UNITED ARAB EMIRATES
MINISTRY OF HEALTH & PREVENTION

UAE National Infection Prevention and Control Guidelines

1st edition
2026

UAE National Infection Prevention and Control Guidelines

Document ref. number: AMR IPC 01, Version 1.0
Document Owner: UAE Higher Committee for Antimicrobial Resistance
Document Classification: ⊙ Public ○ Restricted ○ Internal ○ Confidential

This document was developed by the UAE national subcommittee for Infection Prevention and Control in health sector

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Acknowledgements:

The Ministry of Health and Prevention wishes to thank all participating individuals in the United Arab Emirates for participating in the review of the UAE Infection Prevention and Control Guidelines.

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Abbreviations and acronyms

AMR: Antimicrobial resistance

APIC: Association for Professionals in Infection Control and Epidemiology

ASP: Antimicrobial Stewardship Program

CAUTI: Catheter-Associated Urinary Tract Infection

CDC: Centers for Disease Control and Prevention

CLABSI: Central Line-Associated Blood Stream Infection

GCC: Gulf Cooperation Council

HAI: Healthcare Associated Infections

HCW: Healthcare Worker

HH: Hand Hygiene

ICU: Intensive Care Unit

IPC: Infection Prevention and Control

IVAC: Infection-related Ventilator-Associated Complication

MOHAP: Ministry of Health and Prevention

NHSN: National Healthcare Safety Network

NIOSH: National Institute for Occupational safety and Health

OSHA: Occupational Safety & Health Administration

PPE: Personal Protective Equipment

PVAP: Possible Ventilator-Associated Pneumonia

SSI: Surgical Site Infection

VAE: Ventilator Associated Event

VAP: Ventilator Associated Pneumonia

WHO: World Health Organization

Infection Prevention and Control Program

Purpose and scope:

- To provide a framework for infection prevention and control (IPC) activities and practices in all Healthcare facilities
- To prevent the occurrence of Healthcare-Associated Infections (HAI) among patients, health-care workers, visitors and other persons in health-care facilities. These infections may be:
  - Endemic, associated with or without the use of devices or procedures during health care
  - Epidemic, originating within the population of the health-care facility
  - A consequence of the transmission of community-acquired infections to patients in the health-care facilities that provide care, generating the amplification of epidemics of community-acquired infections
- To prepare health-care facilities for the early detection and management of HAI outbreaks and to organize a prompt and effective response.
- To contribute to a coordinated response to control community-acquired infectious diseases, endemic or epidemic, that may be “amplified” via health care.
- To contribute to preventing the emergence of antimicrobial resistance and/or dissemination of resistant strains of microorganisms.
- To minimize the environmental impact of these infections or their management.
- To delineate functions, responsibilities and accountabilities of authorities responsible for infection prevention and control.

Program statement

- The IPC Program must be comprehensive and be consistent with current scientific information, national & international resources such as CDC, WHO, Local regulations, accepted practice guidelines and across all levels of the hospital to

reduce the risk of HAIs in patients and health care workers.

- The IPC program must identify the procedures and processes associated with the risk of infection and implement strategies to reduce infection risk.
- The facility must use a risk-based data-driven approach in establishing the focus of the IPC program.
- The Program must be approved by governance/leadership, established with appointed personnel, resources, clear objectives, functions, a defined scope of responsibilities and overseen by Infection Control Committee.
- The Program must include all employees, patients, families, visitors, students, and other stakeholders.
- The program must include all patient care areas, staff area and visitor areas of the hospital.
- All Infection Control activities/Projects shall be coordinated involving a multidisciplinary team and the IC Staff.
- The IPC program shall be staffed according to the facility's size, complexity of activities, and level of risks, as well as the program's scope.
- One or more individuals must oversee all IPC activities. This individual(s) must be qualified in IPC practices through education, training, experience, certification, and/or clinical authority.
- The individual(s) shall fulfill program oversight responsibilities as assigned or described in a job description.
- Individual(s) shall coordinate with hospital leadership regarding priorities, resources, and quality improvement related to the IPC program. The results and other data shall be reported to local, national, or public health agencies as required. These results include reportable communicable diseases, HAI surveillance data, and other infection control-related data as specified by the facility, health authority, or ministry of health and prevention.
- The Program incorporates a range of strategies that includes systematic and proactive surveillance based on Infection control risk assessment and shall be

prioritized based on the elements of: High Risk Events, Problem Prone, High Volume, High Cost, Internal and External Customer Satisfaction.

- The leadership shall support and allocate the budget and resources including adequate staffing and information management systems to support the IPC program.
- The IPC Program of all facilities must focus on the following elements and strategies to reduce HAIs:

Infection Control plan:

- Conducting an annual Infection Control risk assessment throughout the facility to identify high volume, high risk and problem prone activities.
- Developing and prioritizing goals and objectives based on risk assessment.
- Developing and implementing action plans that outline the steps needed to accomplish each objective.
- Evaluating the success of action plans in accomplishing the goals and objectives of the infection prevention plan
- Developing, implementing and regularly update the infection control policies and procedures.
- Supporting policies, goals, strategies, legal, technical framework and monitoring infection control practices.
- Working with local and public health authorities to integrate the efforts for control of infections in the hospital and community.
- Investigating outbreaks of infectious diseases.
- Integrating the IPC process with the facility's overall program for quality improvement and patient safety, using measures that are epidemiologically important to the hospital.

Hand hygiene:

- Ensuring that hand hygiene supplies including (soap, antiseptics) are available and evaluated by IPC staff.
- Maintaining hand hygiene programs following a multimodal strategy including

system change, education, evaluation and feedback, reminders in the workplace and safety climate.

Personal protective equipment:

- Ensuring that gloves, gowns, masks, respirators, eye protection, and other protective equipment are available, stock is monitored, and PPE is used correctly when required.

Standard and transmission-based precautions:

- Monitoring compliance with standard precautions and transmission based-precautions.
- Providing barrier precautions that protect immunosuppressed patients from acquiring infections to which they are uniquely prone.

Cleaning and disinfection:

- Applying the principles of cleaning, disinfection and sterilization as per manufacturer instructions supported by evidence-based protocols.
- Identifying and implementing evidence-based protocols to address cleaning and disinfection of the environment and environmental surfaces.
- Evaluating the effectiveness of cleaning and disinfection using appropriate methods.

Laundry and waste management:

- Implementing evidence-based protocols related to cleaning and disinfection of laundry, linens, and scrub attire provided by the facility including proper collection, transportation, sorting and distribution of linen and uniforms.
- Conducting appropriate risk assessment to ensure hazards from the generation, handling, segregation, recycling, storage, transportation and disposal of waste are identified, and appropriate control measures are implemented.

