfectant.
8. Decontaminate carts used for transporting waste within the hospital daily using a hospital-approved disinfectant solution.
9. Use leak-proof carts that are readily cleanable to transport infectious waste from the point of generation or storage to the point of disposal and treatment.
10. Place yellow bags in a holding area for incineration.
11. Pick up and discard broken glass using a mechanical device such as forceps or a brush and dust pan. Broken glass should never be handled with gloved or non-gloved hands.
12. Clean blood spills according to a written procedure (see "Blood Spills Cleaning" below).

D. Blood Spills and Spills of Other Potentially Infectious Material (OPIM)

All work locations where employees may come into contact with blood or other potentially infectious material must have blood spill biohazard equipment/kits available to safely and effectively clean up any spills. This kit must include the following:

1. Personal protective equipment (PPE) such as gown, gloves, eyewear, mask.
2. Supplies such as forcep, plastic scoop and scraper, absorbent granules or absorbent pads, hospital-approved disinfectant, yellow plastic bag and sharp container.

Procedure

The steps described below should be taken when cleaning and decontaminating spills of blood or other potentially infectious materials:

1. **Control** access to area:
   Prevent people from walking through affected area and spreading the blood or other potentially infectious material to other areas. Use the signage for wet floor sign

2. **Contain** spill:
   Use other absorbent granules or absorbent pads to contain the spill.
   a. Put on appropriate PPEs
   b. Use plastic scoop or other mechanical means to remove any broken glass or other sharp objects from the spill area, and dispose into the sharp container
   c. Sprinkle absorbent granules over the spill and leave for two minutes or as per the manufacturer's recommended contact time. Allow the spill to solidify before removing.
   d. Remove the solidified waste material using the scoop and scraper and carefully dispose all contaminated materials into the infectious waste bag

e. If there is no available absorbent granules contain the spill by placing absorbent pads (i.e. paper towel) on top of the spill and apply the appropriate disinfectant. To avoid creating aerosols, never spray disinfectant directly onto the spilled material. Instead, gently pour disinfectant on top of paper towels covering the spill or gently flood the affected area, first around the perimeter of the spill, then working slowly toward the spilled material. If sodium hypochlorite solution (5.25% household chlorine bleach) is used, prepare a fresh solution on a daily basis. Leave for the recommended contact time.
f. Pick up all absorbent material and carefully place in the infectious yellow bag for disposal. Remove PPEs and place in a yellow bag for disposal.
g. Seal the yellow bag.
h. Wash hands thoroughly with soap and water.

3. **Contact** housekeeping to clean the affected area with hospital-approved disinfectant.

E. Spills Occurring Within the Biosafety Cabinet

When infectious material is spilled within the biosafety cabinet, it should be cleaned up immediately by the individual performing the work. If the cabinet is certified and working properly and not overfilled with laboratory equipment, which limits the cabinet's air flow, there is little risk of aerosolization of the material into the general laboratory environment.

Additionally, employees working with potentially infectious microorganisms must wear adequate PPE.

When cleaning and decontaminating a spill within a biosafety cabinet, care should be taken not to move hands and arms in and out of the cabinet unnecessarily. This action creates turbulence that reduces the laminar air flow characteristics and the effectiveness of the biosafety cabinet. A suitable disinfectant and laboratory wipes should always be available within the cabinet or on the supply cart or table directly adjacent to the biosafety cabinet.

Procedure

To effectively clean and decontaminate a spill within the biosafety cabinet follow these steps:

1. With cabinet air flow running, cover the affected area immediately with absorbent material.
2. Using hospital-approved disinfectant, gently spray the top of the covered spill.
   a. Leave for the recommended contact time.
   b. Pick up the absorbent material and place in a small autoclave bag inside the biosafety cabinet.
   c. Clean the affected area again with disinfectant. If chlorine bleach is used, the affected area should be cleaned with 70% ethanol afterward to remove residual bleach. Chlorine bleach will pit and corrode the stainless steel work area inside the biosafety cabinet.
   d. Place the sealed bag in a biohazard waste receptacle.

Appendix A–IX-02: Summary of Infectious/Hazardous Waste Management Plan

Waste Category	Examples	Red Bag	Yellow Bag[1] (Incineration	Yellow Container 2	Black Bag (Sanitary Landfill)	Steam Sterilization
Microbiology	Stocks and cultures of infectious		X			X[3]
Anatomical waste	Tissues, organs, other body parts, specimens of body fluids and their containers (stored in lab for burial	X				
Blood/blood products/ body fluids: All clinical areas: • < 20-ml volumes	Blood containers, IV tubing without needles, suction canisters, pleurovacs, evacuated containers, hemovacs, etc.				X	
• > 20-ml volumes			X			
Items contaminated with blood: • If saturated and/ or dripping	Paper towel, gauze, disposable objects, gloves, etc.		X			
• Not saturated and/or dried					X	
Chemotherapeutic waste	Bulk[4] chemicals and sharps			X		
	Trace[5] chemicals		X			
Sharps	Contaminated needles, syringes, scalpel blades, razors, pasteur pipettes, tubes and broken glass			X		
Contaminated animal carcasses, body parts, and bedding	Contaminated animal carcasses, body parts, and bedding of animals that were intentionally exposed to highly infectious pathogens.		X			X[3]
Other hospital waste	Non-hazardous medical wastes				X	

[1] Yellow bags (70 -micron thickness, leak-proof, labeled Cytotoxic and/or Biohazard as per **ICM-IX-02** Management of Infectious Waste).
[2] Yellow containers must be heavy-duty, leak-proof, and puncture-proof. Containers must be labeled as Biohazard or Cytotoxic separately as per ICM.
[3] If steam sterilization is not used, place in yellow bag for incineration.
[4] Waste materials contaminated with any visible liquid are classified as bulk chemical waste, including contaminated sharps. and must be incinerated at ≥1200°C.
[5] Waste materials contaminated with traces of chemotherapy agents (e.g., empty vials, IV tubing, gowns, gloves).

Note: Radioactive wastes should be placed in hermetically sealed containers with an international logo of Radiation Hazard.

TITLE/DESCRIPTION:	INDEX NUMBER
SINGLE USE DEVICES (SUD)	**ICM - IX - 03**

EFFECTIVE DATE:	APPLIES TO:	ISSUING AUTHORITY:
01/01/2009 **01/01/2013** **01/01/2018**	**All GCC Countries**	**GULF COOPERATION COUNCIL – CENTRE FOR INFECTION CONTROL (GCC-CIC)**

DEFINITION

To outline a process for the evaluation, approval, and appropriate decontamination and reprocessing of single use devices (SUDs) when indicated.

REFERENCES

1. Association for the Advancement of Medical Instrumentation. (2006). Comprehensive guide to steam sterilization and sterility assurance in healthcare facilities.
2. Association for Professionals in Infection Control (APIC) and Epidemiology, Inc. (2014). Chapter 30: Aseptic technique. In APIC Text of infection control and epidemiology (4th ed.).
3. Association for Professionals in Infection Control (APIC) and Epidemiology, Inc. (2014). Chapter 07: Product evaluation. In APIC Text of infection control and epidemiology (4th ed.).
4. Association for Professionals in Infection Control (APIC) and Epidemiology, Inc. (2014). Chapter 32: Reprocessing single-use devices. In APIC Text of infection control and epidemiology (4th ed.).
5. Drug and Health Products. Reprocessing of reusable and single-use medical devices. Health Canada, British Colombia. Available at: www.bc-sc.gc.ca Accessed: March 2009.
6. John Hopkins Hospital. (2006). Reprocessing of single-use patient care items by third part vendors. Interdisciplinary Clinical Practice Manual. Policy No. IFC-004
7. Saudi Food and Drug Authority, Kingdom of Saudi Arabia. Available at: www.sfda.gov.sa. Accessed: March 2009.

COMMENTS

1. The institutional facilities should not reprocess used SUDs for reuse because it is not safe.
2. SUD refers to a patient care item intended to be used once on an individual patient during a single procedure and then discarded. This item is labeled as "single-use" or "disposable."
3. Reuse refers to the use of an item labeled by the original manufacturer as a single-use or disposable patient care item that has been cleaned, disinfected, or sterilized and then tested for functionality after its original use on a patient.
4. Reprocessing refers to the cleaning, disinfecting, repackaging, and sterilizing of an item that was either (a) used on a patient or (b) not used on a patient but has its original packaging compromised. Manufacturer's instructions now known as information for use (IFU) must be adhered to when evaluating reprocessing of SUD.
5. Reprocessing a SUD may affect the function of the device and/or material from which the device is made. Single-use devices may not be designed to allow for thorough decontamination and re-sterilization processes. Unforeseen problems such as inadequate decontamination, material alteration, mechanical failure, and residual chemical agents can render the reprocessed item unsafe. In addition, validation of the SUD's functionality after reprocessing cannot be guaranteed.
6. Critical and semi-critical medical equipment/devices labeled as SUD must not be reprocessed and reused unless the reprocessing is carried out by a licensed re-processor who can validate the functionality of the reprocessed SUD.

SINGLE USE DEVICES (SUD)	ICM - IX - 03

PROCEDURE

1. SUDs must be discarded by the end user at the point of use as per hospital waste disposal protocol.
2. Examine used SUDs being considered for reuse on an individual basis and consider potential risk implications as follows:
   a. Describe the item.
   b. Use of the item (i.e., invasive (critical) vs. non-invasive (non-critical)).
   c. Availability of manufacturer's IFU reprocessing instructions.
   d. Risks to the patient (i.e., infection and/or mechanical defects causing injury).
   e. Quantity to be reprocessed.
   f. Cost per item.
   g. Is it a stock item?
   h. Nil stock (none in supply stores).
   i. Next delivery date.
   j. Ethical, moral, and legal implications.
3. Fill out a hospital standard written request for evaluation of the SUD.
   a. If reuse of a SUD is considered, the conclusion must be influenced by unique circumstances pertaining to the individual device. Complete the attached evaluation form and forward it to Infection Prevention and Control (IP&C) Department.
   b. If re-sterilization of unopened expired devices or opened unused devices is considered, the conclusion must be guided by the manufacturer's instructions/recommendations. Obtain and complete the appropriate form from Central Sterile Supply Department (CSSD).
4. Submit the SUDs in its original packaging with all pertinent IFU along with a written request to the CSSD supervisor for review and assessment.
5. The CSSD supervisor assesses the item and discusses the findings with the IP&C to determine the appropriate course of action with the following consideration:
   a. Risks involved with product safety and performance.
   b. Method of re-sterilization.
   c. Frequency of re-sterilization.
   d. Quality control.

Form 1-IX-03:
Evaluation for Reprocessing Single Use Items/Devices

Requestor:		Date:
Name:		Badge #:
Title:		Department:

	Questions	Yes/No	Describe
1.	Describe the item Expiration date		
2. 3. 4.	Use of item (invasive or non-invasive) Provide manufacturer's reprocessing instructions Risks to the patient?		
5. 6.	Quantity to be reprocessed? Cost per item?		
7.	Is it a stock item? Oracle #		
8.	Special Purchase Request (SPR) #		
8.	Nil stock?		
9.	Next delivery date?		

Infection Control Department		
Evaluator:		Date:
Name:		Badge #:
Findings:		
Action:		

Section10: ENVIRONMENTAL HEALTH

TITLE/DESCRIPTION:	INDEX NUMBER
WATER QUALITY MONITORING PROGRAM AND REQUIREMENTS	**ICM - X- 01**

EFFECTIVE DATE:	APPLIES TO:	ISSUING AUTHORITY:
01/01/2009 **01/01/2013** **01/01/2018**	**All GCC Countries**	**GULF COOPERATION COUNCIL – CENTRE FOR INFECTION CONTROL (GCC-CIC)**

DEFINITION

To monitor the quality of water by defining the essential standards for water consumption in healthcare facilities based on the requirements of the Ministry of Health, the Joint Commission International Accreditation (JCIA), and other related international organizations.

REFERENCES

1. American Institute of Architects Standards (2009).
2. ANSI/AMMI (2010). Water treatment equipment for hemodialysis applications. RD62.
3. Association for Professionals in Infection Control (APIC) and Epidemiology, Inc. (2014). Chapter 115: Water systems issues and prevention of waterborne infectious diseases in healthcare facilities. In APIC Text of infection control and epidemiology (4th ed.).
4. Association for the Advancement of Medical Instrumentation related standards (AAMI) 2010.
5. Canadian Drinking Water Guidelines, Date Modified: 2016-08-08. http://www.hc-sc.gc.ca/ ewh-semt/ water-eau/drink-potab/guide/index-eng.php
6. Environmental Protection Standards. Presidency of Metereology & Environment (PME). Saudi Arabia. www.pme.gov.sa/En/About/EnvStandards/Pages/default.aspx
7. Joint Commission International Hospital Accreditation Standards for hospitals 5th Edition (2014) – FMS.9.2ME1-5 & 9.3ME1-3.
8. Safe Drinking Water Act. (2002). Ontario
9. Saudi Arabian Standards Organization: Un-bottled drinking water, SASO/701/2009.
10. WHO Guidelines for Drinking Water Quality (4th ed.), 2011.
11. WHO Potable Water Quality Guidelines (2004).

COMMENTS

1. Potable drinking water compliant with quality standards must be maintained at healthcare facilities to protect patients, staff, visitors, and the whole community. These standards must be strictly enforced to limit contamination and avoid health hazards.
2. A regular microbiological sampling and testing from all water supply areas must be conducted by the Infection Prevention and Control (IP&C) Department.
3. Immediate corrective action shall be taken as recommended by the IP&C for any potential water contamination or infection risk in coordination with concerned departments such as Facility Management & Safety (Utilities & Maintenance U&M section) and Primary Health-care Clinics (PHC).
4. Laboratory facilities shall perform the required analysis for any urgent or corrective measure of routine water analysis to maintain acceptable water quality.
5. Records of laboratory results related to water quality monitoring shall be maintained by IP&C, Facility Management & Safety (U&M section), and other concerned departments.
6. An effective preventive program which includes treatment such as chlorination and chlorine monitoring, cleaning water supply system, and sampling schedule will be designed and implemented.
7. All efforts shall be made to prevent risk of contamination of water supply system due to chemicals used, renovation and construction, fire, or other related industrial, agricultural, and human activities.

PROCEDURES

1. Each program facility must implement a routine maintenance program to maintain an acceptable clean water distribution system.
2. U&M will properly manage the chemical water treatment to ensure safe drinking water.
3. A safe water supply system will be equipped with back flow preventers to prevent back-si- phonage, backpressure, and cross contamination. Only air gaps are recommended for preventing sewage back-siphonage contamination. To protect against backflow contamination of potable water supply by cross connections, either two check valves in series or a backflow preventer must be used (i.e., a pumping device to prevent backflow).
4. U&M must ensure sufficient water available in the hospital, satellite facilities, and residential compounds at all times. For other residential compounds, water availability and safety is maintained by conducting regular water sampling. Access will be guaranteed to IP&C and other relevant departments to perform inspection, testing, and safety of the compound's water.
5. Chlorination systems will be checked daily by U&M to ensure the chlorination compound supply has not run out and applicable limits are respected.

A. The Water Distribution Management Plan

1. Preventive measures. A preventive maintenance program will include monitoring, inspection, cleaning, disinfection of the water supply system, sampling schedules, and frequency of the following listed below:
   a. Potable water system;
   b. Hemodialysis and emergency water system;
   c. Domestic hot water system;
   d. Showers, faucets, humidifiers, fountains and drain pans; and
   e. Recreation and irrigation water.
2. Testing equipment and water sampling
   a. A detailed physico-chemical potable water quality testing and sampling will be performed annually by an independent certified water-testing laboratory. A copy of the results must be forwarded to IP&C.
   b. The preventive maintenance program will include periodic inspection and investigation to ensure that all water equipment is in good operational condition at all program facilities.
   c. Water quality testing for hemodialysis water shall be performed for chemical and microbiological parameters as described in **Table 1-X-01** (AAMI and EPA Maximum Allowable Levels of Contaminants in Water) at least on a monthly basis. A copy of the results must be forwarded to IP&C.
3. Record keeping
   Records of water quality sampling results, laboratory reports, and chemicals used for treatment must be available at all times and be retained for a period of five years.
4. Physical Parameters
   a. The water shall be aesthetically acceptable to consumers. Unusual taste and color might be an indication of potential contamination. However, the maximum allowable levels of contaminants in water are as follows:
      i. Color <15 TCU (True Color Unit)

ii. TDS < 600 mg/L (Total Dissolved Solids)
iii. Turbidity ≤ 5 NTU (Nephelometric Turbidity Units)
iv. Ph:6.5-8.5
v. Conductivity for Hemodialysis water: 160-1600 Us/cm
vi. Total hardness: Mg/l as CaCo, Max 200

b. See Table 1 for microbiological and chemical parameters

B. Water Sampling

Water sampling must be conducted in accordance with the following steps:

1. Flush the tap for at least one minute. If the tap is a mixing faucet, attachments (i.e., screen and aerators) must be removed. Hot and then cold water must be allowed to run through the tap for at least 1-10 minutes based on the location and frequency of use.
2. Turn off the tap and disinfect the end of the tap by 70% isopropyl alcohol or by using 500-600 ppm chlorine sodium hypochlorite (1:100 v/v dilution of chlorine bleach).
3. Turn on the tap and let it run for a few seconds before taking the sample.
4. Samples shall be collected in a sterile bag of minimum 100 ml capacity.
5. A reducing agent called Sodium Thiosulphate [$Na_2S_2O_3$] shall be added to neutralize residual chlorine and other halogens in the sample.
6. If the water contains elevated levels of heavy metals, then a chelating agent shall be added to the specimen.
7. Sample site, date, and time shall be written on the label of each sample.
8. Water samples must be kept in cold (approximately 4°C) containers and sent immediately to the designated laboratory preferably within 24 hours.
9. Usage of sterile reduced nutrient media (e.g., diluted peptone and R_2A) is preferable with either of the techniques such as heterotrophic plate count, pour plate, spread plate or member filtration.
10. Incubation temperatures will be closer to the temperature of the water rather than at 35°C within 24 hours for total coliform; and 44.5°C for fecal coliform within 48 hours.

C. Emergency Water Use and Other Water System

1. Safety shower and eye wash stations shall be flushed weekly by the department or as per agreement with Fire Protection Services.
2. The hot water temperature shall be maintained in accordance with the American Institute of Architect's (AIA) guidelines. Water temperature shall be maintained in patient care areas within the range of 105 - 120°F (40 - 49°C).
3. When shock decontamination of hot water system is necessary (e.g., after disruption caused by construction and after cross-connection), the hot water temperature should be raised to 160-170°F (71-77°C) and maintained at the level in which each outlet around the system is progressively flushed for a minimum of 5 minutes. U&M shall inform IP&C, the Safety Officer and other possible affected departments prior to shocking treatment in order to avoid scalding. Further, U&M will inform IP&C of any water outage planned or unplanned, or during any water distribution system damage, which may contaminate water supplies.

D. Corrective and Remedial Action

1. Any complaint of contamination shall necessitate complete investigation and immediate appropriate corrective action by the IP&C, U&M, and concerned departments.
2. A corrective action plan in response to various disease outbreaks or water contamination incidents should be in place.
3. Each unscheduled maintenance event shall be reviewed carefully before proceeding without compromising the facility water supply.
4. On completion of corrective actions, water resampling tests will be performed to ensure successful elimination of contamination. The reporting department will be notified to confirm water source is released for use as per the water resample results and release form.
5. The following steps shall be taken into consideration to minimize potential exposure risk:
   a. Management of working hours by scheduling preventive maintenance during periods of low occupancy.
   b. Isolate work area using temporary barriers.
   c. A negative air pressure environment must be maintained in the worksite and in relation to the spaces adjacent to the worksite in order to prevent transmittal of airborne pollutants.
   d. Implement the use of specialized cleaning products, disinfectants, and procedures.
   e. Change air filters if necessary when work is completed.

E. Chemical Use

U&M will make sure that only IP&C approved chemicals are used in water treatment programs. Updated Safety Data Sheets (SDS) and chemical inventories for chemicals added to water will be maintained.

Table 1 –X-01:
AAMI and EPA Maximum Allowable Levels of Contaminants in Water

MNGHA Microbiological Standards for Drinking and Hemodialysis Water		
Contaminant	**Drinking Water**	**Hemodialysis Water**
E. Coli	0	0
Coliform	0	0
Enterococci	0	0
Legionellae	0	0
Virus	0	0
Other Bacteria:		
HPC	≤500 cfu/ml	≤100 cfu/ml
Action Level	≥200 cfu/ml	≥50 cfu/ml
Endotoxin:		
Acceptable Maximum Level (EU/ML)	N/A	0.25
Action Level (EU/ML)	N/A	0.125
** Action level at 90th percentile		HPC – Heterotrophic Plate Count CFU – Colony Forming Units

Source: 1. Association for the Advancement of Medical Instrumentation (AAMI). (2015). Water Quality for Dialysis.
2. World Health Organization, Geneva (2014). Guidelines for Drinking Water Quality – Recommendations. (4th ed., vol. 1).

Table 2 –X-01:
Water Contamination Reporting Form

Reference #: _____ **Date:** _____

Requesting Department

To : _____

Director of
Utilities and Maintenance

Water Contamination Description:

Location	Microbial Growth cfu/ml	Chlorine Level	Chloramine Level	Endotoxin	Physical Parameter: Color or elements traces

Recommendation / Corrective Action:

_____

_____

Inspected and Sample Taken by:

_____

(Name & Signature from IP & C Department

Reviewed and Approved by:

_____

(Director's Name & Signature IP&C Department)

Table 3 –X-01:
Water Resample Results and Release Form

To: _____ **Date:** _____

Requesting Department

Water Resample Results:

Location	Microbial Growth cfu/ml	Chlorine Level	Chloramine Level	Endotoxin	Physical Parameter: Color or elements traces

Remark:

_____

_____

_____

Inspected and Sample Taken by:

_____

(Name & Signature from IP & C Department

Reviewed and Approved by:

_____

(Director's Name & Signature IP&C Department)

TITLE/DESCRIPTION:	INDEX NUMBER
HEMODIALYSIS WATER QUALITY MONITORING	**ICM - X- 02**

EFFECTIVE DATE:	APPLIES TO:	ISSUING AUTHORITY:
01/01/2009 **01/01/2013** **01/01/2018**	**All GCC Countries**	**GULF COOPERATION COUNCIL – CENTRE FOR INFECTION CONTROL (GCC-CIC)**

DEFINITION

To define the policy, procedures, and reporting requirements for the microbiological endotoxin level chemical testing and monitoring water used by the Hemodialysis Unit.

REFERENCES

1. Association of the Advancement of Medical Instrumentation (AAMI) 2010 Standards for Hemodialysis Water Supply.
2. American National Standards Institute (ANSI) 2010.
3. Joint Commission International Accreditation Standards for Hospitals, 5th Edition (2014)-FMS.9.3ME1-3.
4. Facilities Guidelines Institute. (2014) Guidelines for the Design and Construction of Healthcare Facilities. https://www.fgiguidelines.org/guidelines/2014-hospital-outpatient/.

COMMENTS

1. This policy must always be utilized under normal circumstances. All recorded results are to be documented and communicated to all associated departments as specified.
2. Under emergency conditions in the event of a substandard result, the Hemodialysis Department head must be notified immediately by telephone in order to take appropriate actions.
3. All results for the samples taken during monitoring will be recorded in a uniform manner by all the concerned departments.
   a. The location and outlet number must be clearly identified.
   b. In case of abnormal results, the borderline will be based on the AAMI Standard as shown in **Table 1-X-01** AAMI and EPA Maximum Allowable Levels of Contaminants in Water (refer to **ICM-X-01** Water Quality Monitoring Program and Requirements).

PROCEDURE

1. The point of reference and guideline for the general procedure is the AAMI standards. However, the Infection Prevention & Control (IP&C) Department maintains the right to make the final decision as to acceptable standards.
2. Facility Management & Safety department (Utilities & Management section) is responsible for operating the treatment plants and the pipings in accordance with standard guidelines. The Water Treatment Plant foreman will ensure that water quality is checked as per the related standard operating procedures (SOPs) and report findings to the Hemodialysis physician in-charge and Environmental Health Specialist (EHS) or any related trained personnel of the Infection Prevention & Control (IP&C) Department.
3. In addition, the Water Treatment Plant foreman will submit a sample of treated water to an approved laboratory facility to determine compliance with the ANSI / AAMI chemical analysis standard.
4. Trained staff from the IP&C Department will collect water samples from the hemodialysis water treatment plants (pre-reverse osmosis and post-reverse osmosis water outlets) while in operation:

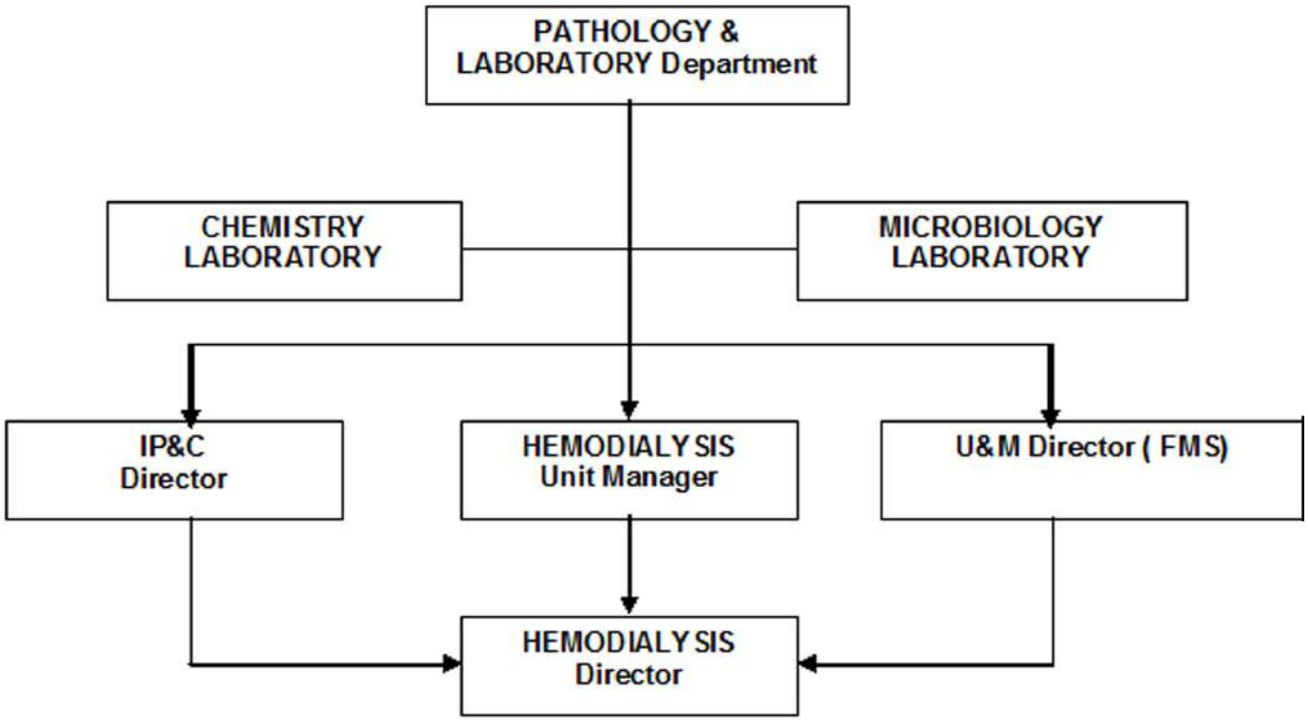
   a. Bacteriological testing - collected samples for heterotrophic plate count will be delivered to micro-laboratory using non-pyrogenic sampling in sterile containers once every month
   b. Endotoxin level testing – collected samples will be delivered to the metabolic laboratory or any other equivalent laboratory capable of testing the samples using non-pyrogenic containers.
   c. Chlorine and chloramine levels test will be documented at the time of sample collection.
5. A free chlorine residual of 0.3 mg/l will be maintained by the Water Treatment Plant foreman at all times in the hemodialysis water system. While some variation in levels is unavoidable, the chlorine levels must not drop below 0.1 or rise above 0.5 mg/l. Failure to achieve this would warrant immediate notification to IP&C and the Hemodialysis physician in-charge for corrective action by the Water Treatment Plant foreman. Once corrective action has been done, proper reporting of the condition of the hemodialysis water system must be provided to the IP&C.
6. Collection of water for testing in the Hemodialysis Unit, including endotoxin analysis and hetero - tropic plate count analysis will be performed at the pre- and post- hemodialysis machine points.
   a. Water samples will be collected and delivered by the trained Hemodialysis unit staff to the micro-laboratory for testing. Analysis and reporting will follow as per related SOPs.
   b. Trained personnel from IP&C will ensure that only sterile sample containers and non-pyrogenic containers appropriate for the tests are used. These samples will be delivered to the appropriate laboratory as soon as possible.
7. Quality control standards for sample collection will be provided by the trained personnel from IP&C through in-service training.
8. All sample results will be reported to the IP&C Department. In the event of an abnormal result, the laboratory will immediately inform the Hemodialysis physician in-charge, IP&C and U&M by telephone, email or memorandum. Each department will ensure appropriate corrective and remedial actions regarding the water sample results as per policy **ICM-X-01** Water Quality Monitoring Programs and Requirements.
9. Representatives from IP&C, Facility Management & Safety (U&M section), Laboratory Medicine and Hemodialysis Unit will meet when required to ensure effective communition, to review current activities, and to discuss any required changes on related issues. See **Appendix 1-X-02** Water Quality Monitoring Reporting Responsibilities.

RESPONSIBILITY

All Departments involved in providing, maintaining, testing, and using water for Hemodialysis are responsible for adhering to the provisions as stipulated. The Quality Management Department is responsible for monitoring compliance to the provisions of this policy.

1. IP&C is responsible for conducting monthly water sampling; report the results; and, take corrective measures accordingly. IP&C serves as the reference point for training and consultations related to water quality standards.
2. Facility Management & Safety (U&M) will maintain the reverse osmosis water treatment plants; do water sampling and testing; report the results; and, take corrective actions accordingly and as per their related SOPs and guidelines.
3. Hemodialysis Unit staff will conduct regular sampling from their unit and wherever the reverse osmosis outlets are; report the results; and, take perceptional actions toward patients accordingly, especially when abnormal results are reported.
4. The microbiology laboratory will receive the samples; analyze them; and, report results in a timely manner and as per related SOPs.

Appendix 1-X-02:
Water Quality Monitoring Reporting Responsibilities



TITLE/DESCRIPTION:	INDEX NUMBER
HAZARDOUS CHEMICAL GASES AND SAMPLING	**ICM - X- 03**

EFFECTIVE DATE:	APPLIES TO:	ISSUING AUTHORITY:
01/01/2009 01/01/2013 01/01/2018	**All GCC Countries**	**GULF COOPERATION COUNCIL – CENTRE FOR INFECTION CONTROL (GCC-CIC)**

DEFINITION

To identify and outline the responsibilities of the Infection Prevention and Control (IP&C) in monitoring and taking environmental sampling for toxic and potentially hazardous gaseous pollutants in healthcare facilities.