HAI surveillance:

- Establishing a reliable, focused surveillance program using an epidemiologic approach for data collection and trend analysis based on the updated CDC/NHSN criteria and protocols. Healthcare epidemiology focus areas include surveillance of HAIs, device related infections, surgical site infections, emerging and re-emerging

pathogens and alert/resistant organisms.

- Analyzing HAI rates and design strategies to reduce the associated risks by identifying opportunities for performance improvement
- Streamlining data management activities and ensuring that data is handled effectively and efficiently to enhance patient safety outcomes.

Influx of infectious diseases and emergency preparedness

- Developing and implementing a process to manage a sudden influx of patients with airborne infections and when negative-pressure rooms are not available.
- Developing, implementing, and evaluating an emergency preparedness program to respond to the presentation of global communicable diseases.

Education and training

- Educating all healthcare workers during orientation of new employees and on regular basis staff regarding evidence-based prevention strategies including standard and transmission-based precautions, hand hygiene, basic microbiology, cleaning and disinfection, prevention of occupational exposure and other important aspects of infection prevention.
- Conducting category specific training to the professional staff like nursing, interns, medical students, contract workers and train-the-trainer educations as required.
- Maintaining professional development and competency of Infection Control staff.

Procedures

- **Program Leadership and Coordination**
  - Leadership shall support the IPC program by providing the necessary financial and manpower resources.
  - The IPC team/committee shall inform the hospital administration of IPC problems and accomplishments, such as outbreak investigations, new federal or state regulations, policy and procedures compliance and routine compliance monitoring data.
  - The IPC team shall provide expert consultation on control and prevention of communicable diseases and have the administrative power to isolate patients.

- The IPC team provides consultation to other institutional committees (such as Product Evaluation Committee, Nursing Procedure Committee and Safety Committee) so that administration is aware of the potential infection risks related to new products, equipment or procedures.
- The infection control staff/team shall update and collect infection control references and guidelines reflecting scientific evidence-based practices and current standards.

- **Infection Prevention & Control Department**
  - For effective IPC program, the secondary and tertiary healthcare facilities must have a staffing ratio of at least one full-time practitioner for every 100 beds assigned to the IPC program; however, the program shall be staffed according to the hospital's size, complexity of activities, and level of risks, as well as the program scope.
  - Primary healthcare care center must have a trained IPC link person with dedicated part time.
  - IPC practitioners are required to continuously update their skills and knowledge through participation in continuous medical education programs and attending IPC scientific activities.
- **Infection Prevention & Control Committee**
  - The IPC committee has an approved document outlining its structure, rules, duties, and members' responsibilities.
  - The IPC committee comprises key members such as the head of IPC, medical director, head of nursing services, head of laboratory department(microbiology), head of surgical operating room, head of CSSD, head of critical care units (ICUs), head of pharmacy department, head of dietary services, head of environmental health department, head of housekeeping department, head of administrative or financial department, head of medical supply department, and other guest members as required.
  - The IPC committee meets regularly, at least quarterly, or as needed in urgent situations.
  - Meeting minutes are structured like task force tables, with action items and timelines

clearly documented and followed up in subsequent meetings.

- Functions of the IPC committee include reviewing and evaluating the yearly IPC plan, approving IPC policies and procedures, reviewing surveillance data, and discussing activities related to respiratory protection programs, among other responsibilities.

- **Risk Assessment**

  The IC staff/committee shall:

  - Regularly conduct and document infection control risk assessments to pinpoint high-risk areas using an appropriate risk assessment tool
  - Implement interventions based on identified infection risks.
  - Tailor risk assessment to the specific context of each healthcare facility.
  - Assess intervention effectiveness and adjust infection prevention programs accordingly.
  - Continuously monitor data to ensure ongoing risk reduction.
  - Utilize risk analysis matrices to guide decision-making and determine appropriate risk mitigation strategies.

- **Surveillance Strategy:**
  - The IPC staff/committee shall evaluate the organization needs and develop a surveillance plan/ policy using a risk-based approach, to 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 risk and incidence of HAIs.
  - The IPC staff/committee shall use the annual data to design the surveillance plan and establish priorities for surveillance of infections and pathogens, standardized case definitions and active methods of surveillance.
  - IPC staff shall be well trained regarding the national approved surveillance platform and familiar with CDC-NHSN definitions approved by national MOHAP guidelines.
  - Surveillance systems should be carried out in all critical care units (active, prospective, targeted and patient-based surveillance)
  - The surveillance program protocols and procedures shall include:

- Clearly defined, locally relevant objectives for surveillance activities
- Recognized, standardized and written case definitions for indicators (numerator)
- Identification and description of all data sources utilized
- Identification and description of population at risk (denominator)
- Defined processes for data analysis, including the calculation of relevant rates
- Established mechanisms for timely and accurate reporting
- Use of benchmarks for comparative assessment and performance evaluation
- Strategies for identifying and addressing deficiencies using standardized case definitions for infections
- Measurable outcome indicators, including infection rates and associated mortality rates, to monitor the effectiveness of the surveillance system

- Surveillance results need to be timely and regularly examined, interpreted, and shared with HCWs and relevant departments in order to lead to appropriate action, in particular to the hospital administration.
- The IPC committee regularly reviews surveillance results, develops action plans, and ensures follow-up at least once every quarter.
- Surveillance findings are utilized to drive quality improvement projects aimed at reducing HAIs.

- **Standard Precautions**
  - Ensure that standard precautions and hand hygiene guidelines are implemented as per each facility policy.
  - Ensure availability of gloves, masks, eye protection, other PPE, soap, antiseptics and disinfectants are available and used correctly when required.
- **Environmental Infection Control**

  The IPC staff shall coordinate with the environmental services staff to:
  - Select cleaning and disinfection standards and procedures from recognized IPC guidelines in order to maintain environmental cleanliness.
  - Identify areas and situations that are high risk for infection transmission and implement additional cleaning and disinfection procedures as indicated.

- Ensure that cleaning of infectious rooms during the patient's hospitalization and after discharge follows IPC guidelines.
- Monitor environmental cleaning and disinfection processes and use the data to make changes to the process when applicable.
- Monitors environment in coordination with concerned departments on clean water, ventilation, hand washing/ hand hygiene facilities, patient placement and isolation facilities, storage of sterile supply, conditions for building and/or renovation.

- **Engineering Controls**
  - The IC staff shall coordinate with the plant engineering department/staff to reduce the risk of infection in the facility through the use of mechanical and engineering controls such as negative and positive pressure ventilation systems; biological hoods in laboratories; temperature controls for water, steam, and others; and airflow, ventilation systems, and humidity controls in a manner that minimizes infection risk in the facility.
- **Construction and Renovation Risks**
  - Reduce the risk of infection in the facility associated with demolition, construction, and renovation through a construction/renovation infection control risk assessment (ICRA)
  - Use approved risk matrix and tool to identify infection prevention and control risk during renovation or new construction, utility requirements, noise, vibration, and emergency procedures.
  - Assess and manage the impact of the demolition, renovation or construction and implement engineering controls.