COMMENT

To identify, evaluate, and control potential risks from chemical, physical, and biological hazards. Air sampling will be conducted when necessary to monitor workplace hazards.

Air sampling is used to:

1. Detect bio-aerosol released from the operation of healthcare equipment;
2. Determine the success of controls and repairs in containing the hazard;
3. Detect hazardous agents in an indoor environmental setting; and
4. Maintain industrial hygiene for safety purposes and quality assurance.

PROCEDURE

A. Biological Air Sampling

S/N	GAS/DUST	USED EQUIPMENT	MOST TARGETED AREAS
1	Ethylene Oxide , Mercury,	Sampling pump	CSSD, laboratory, wards
2	Organic Vapors as Xylene, Benzene, Glutaraldehyde, formalin	Photo ionization Monitor, passive sampling badges	Laboratories - histology, ECHO, microscopy
3	Oxygen level	Multi gas monitor	Basement, areas with potential gas leak, any area suspected with gas leak.
4	CO,CO2,NO, NO2 NH3	Multi gas monitor	Laboratory, NICU, workshops, power station
5	CH4=LEL	Multi gas monitor	Laboratory
6	Dust as Silica	Dust particulate	Dental Laboratory
7	Antineoplastic vapor	moistened wipe	Pharmacy

S/N	AREA	DEPARTMENT	GAS	HOW OFTEN
1	Laboratory	Histology	Xylene	Quarterly and when necessary
2	Laboratory	Hematology Histology	Formalin (Formaldehydes)	Quarterly and when necessary
3	Laboratory		CO_2	As required
4	Laboratory	Toxicology	NO, H_2	As necessary
5	Chemical Fume Hoods (CFH)	Wherever there is CFH	Any gas generated in the CFH	As necessary

B. Nitric Oxide (NO) and Nitrogen Dioxide (NO_2) Gases in NICU Wards

Nitric oxide gas is used to treat neonatal babies suffering from hypertension. Risks associated to this procedure are as follow:

1. Nitric oxide (NO) permissible exposure level (PEL) in the human body should not exceed 20 ppm. Once nitric oxide leaks in the room, it will react with the oxygen in the room and will form nitrogen dioxide (NO_2). The NO pressurized gas cylinder has two detectors: one for NO level that goes into the patient; and the other shows the level of NO_2. Any damage on the NO cylinder can lead to an explosion.
2. Nitrogen dioxide (NO_2) permissible exposure level is 1ppm. It is a highly toxic gas and its level should be maintained at less than 1ppm. IP&C staff should conduct regular inspection and have a portable detector that can detect both NO and NO_2 gases, as well as, the oxygen level in the room.

C. Calibrating Air Samplers

Sampling devices will be calibrated as per manufacturer's instruction and applicable standards in coordination with the clinical engineers. These devices have automatic data logging and analyzing features for quick accessibility and reporting of results.

D. Safety Measures

1. Regularly observe the NO cylinder gas detectors. In case of leak:
   a. Shut the flow of the gas.
   b. Evacuate the patient to a place with fresh air.
   c. Call the clinical engineer and trained personnel from IP&C .
2. Keep the cylinder in upright position even when empty.
3. Read the safety data sheets (SDS) that tell the symptoms associated with overexposure to hazardous agents.
4. Should there be symptoms or cases of overexposure, seek medical advice and make the necessary reporting procedures to the concerned departments

TITLE/DESCRIPTION:	INDEX NUMBER
MICROBIAL AIR SAMPLING IN PATIENTS' AREAS	**ICM -X - 04**

EFFECTIVE DATE:	APPLIES TO:	ISSUING AUTHORITY:
01/01/2009 01/01/2013 01/01/2018	**All GCC Countries**	**GULF COOPERATION COUNCIL – CENTRE FOR INFECTION CONTROL (GCC-CIC)**

DEFINITION

To mitigate dusts and determine the number and types of microorganisms present in the patient's room through microbial air sampling techniques.

REFERENCE

Recommendations of the Centers for Disease Prevention and Control (CDC) and the Healthcare Infection Control Practices Advisory Committee (HICPAC). Guidelines for environmental infection control in healthcare facilities. 2003.

PROCEDURE

A. Responsibility

1. The IP&C trained personnel will:
   a. Perform pre-sampling walk-through assessment and documentation of findings utilizing the appropriate forms, refer to **Appendix 5-X-09** in **ICM- X-09** Construction and Renovation Measures in the Healthcare Facility.
   b. Perform fungal sampling using the appropriate air sampling techniques (e.g., air sampler device or settle plates technique)
2. Engineering Services or any related engineering party will:
   a. Calibrate the sampling equipment regularly and as needed.
   b. Complete the air sampling request form to be sent to IP&C. Refer to **Form 1-X-04** Microbiology Requisition Form for Air Sampling.
   c. Advise IP&C Department for any new construction/demolition projects before embarking on any activities to procure the appropriate risk assessment and work permit.
   d. Inform the IP&C Department on the need for air sampling assessment upon completion of any construction/demolition project.
   e. Check HVAC if there is complete air balance making sure that no other engineering work is required before requesting air sampling.
3. Laboratory will analyze the samples and report the results to IP&C in a timely manner for clearance.

B. Acceptable Range of Air Samples

For areas with high risk patients (e.g., hematology/oncology and liver or bone marrow transplant), aerobic cultures should have no fungal growth.

C. Air Sampling Technique

1. Volumetric air sampler machine (centrifugal or spin air sampling machines) can be used.

2. If air sampling machines are not available, air sampling may be conducted using settle plates with appropriately selected media which may be obtained from the microbiology laboratory.

D. Role of Environmental Health Specialist (EHS) or Designated trained Personnel

1. Coordinate the schedule of air sampling and observation that will be conducted with the involved unit/department(s).
2. Advise the concerned department to call housekeeping to conduct deep cleaning twenty four (24) hours after any dust generating procedure (e.g., drilling, construction, etc.),
3. Collect air sample upon the request of the concerned department after ensuring that deep cleaning has been done appropriately .
4. Submits the air sampling specimen to the microbiology laboratory for culture test. It is recommended that the collected specimens should be assigned with specific access code for easy retrieval of results from the Laboratory Information System (LIS).
5. Inspect the area and address observations such as: physical condition of the area; amount of traffic; time and weather conditions; open versus closed windows and doors; other factors. Observations should include factors associated with increased risk of the presence of fungal spores from plants; holes in ceiling or walls; or, other possible sources of dust.
6. Microbiology laboratory is expected to report culture results after 3-7 days of incubation. Investigation by IP&C and Facility Management & Safety (U&M section) must be conducted to determine possible sources causing elevated fungal counts. Intervention strategies should be taken and subject for further discussion during Infection Control Committee (ICC) meetings.
7. Repeat air sampling after ensuring corrective actions and deep cleaning has been done.
8. Generate regular reports, culture results, interventions and evaluations made from scheduled air sampling observations, as well as, pre-sampling and walk-through assessment and submit to the concerned department/unit.

E. Air Sampling

1. Routine and ad-hoc air sampling:
   a. Provided that engineering air ventilation parameters are satisfactory and regularly monitored, microbiological air sampling may be done on an ad-hoc basis.
   b. Ad-hoc sampling may be requested in cases of identified healthcare-associated fungal disease.

2. Construction Projects:
   Air sampling test should be conducted as basis for the completion of an Infection and Environmental Control Risk Assessment for each project.
   a. During the pre-construction stage, the engineering party should submit an Infection Control Risk Assessment Permit **(Form 1-X-09**) for each construction project to the IP&C for evaluation and approval.
   b. Concerned departments with construction project should fill up the requisition Form **1-X-04** Microbial Air Sampling Request addressed to the IP&C Department for appropriate action by the IP&C Department.
   c. IP&C should release and furnish the requesting department with the completed Microbial Air Sample Release Form **2-X-04.**

Form 1-X-04:
Microbial Air Sampling Request

Contact Person's Name: _____ _____

Date & Time of Collection: _____ **Contact #s:** _____

Location: _____

Reason for request:

☐ **New Construction** ☐ **Other Untoward Event**

Justification:

_____

_____

Department Head's Name and Signature: _____

Form 2-X-04:
Microbial Air Sample Release Form

Contact Name of the requesting department: _____Contact #: _____

Date & Time of Collection: _____

Reason for request:

☐ New Construction ☐ Other Untoward Event

Remarks:

_____

_____

Inspector's Name from IP&C : _____

TITLE/DESCRIPTION:	INDEX NUMBER
CSSD HEALTH CHALLENGES	**ICM - X - 05**

EFFECTIVE DATE:	APPLIES TO:	ISSUING AUTHORITY:
01/01/2009 **01/01/2013** **01/01/2018**	**All GCC Countries**	**GULF COOPERATION COUNCIL – CENTRE FOR INFECTION CONTROL (GCC-CIC)**

DEFINITION

To protect the Central Supplies and Sterilization Department (CSSD) staff from any occupational and environmental risks exposure.

REFERENCE

Hazard Communication Standards
Download:https://www.osha.gov/Publications/OSHA3636.pdf

COMMENTS

The CSSD employees are faced with environmental and occupational health safety issues as they are exposed to biological, chemical and thermal risk in the hospital environment.

PROCEDURES

A. Chemical use

1. IP&C will evaluate and approve any chemicals being used in CSSD.
2. Safety Data Sheets (SDS) of chemicals kept in soft and hard copies must be regularly reviewed and updated.
3. CSSD policies and procedures should be in sync with the IP&C regulations and standards.
4. Training on work practices that comply with the Hazard Communication Standards should be provided to all employees.
5. Warning labels and easy access to SDS should be in place.
6. Other ways to avoid workplace hazard are:
    a. Provide appropriate personal protective equipment (PPE) such as gloves, goggles, and gown when handling hazardous cleaning detergents and chemicals.
    b. Where the eyes or body of any person may be exposed to corrosive materials, medical services and first aid should be readily provided. Suitable facilities for quick drenching or flushing of the eyes and body should be available within the work area for immediate emergency use.
    c. Use automatic washing machines that automatically dispense the chemicals used for washing to minimize employee exposure to chemicals. Workers must be cautious and must use appropriate PPE (e.g., goggles, and/or gloves) when changing detergent and other chemical container

B. Burns / Cuts:

CSSD employees are exposed to possible burns or cuts that can occur from handling or sorting hot sterilized items or sharp instruments when removing those from autoclaves/sterilizers or from steam liners. Possible solutions to avoid these risks are as follow:

1. Establish work practices that will prevent hazards such as:
   a. Do not remove items from sterilizers until cooled.
   b. Avoid handling sharp ends of instruments.
   c. Use forceps or other devices to remove sharp instruments from baskets and autoclaves.
2. Use appropriate PPE, especially, hand protection gears such as oven mitts to protect the hands when handling hot items, and steel mesh or Kevlar gloves when handling or sorting sharp instruments.

C. Slips, Trips, and Falls

CSSD employees are exposed to slippery floors due to steam and washing processes.

1. Keep floors clean and dry to avoid slips. Wet surfaces enhance the growth of molds, fungi, and bacteria, which can cause infections.
2. Keep aisles and passageways clear and properly maintained with no unnecessary obstruction that can create hazards. Provide sufficient and accessible floor or ceiling electrical outlets for equipment to avoid trips due to crisscrossing power cords.

D. Bloodborne Pathogens

CSSD employees are potentially exposed to bloodborne pathogens and other infectious materials such as bloody, contaminated surgical instruments and sharps (e.g., needles, scalpels). Employees must safely discard disposable sharp items and reprocess reusable instruments/equipment.

E. Multi-Disciplinary Environmental Rounds (MDER)

IP&C conducts regular multidisciplinary environmental rounds (MDER) to monitor CSSD practices. CSSD-related occupational hazards should be immediately investigated including microbiological water testing done on a monthly basis or when specific need arises.

The table below provides MDER indicators for monitoring:

ITEMS	INDICATOR	MDER SCHEDULE	IN-CHARGE
1. Water quality	Hardness	Weekly	Facility Management
2. Air quality	a. Air changes b. Air Pressure c. Toxic gases • Ethylene oxide • Hydrogen peroxide	Monthly or when required Quarterly or when required When alarm is on or when necessary. Quarterly/when necessary	Facility Management Facility Management Infection Prevention & Control (IP&C) IP&C
3. PPE	Use and availability	On regular basis	IP&C
4. Chemical Hygiene		On regular basis	IP&C

TITLE/DESCRIPTION:	INDEX NUMBER
FOOD HYGIENE	**ICM - X - 06**

EFFECTIVE DATE:	APPLIES TO:	ISSUING AUTHORITY:
01/01/2009 01/01/2013 01/01/2018	**All GCC Countries**	**GULF COOPERATION COUNCIL – CENTRE FOR INFECTION CONTROL (GCC-CIC)**

DEFINITION

To provide guidelines on the proper food preparation, distribution, and vending in healthcare facilities.

REFERENCES

U.S. Food and Drug Administration (FDA). Hazard Analysis Critical Control Point (HACCP) Principles & Application Guidelines. Adopted August 14, 1997; Downloaded from: https://www.fda.gov/Food/GuidanceRegulation/HACCP/ucm2006801.htm.

COMMENT

All food services and contractors must comply with the applicable Infection Prevention & Control Department's environment health and occupational health standards and regulation. Routine food hygiene inspection shall be conducted regularly by trained personnel from the IP&C Department on a random basis without prior notice. Food services and contractor staff cooperate with environmental health inspectors and immediately correct any related infraction to ensure safe food quality and services.

PROCEDURES

A. Food Handlers

1. No food handler may be allowed to engage in food services without obtaining a valid health certification and Food Handler identification card from the IP&C.
2. Food handlers must complete the pre-employment screening process and must abide with Employee Health Clinic guidelines.
3. Food service supervisors are responsible for providing updated lists of food handlers to the Pre-Employment/Surveillance Clinic of the IP&C Department.

B. Personal Hygiene

1. Trained personnel from IP&C will ensure that food service supervisors train, monitor, and check daily their food handlers' personal hygiene including presence of infected cuts, boils, respiratory complications, or any other evidence of health associated infection.
2. Food services employees shall wash their hands thoroughly before starting work; after using the toilet; after touching their ears, nose, mouth, or hair; after handling food; after handling any food waste; before and after any cleaning procedures; after handling raw food; before moving from a raw food preparation area to cook foods; after eating, drinking, or smoking; after removing gloves; and, after handling soiled articles or trash.
3. Food handlers shall not eat, drink, or smoke in food preparation areas.
4. Nails shall be kept clean and trimmed to the tip of the finger.
5. Jewelries shall not be worn when at work.
6. Disposable protective gloves shall be worn when serving food and/or handling cooked and uncooked food. Change gloves between one area to the other. Perform hand hygiene every after removal of gloves.

7. Proper protective clothing shall be necessarily worn to include clean uniforms, aprons, hair nets, gloves, and closed shoes. Open sandals and bare feet are prohibited in the food handling areas.
8. Food shall not be tasted by hand or with the same utensils used in the food preparation
9. Violation of hygienic practices shall be dealt with disciplinary sanctions.
10. Continuous education and training of all food handlers may include, but not limited to:
    a. Hand washing
    b. Sanitizing equipment
    c. Temperature and bacterial growth
    d. Personal hygiene
    e. Preparation and storage of food item
    f. Transportation and service of food items
    g. Handling of refuse or waste disposal

C. Equipment Features

1. Should be easily disassembled for cleaning.
2. Smooth surfaces are free of pits, crevices, ledges, bolts, and rivet heads.
3. Rounded edges and internal curves are covered with finished smooth surfaces.
4. Coating materials are resistant to cracking and chipping.
5. Non-toxic and non-absorbent materials should not impart odor, color, or taste to food.
6. Preferably food contact surfaces should be made of stainless steel material.
7. Cutting/chopping boards are frequently identified as source of cross contamination. Cutting boards shall be made of non-absorbent materials and resistant to knife cuts and cracks. Cutting boards shall be washed and sanitized properly after each use. Color-coded boards shall be provided for different food preparation activities.
8. Floor mounted equipment should be either sealed directly to the floor or mounted at least 15 cm from the floor.
9. Processing equipment should have 0.5 m of clear space around its perimeter to facilitate cleaning and maintenance.
10. Any equipment or utensils including cutting boards with crack or chipped part shall be discarded and replaced.
11. Cleaning schedules and protocols should be detailed and comprehensive to include every piece of equipment including mobile items, fixtures, floors, walls, and all other areas of the kitchen and food service area.
12. Refrigerators, dishwashing machines, and hot holding cabinets will be monitored daily for correct temperatures and temperature logs shall be kept.
13. Refrigerators, hot holding cabinets, and ice chests will be cleaned and sanitized when visibly dirty and weekly.

D. Food Handling

1. Frozen meat/poultry/fish shall be thawed either in a refrigerator with cover, date-labeled, and placed in a drip pan; or immersed under running water; or in a microwave for immediate cooking.
2. Raw fruits and vegetables shall be washed thoroughly before being cooked. Raw vegetables and fruits to be served raw shall be sanitized in a solution of 100-mg/l residual chlorine within a minimum of 10 minutes contact time.

3. Cross contamination via raw food to processed food or soiled utensils to food shall be avoided at all times.
4. Food and utensils being transported must be properly covered and kept at room temperature inside clean vehicles. Chilled food should be transported in refrigerated vehicles or cold containers; while hot food shall be transported in insulated containers.
5. Food items should not be left uncovered in areas where flies, insects, dusts, or other agents may contaminate them.
6. Within the food service area and any patient kitchenette area operated by the Food Service Department, only hospital prepared food should be stored in the refrigerator.
7. Food samples of all prepared and distributed meals should be properly labeled when stored in the refrigerator for a maximum of twenty four (24) hours only.
8. Food on display shall be protected from contamination by using easily cleaned counter-protector casing and similar equipment. Utensil dispensers should be separated from the food service counter, especially in self-service areas.
9. Food should not be prepared way in advance of the intended service time.
10. Kitchen supervisors shall conduct regular food and sanitation inspections and document findings, recommendations, and required actions.

E. Storage and Temperature Requirements

Refer to **ICM-VIII-01** Nutrition Services Section D, for detailed recommendations on storing food and temperature requirements.

F. Cleaning and Sanitization of Utensils

1. Utensils shall be disassembled before cleaning.
2. Cleaning utensils using a dishwasher should maintain the wash/rinse cycle temperature at 74^{O}C and the sanitization temperature at 82^{O}C.
3. Manual washing should be done in a four-compartment sink. The sanitization phase can be done by using hot water (77^{O}C) or by contact solution of 100-ppm residual chlorine for 30 seconds.
4. Manual dishwasher shall be designed into pre-scrape, wash, rinse and sanitize compartments with splash guard installed on both sides of the four-compartment sink.
5. All cleaned and sanitized equipment shall be allowed to air dry or drained (bottoms-up) on racks in a separate area. Towel drying is prohibited.

G. Waste Disposal and Pest Control

1. Refuse bin, trash can, or dumpster must be kept covered at all times. These must be emptied frequently from the kitchen area.
2. The garbage room's walls, ceilings, floor and all attachments shall be constructed of smooth, easily cleanable, non-absorbent material. The floor shall be sloped leading to a trapped floor drain. The structure should be insect and rodent proof and the entrance to the room shall be fitted with an air curtain device. The room should be thoroughly clean, disinfected twice daily, and properly maintained. Garbage storage room shall not be located inside the food facility.
3. Refuse containers distributed around the kitchen shall be thoroughly washed with hot water and detergent outside of the kitchen whenever emptied.

4. Pest control practices will be implemented in coordination with the Pest Control Committee.
5. All outer openings shall be kept closed at all times to minimize entrance of flies, rodents and other vermin to the Food Service area.
6. Encourage strict implementation of the integrated pest management program.

H. Design and Construction

1. False ceilings are not recommended. If installed, it should be constructed completely sealed off from the processing areas.
2. Walls, floors, and ceilings should be impervious to water, non-absorbent, free of cracks and crevices, resistant to chemicals, easily cleaned, and properly maintained.
3. There should be an orderly sequential handling of the product from the receiving dock, into the storage area, to the preparation area, process area, packaging area, and serving area.
4. Stainless steel is the preferred material for food contact surfaces. Any other material to be used should be resistant to corrosion, abrasion and thermal shock, easily cleanable and resistant to sanitizers.
5. Dressing rooms or lockers should be provided for employees.
6. Hand washing facilities shall be in locations accessible to food service staff where hands are more likely to become soiled, especially in food preparation and serving areas, locker rooms, and dressing rooms. Sinks shall be provided with warm running water, hand soap, and paper towel dispensers at all times.
7. Floors in kitchen areas and toilet rooms should be sloped to 1/8 to 1/4 in/ft to a drain. A trapped floor drain is needed for every 400 ft^2 of floor area, with the length of travel to the drain not more than 15 ft.
8. The line or point of junction between the wall and the floor, and with built-in equipment should form a tight sanitary cove and smooth flush connection.
9. The wall painting should be light colored in work and processing areas.
10. Hollow walls and partitions, hung ceilings and boxed-in pipes and equipment shall be eliminated.
11. A minimum of 30 ft-c (candle) to 100 ft-c lighting shall be maintained, 70 ft-c is the minimum requirement for the kitchen and food processing areas.
12. Food facility construction plans whether newly constructed or remodeled food facility shall be submitted to the IP&C Department for review and approval.
13. Food facilities shall submit the menu for review and approval by IP&C.
14. All newly constructed and/or remodeled food facilities in any hospital shall be inspected prior to opening for business.

I. Maintenance

1. Facility Management & Safety (Utilities and Maintenance) should maintain a schedule for routine inspection and cleaning of ventilation ducts and lights.
2. There should be a schedule for preventive maintenance of all equipment to ensure proper functioning at all times.
3. There must be a procedure for sanitizing equipment after maintenance work.
4. Greasy filter hoods should be removed, cleaned, and sanitized using a 100-ppm chlorine solution on a monthly basis, and when necessary.

J. Signage

The following signs must be displayed in specific places in the Food Service areas.

Sign	Place
No Smoking	All areas
Wash Your Hands	Inside lavatory doors, over wash basins and at food preparation areas
Temperature Charts	On dishwashers, freezers, and refrigerators
Equipment Cleaning and preventive maintenance	On or near all equipment
Cleaning Schedules	On bulletin boards

K. Cleaning Procedures

Cleaning materials include: clean cloth, germicidal detergent, clean mops, buckets, clean dust mops, upholstery cleaning solution, bucket for germicidal solution, rubber gloves, and vacuum cleaner.

1. All used dishes will be removed from dining tables as soon as possible after use.
2. Used dishes will be collected and stored in covered carts in the dining halls. Full carts will be transported to the dishwashing area of the kitchen, cleared, and placed in the dishwasher.
3. Tabletops in the dining halls will be cleaned using a hospital-approved detergent germicide when soiled and after every clearance of meal trays or dishes.
4. All chairs and wall benches will be cleaned of spillage. When soiled, they will be shampooed with upholstery cleaning solution. Wall benches will be vacuumed before being shampooed.
5. All windows will be cleaned once every week and spot cleaned whenever soiled.
6. All walls will be washed once a month and spot cleaned daily.
7. All space dividers will be cleaned with a detergent germicide once a month.
8. Plastic plants will be dusted weekly and washed once per month.
9. All ceiling vents will be cleaned once a month.
10. All floors will be wet-mopped after each meal service. When wet mopping, all dirt and trash must be picked up at once and not allowed to accumulate in walkways.
11. All floors in the dining halls will be kept free of spilled foods, mopped daily, and cleaned with a scrubbing machine once a week. Dining halls may be closed for cleaning for one hour during the night shift. Chairs will be pulled out from the tables and floors scrubbed using detergent germicide.
12. Containers of sugar and other condiments shall be kept clean at all times.
13. All used cleaning cloths and mops will be placed in plastic bags and sent for laundering daily.
14. Mops and buckets must be rinsed and emptied after use. Buckets must not be left with dirty mop and water in them; they should be cleaned thoroughly after use.

TITLE/DESCRIPTION:	INDEX NUMBER
HOUSEKEEPING	**ICM - X- 07**

EFFECTIVE DATE:	APPLIES TO:	ISSUING AUTHORITY:
01/01/2009 **01/01/2013** **01/01/2018**	**All GCC Countries**	**GULF COOPERATION COUNCIL – CENTRE FOR INFECTION CONTROL (GCC-CIC)**

DEFINITION

To develop and maintain effective and efficient cleaning methods and schedules which are necessary to provide a clean healthy environment for patients, staff and visitors.

REFERENCE

1. Ontario Agency for Health Protection and Promotion, Provincial Infectious Diseases Advisory Committee. Best Practices for Environmental Cleaning for Prevention and Control of Infectious in All Health Care Settings. 2nd Revision. Toronto, ON: Queen's Printer for Ontario; 2012.
2. HICPAC. Guidelines for environmental infection control in health-care facilities: Recommendations of CDC and the Health Care Infection Control Practices Advisory Committee (HICPAC). 2003. U.S. Department of Health and Human Services Centers for Disease Control and Prevention (CDC) Atlanta, GA 30333. Association for Professionals in Infection Control (APIC) and Epidemiology, Inc. (2014). Chapter 107: Environmental Services. In APIC Text of infection control and epidemiology, 4th ed.
3. Minnesota Hospital Association. Environmental services cleaning guidebook: controlling CDI environmental services. Adapted from Allina Hospitals and Clinics Environmental Services Cleaning Guidebook by the Minnesota Hospital Association (MHA), Minnesota Department of Health (MDH) and Stratis Health, with representatives from: Central Care Health – Melrose, Grand Itasca Clinic and Hospital, Minnesota Valley Health Center, Park Nicollet Methodist Hospital, United Hospital, University of Minnesota Medical Center, and Windom Area Hospital, as part of the "Controlling CDI" project. (2013).
4. United States Department of Labor. Occupational Safety & Health Administration. (OSHA). Housekeeping. https://www.osha.gov/SLTC/etools/hospital/housekeeping/ housekeeping.html

COMMENTS

1. Cleaning is a process that physically removes extraneous matter from devices, but does not destroy all micro-organisms. Cleaning usually involves soap and water, detergents orenzymatic agents.
2. Cleaning must precede disinfection, organic matter (soil, debris and blood stains) matter will act as physical protection of the microbe which may inactivate the disinfectant, therefore, cleaning must precede disinfection.
3. Disinfection is the removal or destruction of micro-organisms but not necessarily bacterial spores and/or some viruses.
4. When purchasing cleaning agents or equipment, consideration must be given to occupational health. Follow the manufacturer's instructions for dilution and contact time, safety data sheet (SDS) for healthcare workers (HCWs), patient safety, and environmental safety issue.
5. Daily cleaning consist of routine procedures for cleaning, dusting, mopping and vacuuming all patient care and public areas in the healthcare facility.
6. Terminal cleaning is the thorough, extensive cleaning and disinfection of the environmental surfaces including points that are hard to reach. It is indicated after a patient is discharged home, or after a patient died, after using a clinical area occupied by a highly infectious patient, and if performed in the operating room at the end of each day or shift.

HOUSEKEEPING	ICM - X- 07

POLICY

1. There will be an appropriate written schedule for cleaning and decontamination of all areas of the hospital.
2. Cleaning must be performed in a systematic manner to ensure all surfaces are cleaned. After selecting a starting point on either a clockwise or counterclockwise direction.
3. Cleaning procedure should begin with the least soiled areas and move to the most soiled areas.
4. Cleaning also proceeds from high to low surfaces, allowing dust and debris from high surfaces to fall to lower ones before lower surfaces are clean.
5. The frequency of cleaning and disinfecting individual items or surfaces in a particular area depends on whether surfaces are:
    a. High touch – are those that have frequent contact with hands. Examples include door-knobs, elevator buttons, telephones, call bells, bedrails, light switches, computer keyboards, monitoring equipment, hemodialysis machines, wall areas around toilet and edges of privacy curtains. High touch surfaces in care areas require more frequent cleaning and disinfection than minimal contact surfaces. Cleaning and disinfection is usually done at least daily or per shift and more frequently if the risk of environmental contamination is higher (e.g., intensive care units).
    b. Low touch – are those that have minimal contact with hands. Examples include floors, walls, mirrors and window sills. Low-touch surfaces require cleaning at least on a daily basis or whenever soiling or spills occur.
6. Avoid large-surface cleaning methods that produce mist or aerosols or disperse dust in patient care areas.
7. Follow proper procedure for effective use of mops, cloths, and solution:
    a. Prepare cleaning solution daily, or as needed and replace with fresh solution as needed.
    b. Use clean mops and cloths every time a bucket of cleaning solution is emptied and replenished with clean, fresh solution. Used mop heads should be sent to the laundry on a daily basis.
8. For the operating rooms, cleaning must be done every after each cases or after the last surgical procedure of the day or night, wet vacuum or mop the operating room floors with a single used mop head or a clean mop head with a hospital-approved disinfectant.
9. Use proper dusting methods for all patient care areas especially immunosuppressed patient's areas. Wet-dust horizontal surfaces daily using cloths moistened with hospital-approved disinfectant to avoid dispersal of dust.
10. Close the doors of immunocompromised patient's room when vacuuming the corridors and floors to minimize exposure to airborne dust. Use only vacuum with HEPA filters in high-risk areas.
11. Try to avoid using phenolic disinfectant in the neonatal units.
12. Cleaning products shall be selected on the basis of use, efficacy, acceptability, safety and cost.
13. All cleaning products and chemicals shall be reviewed and approved by the IP&C Department based on the safety data sheets (SDS) available for reference.
14. All housekeeping staff shall be made aware of and adhere to Isolation Precautions, Standard Precautions and SDS instructions in patient care areas and must be educated on the cleaning agents, disinfectants, proper dilution and contact time.

PROCEDURE

A. Resources Required

1. Adequately trained housekeeping staff;
2. Personal protective equipment (PPEs);
3. Hospital-approved disinfectants and cleaning agents;
4. Appropriate cleaning equipment and materials.

B. Routine Practices

Housekeeping staff must adhere to Standard Precautions and if required Expanded Precautions when performing routine practices of cleaning and following infection control measures. Routine practices related to environmental cleaning include:

1. Hand hygiene as the most important and effective measure to prevent the spread of healthcare associated infections. Hand hygiene must be practiced:
   a. Before initial patient environment contact (e.g., before coming into the patient's room or bed space).
   b. After potential body fluid exposure (e.g., after cleaning bathroom, handling soiled linen, equipment or waste).
   c. After patient environment contact (e.g., after cleaning client/patient/resident room; after cleaning equipment such as stretchers; after changing mop heads).
   d. After using the toilet.
   It is necessary to clean hands after removing gloves. The use of gloves does not replace the need for hand hygiene.
2. Cleaning staff should wear and use Personal Protective Equipment (PPEs):
   a. Gloves - when there is risk of hand contact with contaminated items with blood and body fluids.
   b. Gown - if contamination of uniform or clothing is anticipated (e.g., cleaning bed of incontinent patient/resident).
   c. Mask and eye protection or face shield - where appropriate to protect the mucous membrane of the eyes, nose and mouth during activities where sprays of secretion are likely.