- **Antibiotic Utilization**
  - Monitor antibiotic use through utilization studies and ongoing audits, in accordance with the facility's antimicrobial stewardship policy or protocol.
  - Coordinate the corrective actions relative to the findings from these studies with the pharmacy and medical staff.
- **Outbreak preparedness and management**

- Plans for managing outbreaks shall be developed to address unexpected public health emergencies. Occasional clusters of patients who are colonized or infected may trigger further investigation including a case-control study.

- **Communicable Disease Reporting as per MOHAP regulations:**
  - Coordinates with Public health Departments regarding exposure that may need immediate community follow-up (e.g., tuberculosis, pertussis) as per facility policy/protocol
  - Assists the Public health in confirming cases that may have been seen in the hospital or center. as per facility policy/protocol
- **Isolation and Barrier Precautions:**
  - Ensure that Patients with known or suspected contagious diseases are isolated in accordance with recommended guidelines.
  - Ensure that Negative-pressure rooms are monitored routinely. Develop and implement a process to address managing patients with airborne infections for short periods of time when negative-pressure rooms are not available Coordinate with concerned department/staff to manage influx of patients with infectious diseases as per facility policy. /Protocol
  - Ensure that staff are educated in the management of infectious patients when there is a sudden influx or when negative-pressure rooms are not available.
  - Develop, implement, and evaluate an emergency preparedness program to respond to the presentation of global communicable diseases: including identification of the first points of entry to the facility; conducting annual drills, debriefing of the evaluation; and implementation of follow up actions as per debriefing.
- **Other Processes**
  - Implement evidence-based standards related to cleaning and disinfection (transportation, cleaning and storage) of laundry, linens, and scrub attire provided by the facility as per each facility policy/protocol.
  - Reduce the risk of infections through proper disposal of waste, proper management of human tissues, and safe handling and disposal of sharps and needles as per each facility

policy/protocol.

- Identify and implement practices to reduce the risk of injury and infection from the handling and management of sharps and needles
- Ensure operation of the mortuary as per infection control standards that minimize the risk of transmitting infections
- Adopts Sharps Safety Protocol and appropriate management of blood and body fluid exposures
- Reduce the risk of infections associated with the operations of food services by overseeing the process such as food preparation, distribution, storage and kitchen sanitation as per food safety guidelines and local regulatory bodies (Ensure that evidence-based guidelines are adopted for nutritional products that have special storage and preparation requirements, such as human milk, baby formula, and other enteral products.

- **Quality Improvement**
  - Integrate IPC activities into the facility's quality improvement and patient safety program.
  - Use monitoring data to evaluate and support improvements to IPC program.
  - Monitor data using benchmarks for infections rates and other indicators.
  - Provide reports of data analysis to leadership (at least on a quarterly basis).
  - Provide education on IPC practices to staff, physicians, patients, families, and other caregivers when indicated by their involvement in care. This must include orientation upon joining, and annual updates for all staff.

- **Employee Health**

  The IPC staff shall oversee the employee health activities by coordinating with the concerned employee health staff/department which covers medical evaluations, health and safety education, immunization programs, management of job-related illnesses and exposures to infectious diseases, including policies for work restrictions for infected or exposed personnel, counseling services for personnel at risk of infections related to employment, exposures or special conditions, and maintenance and confidentiality of personnel health records.

- **Medical laboratory**
  - The IPC and laboratory staff shall ensure that microbiology laboratory techniques and

protocols are adhering to IPC guidelines including MDRO identification and reporting.

- The IPC staff shall use microbiology data for surveillance and Infection Control activities.
- The IPC/lab staff shall facilitate establishing laboratory bio safety standards including the transport of samples and handling of biohazards samples in safe manner.

- **Links with public health or other services**
  - The IPC staff/committee serve as links between the organization and public health for events of mandatory reporting.
  - The ICP staff shall coordinate with concerned departments/committees' activities related to waste management and sanitation, biosafety, antimicrobial pharmacy, occupational health, patients and consumers and quality of health care

- **Monitoring the effectiveness of the program**
  - Trends in HAIs rates (CLABSI, VAE, VAP, SSI and others)
  - Trends in MDROs
  - Hand Hygiene Compliance rates
  - Audits reports conducted by health authorities and accreditation bodies
  - Report of outbreak management
  - Evaluation reports of the IC annual plan

References:

- CDC's core infection prevention and control practices for safe healthcare delivery in all settings, Centers for Disease Control and Prevention. Available from; https://www.cdc.gov/infection-control/hcp/core-practices/index.html (Accessed: 20/5/2025)
- Isolation precautions, Centers for Disease Control and Prevention, 2024. Available from: https://www.cdc.gov/infection-control/media/pdfs/Guideline-Isolation-H.pdf (accessed: 20/5/2025)
- APIC text of Author(s): KH, Holmes K, McCarty J, Steinfeld S. Infection prevention and control programs, APIC 2021
- WHO guidelines on hand hygiene in Health Care, 2009, World Health Organization, Available from: https://www.who.int/publications-detail-redirect/9789241597906 (Accessed: 25/5/2025)

Infection Control Risk Assessment

Introduction

- The Infection Control Risk Assessment is the cornerstone of the Infection Prevention and Control (IPC) programs. It identifies areas where the organization should concentrate its infection surveillance, prevention, and control activities.
- This systematic process identifies, and reviews potential infection risk factors related to the care, treatment, services provided, and the environment of care in a specific healthcare setting.
- The most critical and urgent risks are selected and prioritized to develop the organization's Infection Surveillance, Prevention, and Control Plan.
- The plan includes a goal for reducing the risk of infection associated with each of the prioritized risks, a measurable objective for each goal, and evidence-based strategies for meeting each of these objectives. It also identifies: the personnel responsible for developing the plan and implementing the program strategies and includes mechanisms for evaluating the effectiveness of meeting the program's objectives.

Conducting facility Infection Control Risk Assessment:

- The Infection Control Risk Assessment should be one of the first activities of a new IPC program and an ongoing activity for established programs.
- It should be performed at least annually and more frequently if necessary, due to changes in circumstances, such as the addition of a new service, changes in population, community events, re -emerging communicable diseases, or pandemics.
- The risk assessment must be performed by the IPC program leader/committee and other key personnel, leaders, or staff who support or are affected by the program.
- Information may be needed from medical records, the risk management department, quality and patient safety, finance, special services, or public health agencies, in addition to surveillance data.