C. Cleaning Protocols

1. Environmental surfaces (housekeeping responsibilities)
   a. Dusting should only be done if the patient's room is vacant.
      i. To capture dust without aerosolizing spores, it should be performed using a wet cloth or dust mop that is treated with hospital-approved disinfectants. Do not shake dusters.
      ii. Use a "high duster" when dusting surfaces and fixtures above shoulder heights such as top of doors, wall-mounted televisions, overhead lights, pictures, high shelves, and ledges.
      iii. Inspect ceilings, ceiling tiles, and walls during the dusting procedure for peeling areas and stains which would indicate holes in the roofs and/or leaks from pipes above dropped ceilings or behind walls.

b. Walls, windows, and doors
   i. Spot clean walls, windows, and doors as needed and completely clean on a regular schedule.
   ii. Clean door handles and light switches at least daily and more frequently if an outbreak is occurring, and when a patient is discharged or transferred.

c. Horizontal surfaces should be wiped at least daily or in between patients (e.g., in procedure rooms) high touch horizontal surfaces and when visibly soiled with a clean cloth impregnated with a hospital-approved disinfectant. Refer to Table I for examples of high touch surfaces.

d. Mattresses and pillow covers must be made of moisture-resistant material and easy to clean.
   i. Clean and disinfect using hospital-approved disinfectant following the manufacturer's recommendations between each patient and when visibly soiled.
   ii. Fabric covers are not recommended and if used, they must be laundered between patients.

e. Curtains
   i. Curtains vary by patient and are high touch items. When patients are not on Isolation Precaution, it should be cleaned or changed on a routine schedule and when visibly soiled.
   ii. If a patient is on isolation, it is recommended to change the curtain after the patient is discharged, transferred, or taken out of isolation.

f. Window treatments usually consist of curtains, shades, and blinds. They are not frequently touched and do not need to be changed often. Consider changing or cleaning on a regular schedule or when visibly soiled.

2. Daily cleaning of patient's room and bathroom
   a. **Occupied room cleaning** - each hospital will set standards regarding the type of cleaning cloths and number of cloths used per room.

Before cleaning occupied room: • Check for isolation status • Always perform hand hygiene • Don appropriate PPE • Check sharps container. Change if necessary • Empty the trash container. Handle plastic bags from top.	**DO NOT WEAR DIRTY GLOVES OUTSIDE THE ROOM** If you have to leave the room after you have started a room clean, remove your gloves and perform hand hygiene. Put a new pair of gloves on to resume cleaning.
PATIENT ROOM: Clean and disinfect using disinfectant and cleaning rags.	**PATIENT RESTROOM:** Clean and disinfect using disinfectant and cleaning rags.
Change rag as needed to ensure saturation **NO DOUBLE DIPPING**	Change rag as needed to ensure saturation **NO DOUBLE DIPPING**
PATIENT ROOM: • Raise and wipe down arm rails – high touch area • Wipe foot of bed • If the call box or phone is on the bed, wipe down at this time	PATIENT ROOM: • Light switches – high touch area • Door handles, knobs – high touch area • Hand rails – high touch area • Sink and sink counter – high touch area • Clean soap and paper towel dispensers • Wipe shower or tub • Spot walls
CHANGE RAG AND START WITH A FRESH ONE AFTER CLEANING THE BED	**CHANGE RAG AND START WITH A FRESH ONE AFTER CLEANING THE TOILET**

Move from door and sanitize all equipment (Restroom to be done last)	• Toilet paper dispenser • Toilet flusher- high touch area • Toilet seat – high touch area • Under the bowl • Toilet rim • Clean the inside of bowl with disinfectant cleaner and toilet brush • Clean commode frame and seat cover LAST
Ledges (below shoulder height) • Door handles, knobs • Light switches • Call box • Telephone • Window sills and ledges • Computer keyboard • Soiled linen hamper lid • In-room patient sink and faucet • In-room soap dispenser and paper towel dispenser • Biohazard can • Dry erase marker • Over bed table • Patient chairs • Bedside tables • All other easily accessible wall mounted equipment	BEFORE LEAVING THE ROOM: • **Remove gloves and perform hand hygiene** • **Restock supplies** • **Place wet floor sign in the doorway** • **Mop floor – never shake mop** • **Perform hand hygiene**

b. **Terminal room cleaning** - each hospital is to set standards regarding cloth colors, product selection and number of cloths used per room

Before terminal room cleaning:

- Change room status to "Cleaning in progress"
- Always perform hand hygiene
- Don appropriate PPE
- Remove all soiled linen
- Wipe down equipment with disinfectant and then remove from room
- Remove linen from bed and place into linen hamper
- Remove any patient equipment from room per hospital procedure, place IV poles with bags on them by door and notify nursing staff
- Remove oxygen tubing and make sure oxygen is off
- Check room for previous patient belongings – take any items to the nursing station
- Check sharps container. Change if necessary.
- Empty the trash container. Handle plastic bags from the top.
- Discard open facial tissue boxes and used paper rolls.
- Perform high dusting with an extending lamb's wool duster all areas above shoulder height .

DO NOT WEAR DIRTY GLOVES OUTSIDE OF THE ROOM

If you have to leave the room after you have started a room clean, remove your gloves and perform hand hygiene. Put a new pair of gloves on to resume cleaning.

PATIENT ROOM: Clean and disinfect using disinfectant and cleaning rags. Change rag as needed to ensure saturation **NO DOUBLE DIPPING**	**PATIENT RESTROOM: Clean and disinfect using disinfectant and cleaning rags. Change rag as needed to ensure saturation** **NO DOUBLE DIPPING**
PATIENT BED: • Raise foot and head of bed before starting • Hand rails • Mattress – top and bottom Pillows – place cleaned pillow back on mattress	• Light switches • Door handles, knobs • Hand rails • Sink and sink counter • Clean soap and paper towel dispensers • Wipe shower or tub • Spot walls

CHANGE RAG AND START WITH A FRESH ONE AFTER CLEANING THE BED	CHANGE RAG AND START WITH A FRESH ONE AFTER CLEANING THE TOILET
Move from door and sanitize all equipment (Restroom to be done last)	• Toilet flusher- high touch area • Toilet seat – high touch area • Under the bowl • Toilet rim • Clean the inside of bowl with disinfectant cleaner and toilet brush • Clean commode frame and seat cover
Ledges (below shoulder height) • Door, door handles, knobs • Light switches • Call box • Telephone • Pt. storage cabinets & drawers – hosp. info book • Window sills and ledges • Computer keyboard • Soiled linen hamper lid • In-room patient sink and faucet • In-room soap dispenser and paper towel dispenser • Biohazard can • Dry erase marker • Over bed table • Patient chairs • Bedside tables • Thermostat – check with maintenance for temperature • Glove boxes • All other easily accessible wall mounted equipment	**BEFORE LEAVING THE ROOM** • Remove gloves and perform hand hygiene • Restock supplies • Make up bed – will depend on location • Place wet floor sign in doorway • Final check for room cleanliness • Final maintenance check – lights and repairs • Mop floor – never shake mop • Change room status to “ready” • Remove wet floor sign- after floor has dried

D. Strategies for Routine Cleaning of Non-critical Medical Equipment (Nursing and Allied healthcare workers’ responsibilities)

1. Follow manufacturer’s instructions on the cleaning protocol specific to their equipment. These instructions should include information about materials compatibility with chemical germicides, whether or not the equipment can be safely immersed for cleaning, and how the equipment should be decontaminated if servicing is required.
2. Use impervious-backed paper, plastic or fluid-resistant covers as barrier protection. Barrier protection of surfaces and equipment is useful, especially if these surfaces are:
   a. Touched frequently by gloved hands during the delivery of patient care;
   b. Likely to become contaminated with body substances; and
   c. Difficult to clean.
3. Frequency of cleaning depends on the usage of equipment:
   a. If the equipment is shared with other patients (i.e., b/p cuff) it has to be disinfected every after patient use.
   b. If the equipment is dedicated to a single patient in a patient’s room, it has to be cleaned and disinfected at the end of the day or shift, or whenever it is soiled and when the patient is discharged. Refer to hospital policy on cleaning and disinfection of equipment.

E. Cleaning Strategies for Spills of Blood and Body Fluids

1. Promptly clean and decontaminate spills of blood or other potentially infectious materials.
2. Follow proper procedures for site decontamination of blood and body fluid spills. Refer to policy **ICM-IX-02** Management of Infectious Wastes Section D for blood spills and spills of Other Potentially Infectious Material (OPIM).

F. Flowers and Plants in Patient-Care Areas

Flowers and potted plants are not allowed in patient rooms of immunosuppressed patient's room. Some precautions for general public settings are:

1. Advise hospital staff to wear gloves when handling plants.
2. Wash hands after handling plants.

G. Monitoring Cleanliness

1. Each hospital needs to establish a monitoring tool for assessing cleanliness and quality control. Checklist and audit tools will assist supervisory staff in monitoring and documenting cleaning and disinfection of environmental surfaces and medical equipment.
2. Auditing the cleanliness of health care setting periodically and whenever changes to methodologies are made essential to ensure that achievable standards are maintained. Refer to sample checklist from CDC **Table 2-X-07**. Environmental Checklist for Monitoring Terminal Cleaning.

Table I-X-07 Examples of High-Touch Surfaces

Patient room	Bathroom	Operating room
Bed controls	Bedpan cleaners/flushers	Anesthesia equipment & controls
Bed rails	Call light	Anesthesia supply cart
Bedside table	Doorknobs	Arm boards
Over bed table	Faucet handles	Autoclave door handles
Cabinet knobs Call light	Handrails Hand held shower handles	Back table Computer keyboard
Doorknobs	Light switch	Door handles
IV poles	Sinks	IV poles
Chair	Toilet flush	Light switches
Room sink Telephone	Toilet seat	Mayo stand Medication cart
Chair arms/seat		Operating bed
Computer keyboard		Operating bed controls
Handheld Television controls		Operating bed straps
Ventilator controls		Overhead surgical lights
Thermometer		Patient monitors
Blood pressure cuff		Ring stand
		Sponge counter
		Storage cabinet door handles Telephone
		Warm door handles

Table 2-X-07 CDC Environmental Checklist for Monitoring Terminal Cleaning

Date:	
Unit:	
Room Number:	
Initials of ES staff (optional):[2]	

Evaluate the following priority sites for each patient room:

High-touch Room Surfaces[3]	Cleaned	Not Cleaned	Not Present in Room
Bed rails / controls			
Tray table			
IV pole (grab area)			
Call box / button			
Telephone			
Bedside table handle			
Chair			
Room sink			
Room light switch			
Room inner door knob			
Bathroom inner door knob / plate			
Bathroom light switch			
Bathroom handrails by toilet			
Bathroom sink			
Toilet seat			
Toilet flush handle			
Toilet bedpan cleaner			

Evaluate the following additional sites if these equipment are present in the room:

High-touch Room Surfaces[3]	Cleaned	Not Cleaned	Not Present in Room
IV pump control			
Multi-module monitor controls			
Multi-module monitor touch screen			
Multi-module monitor cables			
Ventilator control panel			

Mark the monitoring method used:

☐ Direct observation ☐ Fluorescent gel
☐ Swab cultures ☐ ATP system ☐ Agar slide cultures

1. Selection of detergents and disinfectants should be according to institutional policies and procedures.
2. Hospitals may choose to include identifiers of individual environmental services staff for feedback purposes.
3. Sites most frequently contaminated and touched by patients and/or healthcare workers.

TITLE/DESCRIPTION:	INDEX NUMBER
PEST CONTROL	**ICM - X- 08**

EFFECTIVE DATE:	APPLIES TO:	ISSUING AUTHORITY:
01/01/2009 **01/01/2013** **01/01/2018**	**All GCC Countries**	**GULF COOPERATION COUNCIL – CENTRE FOR INFECTION CONTROL (GCC-CIC)**

DEFINITION

To provide guidelines for coordinated efforts in addressing and controlling pest-related issues in the healthcare facility.

REFERENCE

Pesticides. Healthcare Without Harm. Downloaded from: https://noharm-uscanada.org/issues/us-canada/pesticides

COMMENTS

Integrated Pest Management (IPM) is widely accepted to be the most effective approach to pest management using non-toxic methods, such as improved sanitation and structural maintenance, mechanical and biological control, and cultural practices. IPM helps healthcare facilities reduce their dependence on pesticides.

Cockroaches, flies, ants, mosquitoes, mites, mice, rats, lizards, pigeons, stray cats, dogs, and occasionally, snakes are pests that may constitute a nuisance or an infestation in healthcare facilities. Pests are agents or vectors for the mechanical transmission of micro-organisms causing infections.

Insect habitats are characterized by warmth, moisture, and availability of food. Insects forage and feed on substrates, including but not limited to food scraps from kitchens, food from vending machines, discharges on dressings, other forms of human detritus, medical wastes, human wastes, and routine solid waste.

The direct association of insects with disease transmission (apart from vector transmission) is small. However, prevention efforts are recommended.

Modern approaches to IPM usually focus on:

1. Eliminating food sources, indoor habitats, and other conditions that attract pests.
2. Excluding pests from the indoor environments.
3. Applying pesticides as needed.

Pigeons can also cause serious health effects and diseases. Recommended ways to contain issues related to pigeon nuisances, especially, in housing facilities are as follow:

1. Remove the AC units from outside to inside the housing units to prevent nesting activities.
2. Remove the decorative brown balconies to avoid the presence of pigeons around housing unit.
3. Use electrical shock on rooftops on each housing building to scare the pigeons.
4. Use available pharmaceutical anesthetic seeds such as 98% Alpha-Chloralose powder.
5. Implement an effective maintenance program on a regular basis to clean all traces of pigeon excretions in healthcare and housing facilities.

Three human diseases known to be associated with pigeon droppings are Histoplasmosis, Cryptococcosis, and Psittacosis.

Organophosphate affects the nervous system by reducing the ability of an enzyme called cholinesterase to function properly in regulating a neurotransmitter called acetylcholine. Acetylcholine helps transfer nerve impulses from a nerve cell to a muscle cell or another nerve cell. If acetylcholine is not properly controlled by cholinesterase, the nerve impulses or neurons remain active longer than they should, over stimulating the nerves and muscles and causing symptoms such as weakness or paralysis of the muscles. (See **Table 1-X-08** Pesticides and **Table 2-X-08** Banned Pesticides)

PROCEDURES

1. IP&C will monitor the staff working in Pest Control and those who are using pesticides for cholinesterase level. Should results be not satisfactory, then such cases will be subject for investigation and reporting by the IP&C Department.
2. A Pest Control Committee may be organized composed of the Support Services Director, representative from IP&C, Pest Control Service supervisor, Housing Manager, Housekeeping Supervisor, and Pest Control subcontractor supervisor. The functions of this committee are as follow:
   a. Discuss progress of pest control activities;
   b. Monitor and evaluate pest control activities;
   c. Solve problems facing pest control activities;
   d. Point out deficiencies in pest control activities and recommends rectifications;
   e. Discuss and rule on contractor's discrepancies.
3. Pre-foundation pest control treatment: planning and designing of facilities need to guarantee that every expansion and new project has to include pre-foundation pest control treatment that gives warranty of 20 years termite free buildings.
4. Problem areas where pest control personnel must check frequently and spray under and behind to kill the pests effectively are:
   a. Wall-side skirting is a possible breeding place for cockroaches.
   b. Loose or missing door rubber gaskets are common hiding place for cockroaches.
   c. Cabinets with closed base that are difficult to clean under where pests can hide.
   d. Window ledges that help birds to nest and breed.

Table 1-X-08: Pesticides

Organophosphate Pesticides	
Acephate	Mevinphos
Azinphos-methyl	Monocrotophos
Bensulide	Naled
Cadusafos	Oxydemeton methyl
Chlorethoxyfos	Phorate
Chlorpyrifos	Phosalone
Chlorpyrifos methyl	Phosmet
Chlorthiophos	Phosphamidon
Coumaphos	Phostebupirim
Dialiflor	Pirimiphos methyl
Diazinon	Profenofos
Dichlorvos (DDVP)	Propetamphos
Dicrotophos	Sulfotepp
Dimethoate	Sulprofos
Dioxathion**	Temephos
Disulfoton	Terbufos
Ethion	Tetrachlorvinphos
Ethoprop	Tribufos (DEF)
Ethyl parathion	Trichlorfon
Fenamiphos	
Fenitrothion	
Fenthion	
Fonofos	
Isazophos methyl	
Isofenphos	
Malathion	
Methamidophos	
Methidathion	
Methyl parathion	

Table 2-X-08: Banned Pesticides

#	Common Name of Active Ingredient	Oral LD 50 (Rats)		Use	Reason for Banning
		Class	mg a.i/kg. Body wt		
1.	Aldrin	Class I	38-67	Insecticide	High acute mammalian toxicity, persistence in the environment, possible human carcinogen.
2.	BHC, HCH (1,2,3,4,5,6-Hexachlorocyclohexane)	Class II	-	Insecticide	Carcinogenic to animals, persistence and bioaccumulation, adverse environmental effects.
3.	Camphochlor	Class I	69	Insecticide	Risks for human and animal health and the environment, long persistence and bioaccumulation.
4.	Carbofuran	Class I, II	8	Soil Insecticide Nematicide	Acute inhalation toxicity, only liquid formulation to be banned.
5.	Chlordane	Class II	367-515	Termiticide	Carcinogenic to rodents, persistence and bioaccumulation in the environmental.
6.	Chlodrecone	Class II	114-140	Insecticide	Carcinogenic to rodents, persistence and bioaccumulation in the environmental.
7.	DDT (Dichloro-Diphey trichloroethane)	Class III	113	Insecticide	Accumulation in humans, probably carcinogenic, persistence in the environment.
8.	Demetion-O + Demetion-S	Class I	2.5-6	Systemic Insecticide	High acute toxicity for man and animals.
9.	Demetion-S-methyl	Class I	30	Systemic Insecticide	High acute toxicity for man and animals
10.	Dichlorovos	Class I	50	Insecticide	Not acceptable in public health formulations for use inside houses and other structures because of its probable carcinogenic and mutagenic effect, may only be used in small percentages in tablets or strips for insect pheromone traps.
11.	Dieldrin	Class I	37-87	Insecticide	Persistence in the environmental.
12.	Disulfoton	Class I	4	Sys. Insect/ Acaricide	High acute toxicity.
13.	Endosulfan	Class I	22.7-160	Insecticide	High acute toxicity, high persistence and potential for bioaccumulation.
14.	Endrin	Class I	7-15	Insecticide	High acute toxicity, Central Nervous System Depressant and hepatotoxin, no antidote.
15.	Ethyl Pyrophosphate (TEPP)	Class I	1.2-2	Insecticide	Very high acute toxicity to man ns animal, quickly absorbed through the skin, its vapors highly toxic.
16.	Flueythrinate	Class I	67	Insecticide	Causes damage to the eye, very toxic by oral route and absorption through the skin, harmful if inhaled, causes carcinogenic effects to humans.
17.	Gamma HCH	Class II	88- 125	Insecticide	Persistence in the environment, Bioaccumulation in food and the human body, probably carcinogenic to man and there is evidence that it encourages the growth of tumors caused by other factors.

#	Common Name of Active Ingredient	Oral LD 50 (Rats)		Use	Reason for Banning
		Class	mg a.i/kg. Body wt		
18.	Heptachlor	Class II	147-220	Termiticide	Carcinogenic to rodents, persistence and environment contamination.
19.	Kelevan	-	-	Insecticide	Superseded
20.	Leptophos	Class II	52.8	Insecticide	High acute toxicity, delayed meurotoxicity to humans and to laboratory animals.
21.	Methamidophos	Class I	30	Insecticide	Highly toxic to mammals, there could always be health problems in misuse.
22.	Methomyl	Class I	17-24	Insecticide	Highly toxic to man and animals, all formulations to be banned.
23.	Methoxychlor	Class IV	6000	Insecticide	Long residual action (long persistence), bioaccumulation.
24.	Mevinphos	Class I	3-12	Systemic Insecticide	Poisonous if swallowed, inhaled or absorbed through the skin.
25.	Mirex	Class II	306	Insecticide	Persistence and bioaccumulation in food, superseded.
26.	Monocrotophos	Class I	14	Systemic Insecticide	High acute toxicity by oral, dermal and inhalation routes causing life-threatening symptoms.
27.	Oxamyl	Class I	5.4	Soil Insecticide/ Nematicide	Very high acute oral toxicity.
28.	Oxydemeton-methyl	Class I	65-80	Systemic Insecticide	Highly toxic to man and animals.
29.	Oxydeprofos	Class II	100	Systemic Insecticide	Highly toxic to man and animals.
30.	Parathion	Class I	6	Insecticide	High acute toxicity by oral, dermal and inhalation routes causing life-threatening symptoms, classified as class C carcinogen.
31.	Parathion-methyl	Class I	6	Insecticide	Very high acute toxicity.
32.	Phosphamidon	Class I	17-30	Systemic Insecticide	Poisonous if swallowed, inhaled or absorbed through the skin.
33.	Schradan	-	-	Systemic Insecticide	Poisonous if swallowed, inhaled or absorbed through the skin- superseded.
34.	Sodium Floride	Class II	180	Insecticide	Very toxic to mammals and highly phytotoxic, used in insect baits and for timber preservation.
35.	Strobane	Class II	220	Insecticide	Carcinogenic risk for humans, discontinued by manufacturing company.
36.	Telodrin	-	-	Insecticide	Superseded
37.	Chlordimeform	Class II	340	Acaricide	Probably human carcinogen.
38.	Chlorobenzilate	Class III	2.784-3.880	Acaricide	A risk of cancer to human's males.
39.	Cyhexaine	Class III	540	Acaricide	Tetratogenic effects in mammals.

#	Common Name of Active Ingredient	Oral LD 50 (Rats)		Use	Reason for Banning
		Class	mg a.i/kg. Body wt		
40	Dicofol	Class II, III	570-595	Acaricide	Potential bioaccumulation combined with persistence in the environment, may contain DDT as a contaminant (in the manufacturing process).
41.	Benomyl	Class IV	10.000	Systemic fungicide	Evidence of genetic disturbances and fetal defects, increase of tumor growth formed in laboratory mice by other factors.
42.	Captafol	Class IV	5000- 6000	Fungicide	Probably carcinogenic to humans.
43.	Chlorothalonil	Class I, II	10.000	Fungicide	Chronic administration has been associated with tumor formation in the kidney and fore stomach of laboratory rats and mice.
44.	Hexachlorobenzene (HCB)	Class IV	40.000	Fungicide (seed dressing)	Carcinogenic to laboratory animals, persistence and bioaccumulation.
45.	Mancozeb	Class IV	5000	Fungicide	At high levels may cause birth defects in test animals, a trace contaminant and a degradation product (ethylenethiourea) causes thyroid effects, tumors and birth defects in laboratory animals, moreover, this fungicide has long withholding periods of about one month.
46.	Maneb	Class IV	7990	Fungicide	At high levels may cause birth defects in test animals, a trace contaminant and a degradation product (ethylenethiourea) causes thyrodeffects, tumors and birth defects in laboratory animals.
47.	Mercury Compounds (e.g. Phenyl mercury acetate)	Class I	50-100	Fungicide & Herbicide	High acute toxicity, accumulation of residues in aquatic foods.
48.	Thiram	Class III	1000	Fungicide	Combination of several severe chronic toxicity effects.
49.	Zineb	Class IV	-	Fungicide	At high levels may cause birth defects in test animals, a trace contaminant and a degradation product (ethylenethiourea) causes thyrodeffects, tumors and birth defects in laboratory animals.
50.	Ziram	Class I	1000	Fungicide	Combination of several severe chronic toxicity effects.
51.	Amitrole, Aminotripole	Class III	5000	Herbicide	Risk of carcinogenic effects in humans.
52.	Atrazine	Class III	1869- 3080	Herbicide	Possible carcinogenic effects in humans.
53.	Cyanazine	Class II	182-380	Herbicide	Possible carcinogenic effects in humans.

#	Common Name of Active Ingredient	Oral LD 50 (Rats)		Use	Reason for Banning
		Class	mg a.i/kg. Body wt		
54.	Dinoseb	Class I	40-60	Herbicide	High acute toxicity, teratogenic and carcinogenic effects, many cause sterility to human males.
55.	Dinoseb Salts (e.g. Dinoseb Acetate)	Class I	40-60	Herbicide	High acute toxicity, teratogenic and carcinogenic effects, many cause sterility to human males.
56.	Nitrofen	Class III	2630	Herbicide	Risks of mutagenic, teratogenic and carcinogenic effects.
57.	Paraquat	Class II	150	Herbicide	High acute toxicity, no antidote.
58.	Simazine	Class IV	5000	Herbicide	Possible carcinogenic effects to humans.
59.	2,4,5-T (2,4,5-trichlorophenoxy acetic acid)	Class III	500	Herbicide	Possible teratogenic, carcinogenic effects to humans, long persistence and bio-accumulation
60.	Arsenic Compounds	_	_	Rodenticide	High acute toxicity, exceptions are the organic arsenicals, which are of low toxicity, used as selective herbicides.
61.	Fluoroacetamide	Class I	15	Rodenticide	High acute toxicity to man and other animals.
62.	Sodium Fluoroacetate	Class I	0.22	Rodenticide	Odorless, tasteless and fast acting, chiefly in the heart. Discontinued by the manufacturing company.
63.	Thallium Sulfate	Class I	16	Rodenticide	High acute toxicity, slow-acting cumulative poison.
64.	Zinc Phosphide	Class I	45.7	Rodenticide	High acute toxicity in all handling operations.
65.	Aldicarb	Class I	1	Sys. Insecticide / Nematacide	High acute toxicity.
66.	Chloropicrin	Class I	250		Highly toxic by inhalation, and toxic by ingestion, can injury to the heart.
67.	Dibromochloropropane (DBCP)	Class I	17-300	Soil Sterilant	May cause sterility to human males.
68.	Ethylene dibromide (EDB)	Class I	146	Soil Sterilant	Potential carcinogen to humans may cause sterility to males, persistence in ground water.
69.	Pentachlorophenol (PCP)	Class I	50-500		Adverse liver and kidney effects, possible carcinogenic to humans.

TITLE/DESCRIPTION:	INDEX NUMBER
CONSTRUCTION AND RENOVATION MEASURES IN THE HEALTHCARE FACILITY	**ICM - X- 09**

EFFECTIVE DATE:	APPLIES TO:	ISSUING AUTHORITY:
01/01/2009 **01/01/2013** **01/01/2018**	**All GCC Countries**	**GULF COOPERATION COUNCIL – CENTRE FOR INFECTION CONTROL (GCC-CIC)**

DEFINITION

To define the steps and precautionary measures to ensure that environmental health risk assessments, interventions, and infection control practices are incorporated into the planning of construction and renovation in the healthcare setting.

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7. Infection Control Toolkit Series: Construction and Renovation (APIC) (2002) publications. gc.ca/collections/collection_2016/aspc-phac/HP3-1-27-S2-eng.pdf (2016 version)
8. Laboratory Center for Disease Control (LCDC) Health Canada (1996). Division of Nosocomial and Occupational Infections: Decreasing the risk of construction -related nosocomial infections for hospitalized patients.
9. Joint Commission International (2013). Joint Commission International Accreditation Standards for Hospitals: Including Standards for Academic Medical Center Hospitals, Standards – Only Version, 5th Edition April 2014) pp 48&57. (FMS.4ME1-3, PCI.7.5 ME 2 & 3).

COMMENTS

1. This policy applies to all construction/renovation works within healthcare facilities by ensuring preventive maintenance are done (i.e., heating, ventilation and air conditioning (HVAC) system, ventilator cleaning, filter replacement, etc.) that may compromise and/or contaminate air and water supply.
2. Healthcare associated infections are caused by pathogens like Mycobacterium species, Aspergillus species, Legionella species present in the dust and debris generated by construction activities considered as major hazards.

3. Trained personnel from the Infection Prevention and Control Department (IP&C) will be involved and be pre-informed of all current and future construction activities at the healthcare facilities. IP&C personnel will be active team members in all phases of any construction/renovation projects where they will play a major role in providing education to workers and staff involved in the project to ensure that preventive measures are outlined, implemented, and maintained.
4. An established multidisciplinary team composed of IP&C, Safety and Engineering staff, with the involved clinical areas will ensure patient safety given that clear lines of communication among all concerned departments are in place.

PROCEDURE

A. Pre-Construction Preventive Measures

1. The composition of the multidisciplinary team will include representatives from all concerned departments. All parties must agree on the multidisciplinary action plan.
2. Seasonal effects related to infections should be considered in the work plan of projects.
3. An Infection Control Risk Assessment Form: Construction Permit (**Appendix 1-X-09**) will be completed and submitted by the proponent contractors and/or maintenance staff to the IPC office prior to the commencement of any project. This permit will be posted on the door of the work site by the project management department and a copy given to Facility Management & Safety or the department head hosting the construction work.
4. The completed construction renovation follow up form (**Appendix 6-X-09**) will be posted on the door of the work site by IP&C personnel indicating their findings and preventive measure recommendations as per the approved construction permit.
5. The IP&C trained personnel will provide information on the following Infection Control Risk Assessment (ICRA):

   Step 1: Identify the type of Construction project using **Appendix 2-X-09** Determining the Type of Construction / Renovation
   Step 2: Identify the Patient Risk Groups that might be affected using **Appendix 3-X-09** (Determining the Patient Risk Groups that will be Affected by the Construction/ Renovation).
   Step 3: Matching the Patient Risk Group (from step 2) with the type of Construction Project (from step 1) according to the IC Matrix-Class of Precautions
   Step 4: Based on the Patient Risk group as per the previous IC matrix, use **Appendix 4-X-09** Description of the Required Precautions by Class, which describes the category of infection control precautions involved during the construction project and upon completion of the project.

6. The Infection preventionist (IP) is responsible for observing and reporting any breaches in the ongoing construction and renovation activities in their assigned areas.
7. IP&C trained personnel will use the Walk-Through Assessment Form (**Appendix 5-X-09**) and will be responsible for:
   a. Identifying issues related to ventilation, plumbing, and electrical in terms of occurrence of probable outages.
   b. Identifying containment measures using prior assessment such as types of barriers (solid wall) and the need for HEPA filtration.

c. Ensuring renovation/construction area must be isolated from the occupied areas during construction and must have negative ventilation with respect to surrounding areas.
d. Considering potential risks of water damage and risks due to compromised structural integrity (i.e., walls ceiling and roof).
e. Managing working hours for the project and assess whether work can be carried out during non-patient care areas.
f. Planning to discuss the containment issues with the project team (e.g., traffic, house-keeping, waste management).