- The risk assessment process includes the following steps:
    1. Convene a team to conduct the risk assessment
    2. Determine the scope of the assessment and select general-risk categories, considering internal and external risks, known risks, and anticipated risks.
    3. Identify specific risk factors within each general-risk category.
    4. Determine a methodology and risk-scoring system with clear definitions.
    5. Assess and score each potential risk factor based on the following questions:
        - What is the probability that any given risk event will occur?
        - What effect would the risk have on staff, patients, the environment, or the organization?
        - How prepared is the organization to respond to challenges at this time?
    6. Evaluate and score the risk events.
    7. Determine and identify the risk priorities for the organization.
    8. Use prioritized risks as the basis for the IPC plan, including goals, measurable objectives, implementation strategies, and evaluation of the effectiveness of interventions. Some events/conditions with a lower score may be selected because they are an accreditation or regulatory requirement.
    9. Share results with staff and leaders.

References

- Association for Professionals in Infection Control and Epidemiology Text of infection control and epidemiology.
- APIC risk assessment template, available from https://apic.org/Resource_/TinyMceFileManager/Education/ASC_Intensive/Resources_Page/ASC_Risk_Assessment_Template.docx (Accessed on 20/5/205)

Risk Assessment tool for the Infection Surveillance, Prevention and Control Program

Event or Condition	What is potential impact of event/condition on patients and staff?				What is probability of event/condition occurring?			What is organization's preparedness to deal with this event/condition?				Numerical risk level
	High (3)	Med (2)	Low (1)	None (0)	High (3)	Med (2)	Low (1)	None (3)	Poor (2)	Fair (1)	Good (0)	Total
Community & Populations served:												
Emerging infectious disease												
Potential for specific infection:												
Care practices:												
Instrument & medical device cleaning, disinfection & handling:												
Environment of care:												
Emergency Management:												
other:												

- **Potential impact of the event/condition on patients and personnel**: determined by evaluating the potential for patient illness, injury, infection, death, need for admission to an inpatient facility; the potential for personnel illness, injury, infection, shortage; potential to impact the organization's ability to function/remain open; and degree of clinical and financial impact.
- **Probability of the event/condition occurring**: determined by evaluating the risk of the potential threat actually occurring. Information regarding historical data, infection surveillance data, the scope of services provided by the facility, and the environment of the surrounding area (topography, interstate roads, chemical plants, railroad, ports, etc.) are considered when determining this score.
- **Organization's preparedness to deal with the event/condition**: determined by considering policies and procedures already in place, staff experience and response to actual situations, and available services and equipment.

Infection Prevention and Control plan

Top RISK EVENT/ CONDITION	GOAL	OBJECTIVES (measurable, includes timeframe for completion)	STRATEGIES FOR IMPLEMENTATION	IMPLEMENTATION	
				Responsible Person(s)	Method for Evaluating Effectiveness

Standard Precautions

Purpose

To establish standardized practices across healthcare settings to prevent the spread of infections. The national standard precautions policy aims to provide a framework for healthcare Workers (HCWs) to minimize the risk of infection transmission in healthcare settings. This policy outlines the required standard precautions that must be followed by all HCWs when providing care to patients, regardless of the patient's diagnosis or infection status.

Introduction

- All HCWs must always adhere to standard precautions all the time when caring for patients to prevent the transmission of infectious agents.
- The Infection Control team shall provide regular and ongoing education to all HCWs on standard precautions, conduct audits, and offer feedback to ensure continuous adherence to standard precautions.
- Healthcare institutions ensure that all staff have the necessary resources and training to comply with this policy.

Definitions

- **Standard precautions**: they are the minimum infection prevention practices that apply to all patient care, regardless of the suspected or confirmed infection status of the patient, in any setting where healthcare is delivered.
- **Elements of standard precautions:**
- Hand hygiene
- Respiratory hygiene/cough etiquette
- Use of Personal Protective Equipment (PPE) according to the risk of exposure
- Safe injection practices
- Sharps management and injury prevention
- Environmental cleaning

- Safe handling and cleaning of soiled linen
- Safe reprocessing of medical equipment and instruments
- Waste management.

Procedures

A- Hand Hygiene:

- Methods of Hand hygiene (HH) involve either plain/antimicrobial soap and water or alcohol-based waterless hand rub. HH is used to remove or kill microorganisms that colonize the hands.
- Perform HH before and after patient contact, before clean and aseptic procedures, after contact with blood, body fluids, secretions, excretions, and contaminated items, whether or not gloves are worn.
- Use an alcohol-based hand rub when hands are not visibly soiled.
- Educate and encourage patients and visitors to perform hand hygiene.
- For further details, refer to the **Hand Hygiene policy**.

B- Personal Protective Equipment (PPE):

- PPE refers to wearable equipment that is designed to protect the mucous membranes (eyes, nose mouth), airway, skin and clothing from exposure to infectious agents. It is used to create a barrier between HCWs and patients, body substances, or surfaces.
- PPE items include medical/surgical masks, respirators, face shield, goggles, waterproof gowns and coveralls, gloves, head and shoe cover, and rubber boots.
- Select and use appropriate PPE effectively and correctly based on the type, degree and risk of exposure and transmission by assessing the:
  - Risk of transmission of the infectious agent to the patient and HCW.
  - Risk of contamination of the HCW's skin and clothing by the patient's blood and body substances.
  - Type of known or possible infectious agent.
  - Risk of exposure and extent of contact with blood, body fluids, respiratory droplets, aerosols or open skin.

  - Likely modes of transmission of the infectious agent
- The use of specialized PPE is mandatory if direct, close contact with patients suspected or confirmed to have highly pathogenic and deadly infectious diseases (e.g., Filovirus disease [Ebola and Marburg]) is anticipated. Additional specialized competency-based training should be obtained prior to working with these and other highly pathogenic organisms.
- HCWs must be trained and competent in PPE donning and doffing. Posters of the sequence for putting on and removing PPE are available on CDC website.
- PPE should be worn before entering to patient's environment and must be removed before leaving the patient's room except for respirators; they must be removed immediately outside patient's room.
- PPE must be removed slowly and deliberately in the correct sequence to reduce the possibility of self-contamination or other exposure to an infectious agent and must be discarded in the appropriate designated container.
- Perform HH before putting on and after removing PPE.
- Do not touch eye protection (face shield/goggle) or mask with your gloves or your contaminated hands.
- Removing PPE starts always with the most contaminated PPE (gloves and gown) and ends with the less contaminated PPE (mask).

- **Gloves:**
  - Gloves can protect staff and patients from infectious agents that may be carried on hands such as MDROs and are an essential component of standard and contact precautions.
  - Gloves shall be worn when touching blood, body substances secretions, excretions and contaminated equipment or surfaces.
  - Gloves must not be worn when answering telephones, using computer keyboards, opening doors or writing patient notes.
  - Gloves should be changed: between care of patients (to prevent cross transmission of infection); when performing separate procedures on the same patient; and as soon as they are torn or punctured.

- **Masks:**
  - Masks are worn to protect the mucous membranes of the nose and mouth which are portals of entry for infectious agents during procedures and patient care activities likely to generate splashes or sprays of blood, body fluids, secretions, or excretions. Masks are essential components of droplet precautions.
  - Masks are used for: procedures that generate large droplets of secretions and excretions; procedures that require aseptic techniques to protect the patient from infectious agents; droplet precautions (e.g. influenza virus); and by patients who are coughing to prevent transmission of infectious agents.
- **Respirators:**
  - Respirators (such as NIOSH approved N95) are essential components of airborne precautions; examples include patients suspected or confirmed with pulmonary tuberculosis, measles and chickenpox.
  - A user seal check shall be performed by the wearer each time the respirator is put to determine if it is properly worn or needs to be adjusted. And all staff who use respirators must go through annual fit testing.
- **Eye protection:**
  - Eye protection PPE such as goggles or face shields are worn to protect the mucous membranes of the eyes.
  - Discard or clean/disinfect the eye protection PPE after each use as per the institution protocols.
  - Personal glasses are not substituted for goggles.
- **Fluid resistant gowns:**
  - Fluid resistant gowns prevent contamination of infectious agents on clothing and skin during procedures and patient care activities likely to generate splashes or sprays of blood, body fluids, secretions or excretions.
  - Securely fasten the tabs/ties to keep the gown in place while performing patient care activities in the patient room/procedure area.

- Remove the gown by untying the tabs/ties and folding it away from you in an inside-out manner. Roll it into a ball and discard it.
- Change the gown for each patient and/or procedure.

- **Head cover:**

A head cover is worn to protect the head and hair from contamination of infectious agents.

It is worn:

- In operating rooms and sterile areas to prevent contamination.
- When performing procedures requiring aseptic techniques.
- When handling sterile supplies in cleanrooms and sterile processing areas.
- In high-Risk infection areas such as transplant units, based on institutions protocols.
- When managing patients with specific infections with rapid transmissibility and high fatality requiring full PPE.

- **Shoe covers and boots** are highly recommended when caring for patients with a confirmed or unknown infectious agent that has rapid fatality with a high mortality rate, such as the Ebola virus. In this situation, boots are preferred because they are easier to clean and disinfect.

C- Respiratory Hygiene/Cough Etiquette:

- Instruct patients, visitors, and HCWs to cover their mouth and nose with a tissue or elbow when coughing or sneezing.
- Dispose of tissues in the nearest waste receptacle and perform HH immediately.
- Keep contaminated hands away from the mucous membranes of the mouth, eyes, and nose.
- Offer masks to coughing patients and encourage them to maintain a safe distance from others.

D- Patient Placement:

- Place patients who may contaminate the environment (e.g., with open wounds or diarrhea) in a single room if available.
- If a single room is not available, ensure contact isolation precautions are applied in a shared room or apply cohorting of patients with the same infectious disease when

applicable.

- Consider patient placement based on the route of transmission and risk of infection to other patients and healthcare workers.
- For further details, refer to **transmission-based precautions policy**.

E- Safe Injection Practices:

- Use aseptic technique for all injections.
- Get help before using sharps around confused or uncooperative patients.
- Avoid using the same syringe for multiple patients, even if the needle is changed.
- Dispose of sharps in designated puncture-resistant containers immediately after use at the point of use.
- 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.
- Close sharps containers when ¾ full and remove for incineration. Never open, empty, or reuse a sharp container.

F- Environmental Cleaning:

Clean and disinfect patient care areas and equipment regularly and when visibly soiled as per institution protocol.

G- Patient care equipment

- Do not reuse single-use items.
- 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.
- Patient care equipment must be cleaned, disinfected or sterilized between patients according to the Spaulding classification of items.
- Remove organic material from critical and semi-critical instruments/devices using recommended cleaning agents before transfer in leak-proof containers to sterile processing department for high-level disinfection or sterilization.

- Refer to the institution protocol for cleaning and disinfection of patient care equipment.

H- Linen Management:

- Handle soiled linens with care to prevent skin/mucous membrane exposure and contamination of clothing or transferring microorganisms to other patients or the environment.
- 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.
- Refer to the institution protocol for linen management.

I- Waste Management:

- Place biomedical waste in identifiable (color-coded) bags or appropriate containers.
- Securely tie or close bags/containers and remove for appropriate disposal.
- Refer to the institution protocol for waste management.

J- Handling of Specimens:

- Treat all blood and body fluid specimens as potentially infectious.
- Wear gloves before obtaining laboratory specimens.
- Label, seal and transport specimens in leak-proof designated containers in an upright position as much as possible and as promptly as possible and ensure no leakage of the specimens.

References:

- Association for Professionals in Infection Control (APIC) and Epidemiology, Inc. (2014). Chapter 28: standard Precautions. In APIC Text of infection control and epidemiology (4th ed.)
- Centers for disease Control and Prevention (CDC), Standard Precautions for all patient care, https://www.cdc.gov/infection-control/hcp/basics/standard-precautions.html (accessed 13/05/2025)

- Centre's for Disease Control (CDC), Sequence For Putting On And Removing Personal Protective Equipment (PPE), https://www.cdc.gov/infection-control/media/pdfs/Toolkits-PPE-Sequence-P.pdf (accessed 13/05/2025)

Hand Hygiene

Purpose

To establish standardized practices across healthcare settings to prevent the spread of infections. The national hand hygiene policy aims to ensure that all healthcare workers adhere to proper hand hygiene techniques, reducing the risk of healthcare-associated infections (HAIs). By implementing this policy, the goal is to protect patients, healthcare workers (HCW), and the public from the transmission of infectious agents, thereby improving overall patient safety and

healthcare quality across the nation.

Introduction

- Hand hygiene is a general term referring to hand washing, antiseptic hand rub, or surgical hand antisepsis
- Effective hand hygiene is the cornerstone of standard precautions and is the single most important measure in the prevention of HAIs and anti-microbial resistance.

Definitions

- **Hand washing:** Washing hands with plain (non-antimicrobial) soap and water.
- **Antiseptic Hand Wash**: Washing hands with water and soap containing an antiseptic agent.
- **Antiseptic Hand Rub**: Applying an antiseptic hand rub to reduce or inhibit the growth of microorganisms without the need for an exogenous source of water and requiring no rinsing or drying with towels or other devices.
- **Surgical Hand Antisepsis:** Antiseptic hand wash or antiseptic hand rub performed preoperatively by surgical personnel to eliminate transient and reduce resident hand flora. Antiseptic detergent preparations often have persistent antimicrobial activity.
- **Plain Soap:** Plain soap refers to detergents that do not contain antimicrobial agents.
- **Antimicrobial Soap:** Soap containing an antiseptic agent. Antimicrobial substances that are applied to the skin to reduce the number of microbial flora include alcohols, Chlorhexidine, and iodine.
- **Alcohol based Hand Rub:** An alcohol-containing preparation designed for application to the hands for reducing the number of viable microorganisms. Most alcohol-based hand antiseptics contain either ethanol, isopropanol or n-propanol, or a combination of two of these products.