8. All contracted construction workers must be aware and trained on the health and safety risks to staff and patients during construction / renovation activities. It is the responsibility of the construction team to comply with the provisions in this policy outlined by IP&C Department.
9. Facility Management & Safety will be responsible in:
   a. Establishing traffic patterns for construction workers that will avoid patient care areas.
   b. Designating, if possible, an elevator to be used solely by the construction workers and ensure that the ventilation of the elevator cab and shaft is not re-circulated in the hospital.
   c. Establishing a mechanism to ensure timely resolution of problems.

B. Preventive Measures during Construction and Renovation

1. The involved hospital ward/department is responsible for addressing the needs of immunocompromised patients. They should be moved to an area away from the construction zone if the air quality cannot be assured during construction. Immunocompromised patients should wear a mask if it is necessary to transport them through or near the construction areas/zones.
2. Facility Management shall ensure that:
   a. All windows, doors, air intake and exhaust vents are sealed in areas of the hospital adjacent to buildings that are going to be demolished including areas confining susceptible patients, to prevent air and dust leaks into patient care areas.
   b. A dust barrier is created from the floor to the ceiling with the edges sealed. Plastic (for short-term projects) or sheetrock (for long-term projects) are examples of materials that can be used to seal the construction area.
   c. All windows, doors, vents, plumbing penetrations, electrical outlets and any other sources of potential air leak are sealed in the construction zone. Seal all holes, pipes, conduits and punctures appropriately.
   d. Negative air pressure within the construction zone should be maintained compared with adjacent areas. Air in the construction zone should be exhausted directly outside. If this is not possible, then the air should be filtered through a HEPA filter before being re-circulated in the hospital. The integrity of the HEPA filter should be assessed to ensure that it is not punctured or blocked.
   e. Any unused exhaust vents in the construction area have to be capped to prevent exhausted air from being drawn back into the facility.
   f. Air ducts and spaces above ceiling are vacuumed before the construction project in the involved areas is started and repeated before utilization of the area to ensure sufficient functioning. The mechanical or electrical fixtures must be cleaned before installation of ceiling tiles.

g. Work surfaces are water misted to control dust while cutting concrete wall or floor.
h. A mat with a sticky surface is placed directly outside the impermeable barrier (anteroom), to trap dust from the equipment and shoes of personnel leaving the construction zone. Change mat on a daily basis.
i. The construction zone is cleaned daily using a wet mop technique.
j. Used supplies and equipment are enclosed in covered containers when being transported out of the area to prevent spillage.
k. Debris from construction in the clinical areas should be removed using covered containers/carts by the construction workers during periods of low activity, as much as possible (i.e., after hours and visits).
l. An external chute is used if necessary for removal of debris if construction is not taking place on ground level.
m. Faucet aerators and other obstructing and stagnating features (e.g., long pipes and plumbing dead-ends) are removed, if possible.
n. Dust suppression is maintained in outdoor construction sites.
o. Copper-8-quinolinolate formulation is considered for application to walls, doors, frames, baseboards, exterior surfaces of radiators, vents in the rooms of the construction area and above false ceilings in adjacent areas.
p. Installation of cleaned ceiling tiles is secured with silicone sealant.
q. The partition floor track is clean prior to installation of sound insulation and closing of partition.

3. All departments are responsible for reporting any discoloration of water promptly to maintenance and infection control personnel. Alternate water sources should be considered for patient use.
4. Construction workers should wear protective equipment based on the construction and renovation risk assessment and monitored by the contractor/safety personnel. These include the use of masks for any dust generating procedure. To limit dust dispersion, if there is no external non-patient area exit, construction workers must remove the protective equipment and vacuum to remove the dust from their clothing before leaving the construction zone.
5. All personnel entering work site are required to wear appropriate personal protective equipment (PPE) indicated by the contractor/safety personnel.
6. Trained personnel from IP&C will regularly visit the construction site until the project is completed to ensure all preventive measures are being adhered to, or appropriate modifications are completed if there are any on-site design changes. Any onsite observations or citations will be brought to the attention of Facility Management & Safety and IP&C Director.
7. Housekeeping are responsible for ensuring that adjacent areas are vacuumed daily or more frequently if needed with HEPA filtered vacuums.
8. Facility Management & Safety in coordination with the trained staffl from IP&C will ensure adequate installation of instructions and signage.

C. Post-Construction Preventive Measures

1. Facility Management will be responsible for ensuring that the following procedures have been complied with:
   a. Thoroughly clean construction zone, including all horizontal surfaces, before the barrier is removed, and again after the barrier is removed and before patients are readmitted to the area. Allow time for all dust to settle before doing terminal cleaning.

b. Ensure that the multidisciplinary team or designee conducts a final walk-through to ensure ventilation system is functioning properly in the constructed area and adjacent areas. Flush water lines prior to use if these were disrupted.
c. Consider hyper chlorinating stagnant potable water or superheating and flushing all distal sites before restoring or repressurizing the water system if there are concerns about Legionella and Aspergillus. Refer to **ICM-X-11** Prevention of Legionella in the Healthcare Setting.
d. Disinfect unused cooling towers and water supply in unoccupied portions of the buildings before they are put in use.
e. Assess hot water temperature to determine that it meets the standards set by the healthcare facility.
f. Ensure that controlled pressure rooms are maintained appropriately.

2. Trained personnel from IP&C and IP will inspect the finished area before barriers are removed and patients are re-admitted. An air sampling will be conducted if required.

Appendix 1-X-09:
Infection Control Risk Assessment Permit Form - Construction

Type of Construction: _____ Project Start Date: _____
Construction Location: _____ Estimated Duration: _____
Project Coordinator: _____ BN #: _____ Tel. Ext.: _____
Contractor Performing Work: _____ Permit Expiration Date: _____
Supervisor: _____ BN#: _____ Tel. Ext.: _____
Mobile #: _____ Pager #:_____

YES	NO	CONSTRUCTION ACTIVITY	YES	NO	INFECTION CONTROL RISK GROUP
		Type A: Inspection, non-invasive activity			**Group 1:** Low Risk
		Type B: Small scale, short duration, moderate to high level of dust.			**Group 2:** Medium Risk
		Type C: Activity generates moderate to high levels of dust and/ or noise requires greater work shift for completion			**Group 3:** Medium / High Risk
		Type D: Major duration and construction activities requiring consecutive work shifts			**Group 4:** Highest Risk

CLASS I	1. Implement work methods to minimize dust dispersion from construction operations. 2. Immediate replace any ceiling tile displaced for visual inspection. 3. Minor demolition for remodeling. 4. Provide Safety Data Sheet (SDS) for paint and disinfectants prior to use.
CLASS II	1. Provide active means to prevent air-borne dust from dispersing into atmosphere. 2. Water mist work surfaces to control dust while cutting. 3. Seal unused doors with duct tape 4. Block off and seal air vents. 5. Wipe surfaces with disinfectant. 6. Contain construction waste before transport in tightly covered containers. Choose low traffic and route. 7. Wet mop and / or vacuum with HEPA filtered vacuum before leaving work area. 8. Place dust mat at entrance and exit of work area 9. Remove or isolate HVAC system in areas where work is being performed. 10. Provide SDS for paint and disinfectants prior to use.

CLASS III	1. Obtain Infection Control permit before construction begins. 2. Isolate HVAC system in area where work is being done to prevent contamination of the duct system 3. Complete all critical barriers or implement control cube method before construction begins. 4. Maintain negative air pressure within work site. 5. Do not remove barriers from work area until complete. 6. Vacuum work with HEPA filtered vacuums. 7. Wet mop with disinfectant. 8. Remove barrier materials carefully to minimize spreading of dirt and debris associated with construction. 9. Contain construction waste before transport in tightly covered containers. Choose low traffic and route. 10. Cover transport receptacles or carts. Tape covering. 11. Remove or isolate HVAC system in areas where work is being performed. 12. Provide SDS for paint and disinfectants prior to use.
CLASS IV	1. Obtain Infection Control permit before construction begins. 2. Isolate HVAC system in area where work is being done to prevent contamination of duct system. 3. Complete all critical barriers or implement control cube method before construction begins. 4. Maintain negative air pressure within work site. 5. Seal holes, pipes, conduits, and punctures appropriately. 6. Construction anteroom and require all personnel to pass through this room so they can be vacuumed using a HEPA vacuum cleaner before leaving work site or they can wear cloth or paper coveralls that are removed each time they leave the work site. 7. All personnel entering work site are required to wear shoe covers. 8. Do not remove barriers from work area until completed project is thoroughly cleaned by the Environmental Services Department. 9. Vacuum work area with HEPA filtered vacuums. 10. Wet mop with disinfectant. 11. Remove barrier

Recommended by:

Facility Management: _____

Permit Requested by: _____
(Name & Signature)

Badge No: _____

Date: _____

Project Management Office: _____

Permit Requested by: _____

Badge No.: _____

Date: _____

Approved by:

Infection Prevention & Control

Permit Approved by: _____
(Name & Signature)

Permit Approved by: _____
(Name & Signature)

Release for Occupancy by: _____
(Name & Signature)

Badge No. _____ Date: _____

Badge No. _____ Date: _____

Badge No. _____ Date: _____

Appendix 2-X-09:
Determining the Type of Construction / Renovation

Type A	Inspection and non-invasive activities including, but not limited to: ▪ Removal of ceiling tiles for visual inspection limited to tile per 50 square feet ▪ Painting (but no sanding) ▪ Wall covering, electrical trim work, minor plumbing, and activities which do not generate dust or require cutting of walls or access to ceilings other than for visual inspection
Type B	Small scale, short duration activities which create minimal dust. Includes, but is not limited to: ▪ Installation of telephone and computer cabling ▪ Access to close spaces ▪ Cutting of walls or ceiling where dust migration can be controlled
Type C	Work which generates a moderate to high level of dust or requires demolition or removal of any fixed building components or assemblies. including, but not limited to: ▪ Sanding of walls for painting or wall covering ▪ Removal of floor coverings, ceiling tiles and caseworks ▪ New wall construction ▪ Minor duct work or electrical work above ceilings ▪ Major cabling activities ▪ Any activity which cannot be completed within a single work shift ▪ Painting in medium and high risk areas ▪ Moderate to high level of noise (cutting steel)
Type D	Major demolition and construction projects including, but not limited to: ▪ Activities which require consecutive work shifts ▪ Requires heavy demolition or removal of a complete cabling system ▪ New construction

Appendix 3–X-09:
Determining Patient Risk Groups that will be Affected by the Construction / Renovation

Group 1 Low Risk	▪ Office areas ▪ Non-patient areas
Group 2 Medium Risk	▪ Patient areas not listed in Groups 3 or 4 ▪ Materials management ▪ Physical therapy / occupational therapy / speech therapy ▪ Admission / discharge ▪ Public corridors (thoroughfare for patients, and supplies) ▪ Laboratories not specified in Group 3 ▪ Echocardiography ▪ Nuclear medicine ▪ MRI ▪ Respiratory therapy ▪ Cafeteria ▪ Dietary
Group 3 High Risk	▪ Critical care units (CCU) ▪ Emergency room ▪ Radiology ▪ Labor and delivery ▪ Microbiology / Virology laboratories ▪ Intensive care units (ICU) ▪ Intermediate care nursery ▪ Newborn nursery ▪ Long term / sub-acute units ▪ Dialysis ▪ Endoscopy ▪ Outpatient surgery ▪ Pediatrics ▪ Pharmacy ▪ Post-anesthesia care unit ▪ Surgical units
Group 4 Highest Risk	▪ Any area caring for immunocompromised patients ▪ Burn unit ▪ Cardiovascular intensive care unit (CVICU) ▪ Cardiac ▪ Catheterization ▪ Angiography areas ▪ Central sterile supply / processing areas ▪ Pharmacy admixture ▪ Negative pressure isolation rooms ▪ Oncology ▪ Radiology oncology suite ▪ Anesthesia and pump areas ▪ Operating rooms

IC Matrix - Class of Precautions: Construction Project by Patient Risk

	Construction Project Type			
Patient Risk Group	**A**	**B**	**C**	**D**
Low Risk	I	II	II	III / IV
Medium Risk	I	II	III	IV
High Risk	I	II	III / IV	IV
Highest Risk	II	III / IV	III / IV	IV

Appendix 4–X-09:
Description of the Required Precautions by Class

	During Construction Project	Upon Completion of Project
CLASS I	1. Implement work by methods to minimize dust dispersion from construction operations. 2. Immediately replace ceiling tiles displaced for visual inspection. 3. Provide Safety Data Sheet (SDS) for paint and disinfectants prior to use.	1. Clean work area upon completion of task.
CLASS II	1. Provide active means to prevent airborne dust from dispersing into the atmosphere. 2. Water mist work surfaces to control dust while cutting. 3. Seal unused doors with duct tape. 4. Block off and seal air vents. 5. Place dust mat at entrance and exit of work area. 6. Remove or isolate HVAC system in areas where work is being performed. 7. Provide SDS for paint and disinfectants prior to use.	1. Wipe work surfaces with hospital approved disinfectant. 2. Contain construction waste prior to transportation in tightly covered containers. Select low traffic time and route. 3. Wet mop and/or vacuum with HEPA filtered vacuum before leaving work area. 4. Remove isolation of HVAC system in areas where work has been performed.
CLASS III	1. Remove or isolate HVAC system in areas where work is being done to prevent contamination of duct system. 2. Complete all critical barriers such as sheetrock, plywood, plastic to seal area from non-work area or implement control cube method (cart with plastic covering and sealed connection to work site with HEPA vacuum for vacuuming prior to exit) before construction begins. 3. Maintain negative air pressure within work site. 4. Contain construction waste before transport in tightly covered containers. Choose low traffic time and route. 5. Cover transport receptacles or carts. Tape covering unless solid lid. 6. Provide SDS for paint and disinfectants prior to use.	1. Do not remove barriers from work area until project is inspected by IP&C-EHOHS, as well as, thoroughly cleaned by the construction workers and the Environmental Services department. 2. Remove barrier materials carefully to minimize spread of dirt and debris associated with the construction. 3. Vacuum work area with HEPA filtered vacuums. 4. Use wet mop with disinfectant. 5. Remove isolation of HVAC system in areas where work is being performed.
CLASS IV	1. Isolate HVAC system in area where work is being done to prevent contamination of duct system. 2. Complete all critical barriers such as sheetrock, plywood, plastic to seal area from non-work area or implement control cube method (cart with plastic covering and sealed connection to work site with HEPA vacuum for vacuuming prior to exit) before construction begins. 3. Maintain negative air pressure within work site. 4. Seal holes, pipes, conduits, and punctures appropriately. 5. Construct anteroom and require all personnel to pass through this room which can be vacuumed with HEPA vacuum cleaner before leaving work site or they can wear cloth or paper coveralls that are removed each time they leave the work site. 6. All personnel entering the work site are required to wear shoe covers. Shoe covers must be changed each time the work exits the work area. 7. Do not remove barriers from work area until project is completed and inspected by the IP&C and thoroughly cleaned by the Environmental Services department. 8. Provide SDS for paint and disinfectants prior to use.	1. Remove barrier materials carefully to minimize spread of dirt and debris as a result of construction activities. 2. Contain construction waste before transport in tightly covered containers. 3. Cover transport receptacles or carts. Tape covering unless solid lid. 4. Vacuum work area with HEPA filtered vacuums. 5. Use wet mop with disinfectant. 6. Remove isolation of HVAC system in areas where work has been performed.