Procedure

A- Institutional responsibilities

- Administrators shall support the promotion of a multifaceted, multimodal hand hygiene strategy and an approach that promotes a patient safety culture.
- Provide HCWs with access to a safe, continuous water supply at all outlets and access to the necessary facilities to perform handwashing.
- Provide HCWs with a readily accessible alcohol-based handrub at the point of patient care
- Make improved hand hygiene adherence (compliance) an institutional priority and provide appropriate leadership, administrative support, financial resources, and support for hand hygiene and other prevention and control activities.
- Ensure HCWs have dedicated time for infection control training, including sessions on hand hygiene.
- Implement a multidisciplinary, multifaceted and multimodal program designed to improve adherence of HCWs to recommended hand hygiene practices
- Ensure that the water supply is physically separated from drainage and sewage within the healthcare setting and provide routine system monitoring and management.
- Provide strong leadership and support for hand hygiene and other infection prevention and control activities.

B- Education

- Educate HCWs about the type of patient-care activities that can result in hand contamination, the indications for hand Hygiene, the technique and about the advantages and disadvantages of various methods used to clean their hands.
- Educate and encourage partnerships between patients, their families, and HCWs to promote hand hygiene in health care settings.

C- Fingernails

- The type and length of fingernails can have an impact on the effectiveness of hand hygiene. Artificial or false nails have been associated with higher levels of infectious agents, especially Gram-negative bacilli and yeasts, than natural nails.
- Do not wear artificial fingernails or extenders when having direct contact with patients.
- Keep natural nails short (tips less than 0.5 cm long or approximately ¼ inch).

- All nail polish that is chipped should be removed prior to presenting for work.

D- Jewelry

- Hand contamination with infectious agents is increased when wearing hand or wrist jewelry.
- Rings, bracelets, bangles and wrist watches should not be worn because they can hinder effective hand hygiene practices.
- In clinical areas all hand and wrist jewelry are limited to a single plain banded ring (e.g. wedding ring only).
- In high-risk settings such as operating suites/rooms, and when performing aseptic procedures, any jewelry, even a plain band, shall not be worn.

E- Skin care

- Ensure that the skin on your hands is intact. Cover non-intact skin areas with waterproof dressing.
- Provide alternative hand hygiene products for HCWs with confirmed allergies or adverse reactions to standard products used in the health-care setting.
- Provide HCWs with hand lotions or creams to minimize the occurrence of irritant contact dermatitis associated with hand antisepsis or handwashing. Hand lotions shall be approved by the Infection Prevention and Control Program and shall be compatible for use with hand hygiene products and gloves in use by the facility. Hand lotions shall not be allowed to be brought from home. Contaminated hand lotions have been implicated in outbreaks of diseases (primarily gram-negative rods) in healthcare facilities.

F- Indications for hand hygiene

- Depending on the type of care given, all caregivers are expected to clean their hands with either soap and water or alcohol-based hand rub as per The World Health Organization '5 Moments for Hand Hygiene' (see appendix A). These indications are:
    1) Before patient contact
    2) Before performing clean or aseptic procedure
    3) After exposure to patients' body fluids or excretions, mucous membranes, non-

intact skin, or wound dressings

4) After patient contact
5) After touching patient's surroundings, e.g. furniture, equipment

- Other clinical and non-clinical indications include:
    - When moving from a contaminated body site to another body site during care of the same patient
    - Before and after removing gloves
    - Before handling medication or preparing food
    - After using toilet
    - Before and after meal breaks, including smoking
- Wash hands with soap and water when visibly dirty or visibly soiled with blood or other body fluids or after using the toilet.
- Wash hands with soap and water when dealing with patients suspected or confirmed to have spore forming organisms (i.e., clostridium difficile). The physical action of washing and rinsing hands under such circumstances is recommended because alcohols, chlorhexidine, iodophors, and other antiseptic agents have poor activity against spores.

G- Hand hygiene and glove use

- The use of gloves does not replace the need for hand hygiene by either hand rubbing or handwashing.
- 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
- Remove gloves after caring for a patient. Do not wear the same pair of gloves for the care of more than one patient.
- When wearing gloves, change or remove gloves during patient care if moving from a contaminated body site to either body site (including non-intact skin, mucous membrane or medical device) within the same patient or the environment.
- Use gloves only when clinically indicated, according to appendix B.

H- Hand hygiene techniques and procedure duration

See appendices C, D, and E

I- Monitoring adherence:

- Use the WHO methodology to monitor hand hygiene practices and provide HCWs with performance feedback.
- Monitor at minimum the two indications “before patient contact” and “after patient contact”.

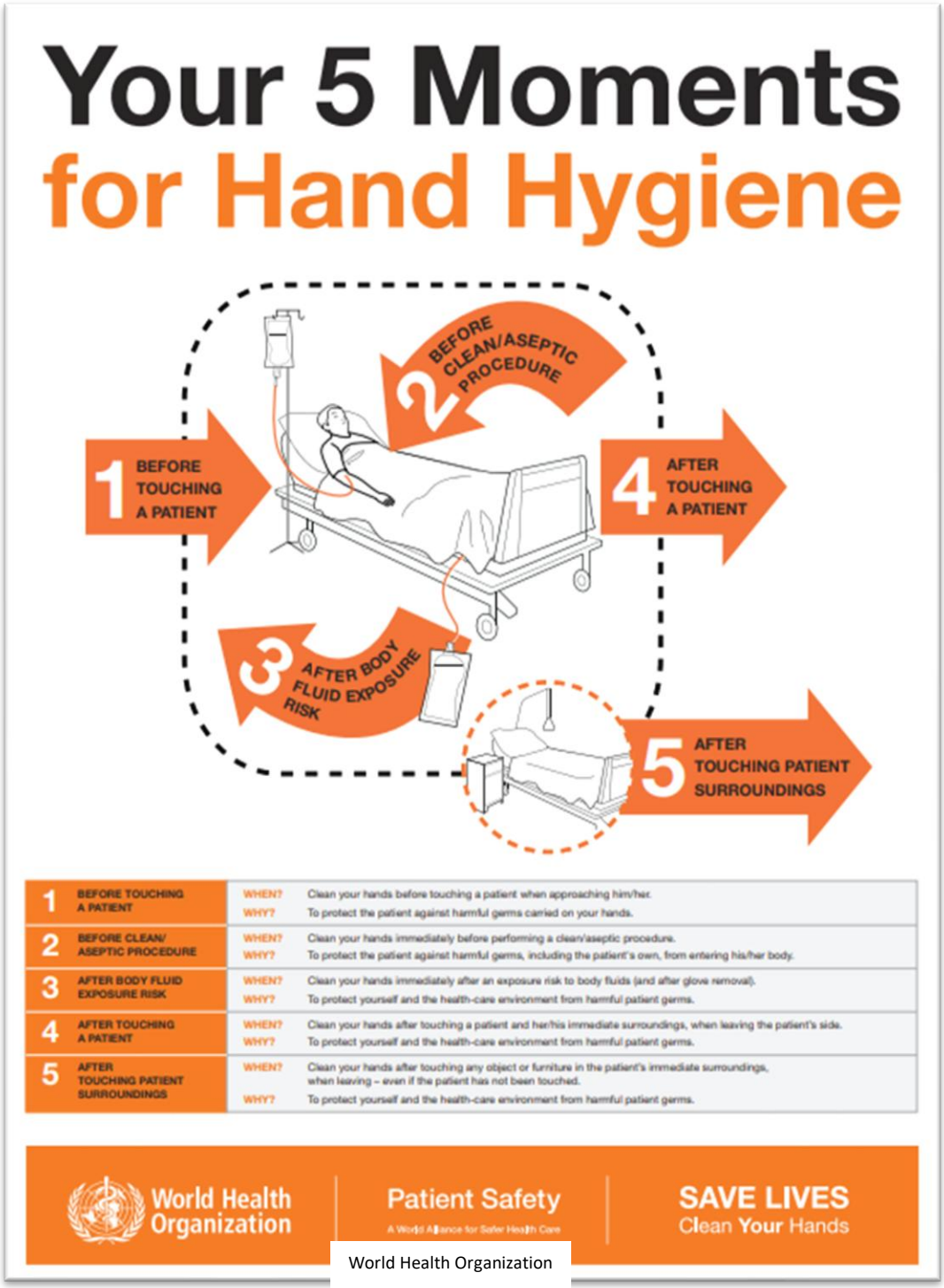
J- Selection and handling of hand hygiene agents

- Provide HCWs with efficacious hand hygiene products that have low irritancy potential.
- To maximize acceptance of hand hygiene products by HCWs, solicit their input regarding the skin tolerance, feel, and fragrance of any products under consideration.
- When selecting hand hygiene products:
    - Determine any known interaction between products used to clean hands, skin care products, and the types of gloves used in the institution.
    - Solicit information from manufacturers about the risk of product contamination.
    - Ensure that dispensers are accessible at the point of care, function adequately and reliably and deliver an appropriate volume of the product and the dispenser is approved for flammable materials.
    - Solicit and evaluate information from manufacturers regarding any effect that hand lotions, creams, or alcohol-based hand rubs may have on the effects of antimicrobial soaps being used in the institution.

References

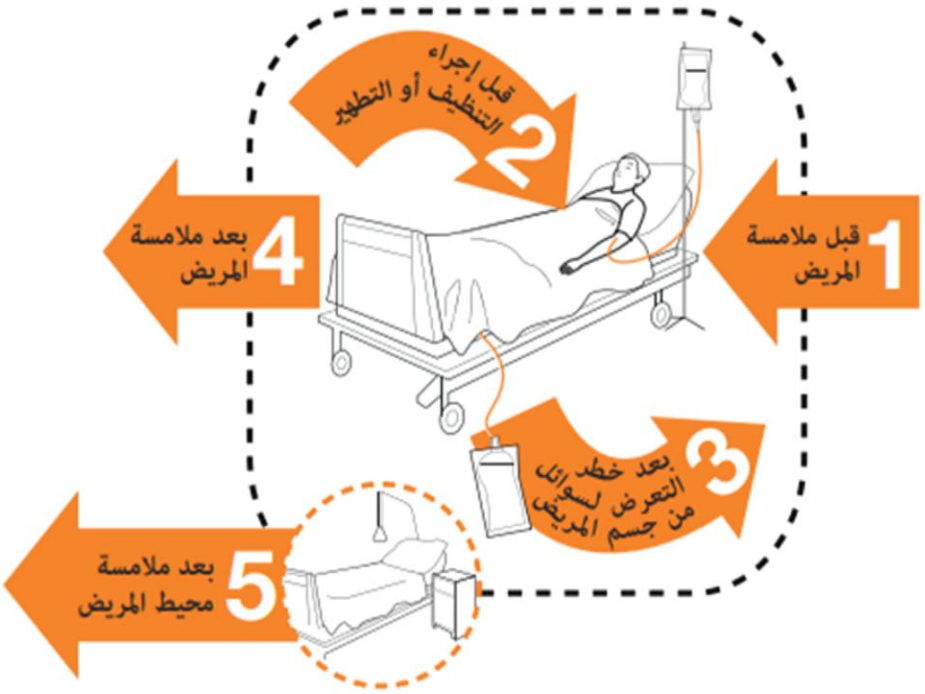
- Centre’s for Disease Control (CDC) Guideline for Hand Hygiene in Health-Care Settings- https://www.cdc.gov/handhygiene/ (accessed 20/05/2025)
- WHO guidelines on hand hygiene in health care, 15 January 2009, https://www.who.int/publications/i/item/9789241597906 (accessed 20/05/2025)

Appendix A- Indications for Hand Hygiene



World Health Organization

اللحظات الخمس لنظافة اليدين



1 قبل ملامسة المريض	متى؟	نظف يديك عند اقترابك من المريض قبل ملامسته.
	لماذا؟	لحماية المريض من الجراثيم الضارة الموجودة على يديك.
2 قبل القيام بإجراء يستدعي التنظيف أو التطهير	متى؟	نظف يديك قبل القيام بإجراء يستدعي التنظيف أو التطهير مباشرة.
	لماذا؟	لحماية المريض من انتقال الجراثيم الضارة إليه، بما فيها جراثيم المريض نفسه.
3 بعد التعرض لخطر ملامسة سوائل من جسم المريض	متى؟	نظف يديك بعد التعرض لسوائل جسم المريض مباشرة (وبعد خلع القفازات)
	لماذا؟	لحماية نفسك ومحيط تقديم الرعاية الصحية من جراثيم المريض الضارة
4 بعد ملامسة المريض	متى؟	نظف يديك بعد ملامسة المريض و ما يحيط به مباشرة، عند مغادرتك محيط المريض.
	لماذا؟	لحماية نفسك ومحيط تقديم الرعاية الصحية من جراثيم المريض الضارة
5 بعد ملامسة محيط المريض	متى؟	نظف يديك بعد لمس أي شيء أو أي أثاث في محيط المريض المباشر، عند مغادرتك - حتى لو لم تلمس المريض.
	لماذا؟	لحماية نفسك ومحيط تقديم الرعاية الصحية من جراثيم المريض الضارة