Appendix 5–X-09:
Walk-Through Assessment

Contact name and Extension of the requestor: _____

Date & Time of visit: _____

1. Review of proposed plans against actual requirements on site.
2. Locations and observations
3. Check for Environmental Factors and parameters

- Environmental Conditions: Temperature/humidity/air flow HVAC System
- Other Parameters to consider such as:
  - water supply pipes
  - air ventilation and lighting
  - drainage pipes
  - medical gas pipings
  - noise and odor control measures
  - waste management and control measures

- Findings.....
  .....
  .....
  .....
  .....
- Recommendations on type of containments:
  - Propose/Decision of carrying out air sampling following Appendix C Flow chart
  - Reason for sampling
- Documentation of results
- Resampling and review process if air sample positive

Reason for sampling:

☒ New Construction ☒ Renovation

IP&C Staff Name: _____

(Name & signature)

Appendix 6–X-09:
Follow-Up for Construction Permit

Date of Follow-Up Rounds Conducted: Location:	
Permit #:	
Findings	
Recommendation	
Inspected by : **Signature:**	_____ IP&C Department
Director: **Signature:**	_____ IP&C Director

TITLE/DESCRIPTION:	INDEX NUMBER
MULTIDISCIPLINARY ENVIRONMENTAL ROUNDS (MDER)	**ICM - X- 10**

EFFECTIVE DATE:	APPLIES TO:	ISSUING AUTHORITY:
01/01/2018	**All GCC Countries**	**GULF COOPERATION COUNCIL – CENTRE FOR INFECTION CONTROL (GCC-CIC)**

DEFINITION

To monitor and maintain multi-disciplinary inspections in all clinical and non-clinical areas within healthcare facilities.

REFERENCE

Joint Commission International (2013). Joint Commission International Accreditation Standards for Hospitals: Including Standards for Academic Medical Center Hospitals, Standards – Only Version, 5th ed., April 2014) pp. 48, 57.

COMMENTS

1. Each hospital facility shall organize a Multi-Disciplinary Environmental Rounds (MDER) Team to be led by the Infection Prevention and Control Program (IP&C) together with representatives of concerned safety departments in the healthcare facility. The MDER Team will conduct regular monitoring and inspections in all clinical and non-clinical areas, as well as, bi-annual inspections in housing areas to ensure that a healthy and occupationally safe environment is maintained.
2. Clinics and wards are inspected and audited at any time even without prior notice, and as deemed necessary.
3. The MDER Team Leader must coordinate and facilitate the team performance and take preventive and corrective measures to ensure that the purpose of the rounds is met.
4. The MDER Team Leader shall be responsible for collecting all comments of the team members to finalize the inspection report, which will be sent to the concerned department within one week of the inspection.
5. The MDER Team Leader shall ensure that the respective department shall carry out corrective measures within two (2) weeks of receiving the report.
6. Each MDER Team member must be competent in doing the rounds based on IP&C's environmental health policies and procedures and in relation to the scope of services offered by their respective department.
7. Information should be relayed electronically to IP&C on the day of review, to ensure that proper reporting and follow up is carried out by the department concerned.
8. The members of the MDER Team must represent all related critical activities within the healthcare facilities as follows:
    a. The team for clinical and non-clinical area rounds must include the following representatives:
        - Nursing Services
        - Quality Management
        - Pharmaceutical Care Services
        - Biomedical Clinical Engineering
        - Fire Protection Services
        - Safety Management
        - Facility Management & Safety – (Utilities & Maintenance U&M and Project Task Force
        - Internal Audit and Organizational Development
        - Housekeeping Services

- Other representatives to join the team when deemed necessary by the IP&C Team Leader.

b. The MDER Team for Staff Housing compounds must include:
- Facility Management & Safety (U&M)
- Recreation
- Staff Housing Services
- Internal Audit and Organizational Development
- Fire Protection Services
- Other representatives to join the team when deemed necessary by the IP&C Team Leader.

9. All team members must attend the MDER as scheduled. In case of emergency or absence, the head of the respective team member's department must delegate another member to participate in the rounds.

PROCEDURE

1. MDER Team members will forward their individual findings to the Team Leader within 24 hours following each inspection round, to produce a final report documented in Weekly Multidisciplinary Environmental Rounds Program Facility Inspection Sheet **(Appendix 1-X-10)** and sent to the inspected department within one (1) week.
2. Where there are no findings or comments to be reported, the team members will inform the Team leader by email or mail within twenty-four (24) hours.
3. The Team Leader will send the final report to the inspected department for corrective action and implementation.
4. The inspected department will implement the recommendations from the report, correct any deficiencies and follow up regarding progress of all findings.
5. All remedial activities and actions taken by the head of the inspected department will be reported to the Team Leader within the following timeframes, as requested in the cover letter of the Final Report:
   a. Fourteen (14) working days for small buildings and wards.
   b. Twenty-one (21) working days for larger buildings.
6. Where there are unresolved issues after the above specified timeframe, the Team Leader will forward it to the Internal Audit and Organizational Development and concerned Executive Management Directors for particular action.
7. The MDER Final Report will be submitted to the following:
   a. Executive Director, Medical Services/Executive Regional Director;
   b. Executive Director, Internal Audit and Organizational Development Division;
   c. Head of the inspected Department.
8. Corrective actions and follow-p steps:
   a. Once IP&C receives the reply from the inspected department, a designated staff from IP&C will coordinate with the inspected department head and will highlight the recommended corrective action.
   b. IP&C will send an official memo to the inspected department in cases of non-response and/or pending corrective actions for follow up action.
   c. Copy of the abovementioned memo will be sent to the higher level of management responsible for concerned service or corrective action.
   d. Copy will be sent to Internal Audit and Organizational Development for follow up and action.
   e. Corrective actions that are not completed within a month's time will have to be on the agenda of the related committee until satisfactory corrective action has been performed.

Appendix 1–X-10:
Weekly Multidisciplinary Environmental Rounds Program Facility Inspection Sheet

Compound / Area Inspected		Date of Inspection:	
Prepared by MDER Team Leader:		Date:	

ITEM NO.	AREA INSPECTED	NON-COMPLIANCE(S)	ACTION REQUIRED/ Responsibility	COMPLETED BY	JCIA & other RELATED STANDARD	ACTION TAKEN	Date Resolved/ SPR# Budget Request Ref. #

TITLE/DESCRIPTION:	INDEX NUMBER
PREVENTION OF LEGIONELLA IN THE HEALTHCARE SETTING	**ICM - X- 11**

EFFECTIVE DATE:	APPLIES TO:	ISSUING AUTHORITY:
01/01/2018	**All GCC Countries**	**GULF COOPERATION COUNCIL – CENTRE FOR INFECTION CONTROL (GCC-CIC)**

DEFINITION

To outline the policies and procedures on effective water treatment that is essential to control Legionella including microbial activity, biofilm development, corrosion, scale deposition and the retention of matriculate solids.

REFERENCES

1. Association for Professionals in Infection Control (APIC) and Epidemiology, Inc. (2014).Chapter 84: Legionella Pneumophilia. In APIC Text of infection control and epidemiology (4th ed.).
2. Association for Professionals in Infection Control (APIC) and Epidemiology, Inc. (2014). Chapter 115: Water system issues and prevention of waterborne infectious diseases in healthcare facilities. In APIC Text of infection control and epidemiology (4th ed.).
3. Centers for Disease Control (CDC) and Healthcare Infection Control Practices Advisory Committee (HICPAC) (2003). Guidelines for environmental infection control in healthcare facilities. Environmental Legionella Isolation Techniques Evaluation Program.
4. Joint Commission Resources (2011). Infection Prevention and Control Issues in the Environment of Care (4th ed.).
5. Stout JE, Muder RR, Mietzner S., et al. Role of environmental surveillance in determining the risk of hospital-acquired legionellosis: a national surveillance study with clinical correlations. Infection Control Hospital Epidemiology. 2007;17:818.
6. WHO (2007): Legionella and the Prevention of Legionella.

COMMENTS

1. This policy establishes and implements water quality monitoring procedures to ensure water safety at all times and secure alternative sources of water during system disruption.
2. It further provides an effective procedure which includes treatment such as chlorination, monitoring, cleaning of water supply system and water sampling schedule. Refer to policy **ICM-X-01** Water Quality Monitoring Program and Requirements.
3. Water supply sampling for Legionella species shall be conducted by the Environmental Health staff of the Infection Prevention & Control (IP&C) Department, the Utility and Maintenance (U&M) staff from the Facility Management & Safety (FMS) as indicated in the following procedures.
4. Laboratory facilities shall perform the required testing for any urgent or routine samples to maintain acceptable water quality standards.
5. All laboratory results shall be recorded and reported to the Environmental Health of the IP&C Department.
6. Abnormal results must be reported to the concerned departments.
7. IP&C shall furnish recommendations to Facility Management and affected areas in order to take the necessary preventive measures and immediate corrective action including water restriction and/or lifting water restriction based on criteria. Refer to **Appendix 3-X-11.**
8. Records of laboratory results must be maintained by the IP&C, FMS and other relevant departments.

PREVENTION OF LEGIONELLA IN THE HEALTHCARE SETTING	ICM - X- 11

TERMINOLOGIES

1. **Legionella pneumophilia** is a common cause of both community-acquired and healthcare associated (HAI) pneumonia. Clinical manifestations are non-specific; but, high fever, diarrhea, and hyponatremia are often distinctive.
2. **Legionella organisms** are aerobic gram-negative fastidious bacteria that do not grow on standard bacteriologic media, thus, specialized laboratory methods and culture media are necessary for diagnosis. Legionella species can cause pneumonia (Legionnaires' disease) and Pontiac fever, a flu-like illness which occur primarily in immunocompromised patients.
3. **Immunocompromised patients** are patients categorized to be very high risk patient group that meet the following criteria:
   a. Solid organ transplantation
   b. Bone marrow transplant
   c. Neutropenic patients
   d. Patients receiving or have been receiving chemotherapy for the last month
   e. Pediatric and neonatal intensive care units (ICUs) patients
   f. Hemodialysis patients
   g. Burn unit patients
4 **Biofilm formation** is defined as a coating of microorganisms where the cells stick to each other and into a surface, which often include species such as Pseudomonas.
5. **Biocide** is defined as either a chemical substance or microorganism that can be used to prevent, make harmless, or control another harmful organism by either chemical or biological interaction.
6. **Cold Water Service (CWS)** includes the installation of equipment, pipe work and fittings that are used to store, distribute, and supply fresh water. Domestic cold water service (DCWS) includes water supplied for domestic water use only.
7. **Cooling tower** is an equipment used to transfer waste heat to the atmosphere. They are commonly used to engineer the process of evaporating fluid to the air to create a cooling effect and help discharge the waste heat.
8. **Cooling tower blow-down or bleed-off** is water drained or discharged from a water system due to the build-up of salts or other impurities where such build up is undesirable. Cooling towers are bleed regularly to reduce salts and impurities that can act as food source for microbial growth including Legionella bacteria.
9. **Definite hospital–acquired** Legionnaires' disease of a person who was in hospital for ten (10) days before the onset of symptoms.
10. **Possible hospital-acquire**d Legionnaires' is the case when Legionella species is identified in a patient who was in the hospital for 1-9 of the 10 days before the onset of symptoms that were not previously known to be associated with any case of Legionnaire's disease, and where no microbiological link has been established between the infection and the hospital.

PROCEDURE

1. A regular preventive maintenance program shall include monitoring, inspecting, cleaning and disinfecting the water supply system as indicated in **Appendix 1-X-11.**
2. Trained personnel from IP&C shall conduct the required water sampling for legionella control as indicated in **Appendix 2-X-11**.
3. Water sampling procedure shall be conducted as per microlaboratory recommendations.

4. Chlorine levels shall be tested and recorded each time water samples are collected.
5. All samples shall be delivered to the laboratory for bacteriological studies including Legionella and results shall be obtained within 24 hours, to be recorded and reported to the concerned departments.
6. Abnormal results shall be reviewed by the IP&C environmental health staff as indicated in **Appendix 3-X-11** and for corrective actions as indicated in **Appendix 4-X-11.**

Appendix 1-X-11:
Preventive Measures for Legionella Control

Location	Preventive Measures	Responsibility	Remarks
Cooling Towers	1. PH monitoring 2. Monitoring free chlorine. 3. Use an effective hospital-approved biocide on a regular basis 4. Legionella sp. monitoring	As per hospital	• Sampling of Legionella on a quarterly basis. • Free chlorine should not be less than 0.5 mg/l
Hot and cold-water distribution systems	1. Keep temperature \ < 20 °C for cold water 2. Keep temperature > 50 °C for hot water 3. Monitoring of Free Chlorine	As per hospital	Free Chlorine to be measured at the point of use during legionella sampling. It must be within this range (0.2-0.5 mg/l)
Therapy Tubs & pools	1. Disinfection 2. Legionella monitoring	As per hospital	Tubs disinfection shall be performed as per manufacturer recommendations
Humidifiers Respiratory equipment	1. Respiratory apparatus must be disinfected on a regular daily basis 2. and between every patient as well	As per hospital	Disinfection shall be performed as per manufacturer recommendations
Faucets and Shower Heads	1. Disinfection 2. Hot and cold water flushing 3. Legionella monitoring	As per hospital	• Disinfection shall be conducted using IP&C Department approved disinfectant. • Flushing shall be performed during patient room cleaning for 3-5 minutes.
Dental chairs	1. Disinfection 2. Legionella monitoring	As per hospital	Disinfection shall be performed as per manufacturer recommendations
Ice machines	1. Disinfection 2. Legionella monitoring	As per hospital	Disinfection shall be performed on a daily basis

Appendix 2-X-11:
Legionella Sampling Points

SAMPLING POINT	RESPONSIBILITY	FREQUENCY	REMARKS
Cooling Towers	As per hospital policy	Quarterly basis or as per hospital policy	
Potable Water Tank	As per hospital policy		
Humidifiers Respiratory equipment	As per hospital policy		
Faucets and Shower Heads at immuno-compromised patient areas (e.g., oncology wards, PICU, NICU, burn units) Hemodialysis Unit Dialysis Ports	As per hospital policy		- Locations of shower heads and faucets in immunocom-promised inpatient areas shall be detected by IPCD. - At least random of 25% samples will be collected from immunocompromised inpatient areas. - Samples will only be collected post to the RO plant at hemodialysis Unit.
Dental chairs	As per hospital policy		At least a random of 25% samples will be collected
Ice Machines	As per hospital policy		

Appendix 3-X-11:
Legionella Limit Values

1. For patients with classical individual risk factors such as pediatric/neonatal ICUs, dialysis patients, and burn unit patients:

    - Target level <1000 CFU/l Legionella sp.
    - Alert level 1000 -10,000 CFU/l Legionella sp.
    - Maximum level >10,000 CFU/l Legionella sp.

2. For high-risk patients, such as those with severe immunodepression, transplantation, corticotherapy with equivalent dose of 0.5 mg/kg per day prednisolone for 30 days or more, or 5 mg/kg per day for 5 days or more:

    - Target level not detectable
    - Maximum level ≥ 250 CFU/l Legionella spp.

    - The target levels defined are seen as the best way to minimize the risk.
    - The alert level is to ensure that relevant people are informed and water prevention shall be revised.
    - The maximum level means corrective action and water restriction shall be applied to the affected area/s and re-use of water in the same area/s must be officially approved by IP&C Department.

Appendix 4-X-11:
Corrective Actions Flowchart