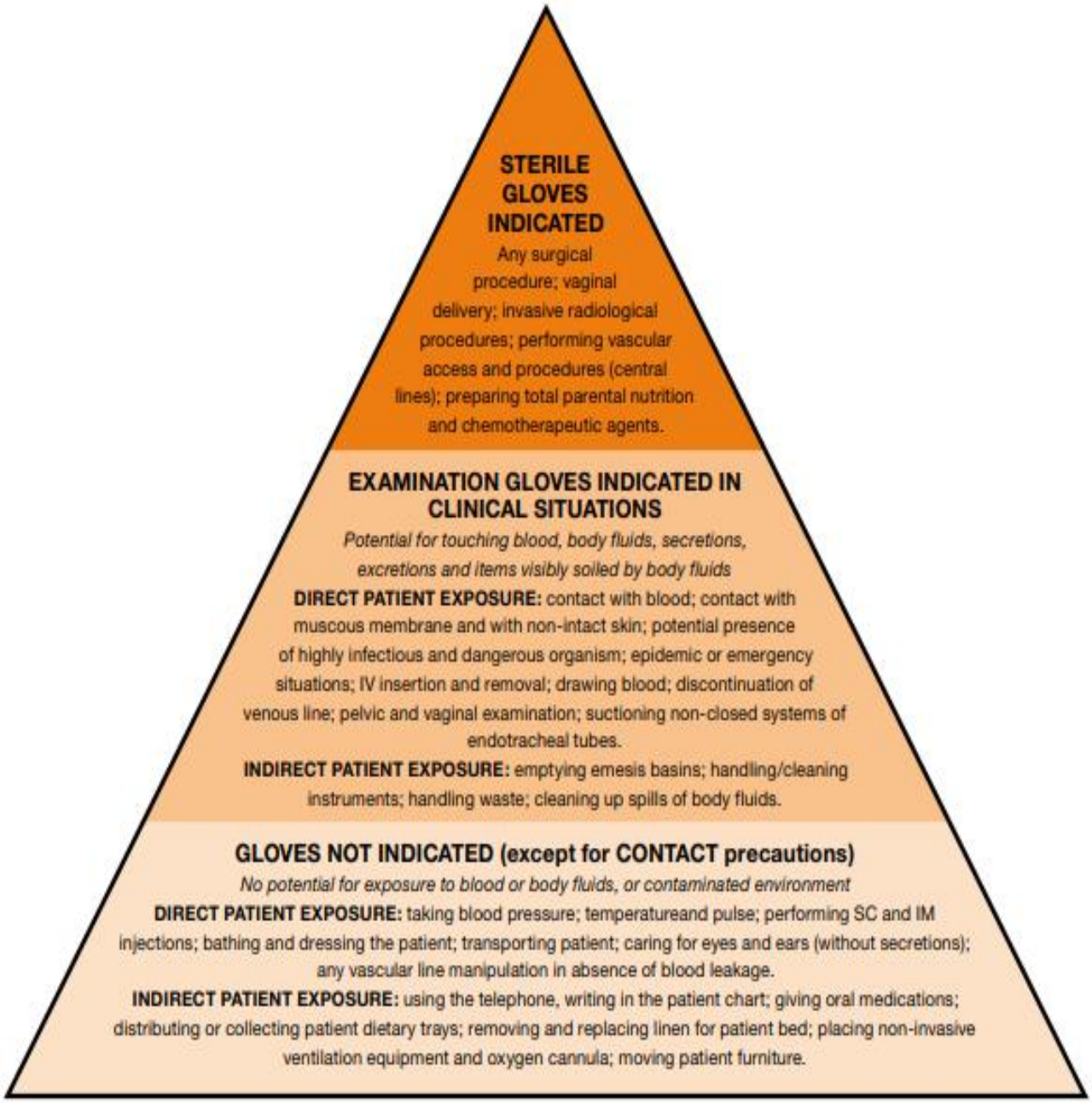
أنقذوا الأرواح
نظفوا أيديكم

سلامة المرضى
التحالف العالمي لرعاية صحية أكثر أمانًا

منظمة الصحة العالمية

World Health Organization

Appendix B- Indications for using gloves



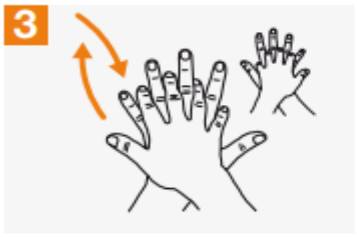
Appendix C – How to hand rub

Hand Hygiene Technique with Alcohol-Based Formulation

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;

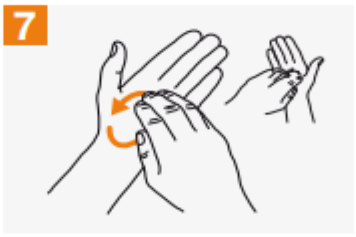


Right palm over left dorsum with interlaced fingers and vice versa;

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.

World Health Organization

Appendix D – how to hand wash

Hand Hygiene Technique with Soap and Water

Duration of the entire procedure: 40-60 seconds

Wet hands with water;

Apply enough soap to cover all hand surfaces;

Rub hands palm to palm;

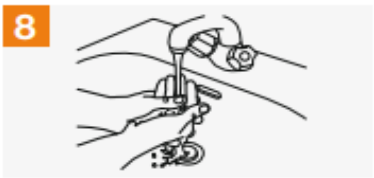
Right palm over left dorsum with interlaced fingers and vice versa;

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;



Rinse hands with water;

Dry hands thoroughly with a single use towel;

Use towel to turn off faucet;

Your hands are now safe.

World Health Organization

Appendix E – how to perform surgical hand rubbing

Surgical Handrubbing Technique

- Handwash with soap and water on arrival to OR, after having donned theatre clothing (cap/hat/bonnet and mask).
- Use an alcohol-based handrub (ABHR) product for surgical hand preparation, by carefully following the technique illustrated in Images 1 to 17, before every surgical procedure.
- If any residual talc or biological fluids are present when gloves are removed following the operation, handwash with soap and water.

Put approximately 5ml (3 doses) of ABHR in the palm of your left hand, using the elbow of your other arm to operate the dispenser.

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

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).

Images 8-10: Now repeat steps 1-7 for the left hand and forearm.

Put approximately 5ml (3 doses) of ABHR in the palm of your left hand as illustrated, to rub both hands at the same time up to the wrists, following all steps in images 12-17 (20-30 seconds).

Cover the whole surface of the hands up to the wrist with ABHR, rubbing palm against palm with a rotating movement.

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

Rub palm against palm back and forth with fingers interlinked.

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

Rub the thumb of the left hand by rotating it in the clasped palm of the right hand and vice versa.

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

Repeat this sequence (average 60 sec) the number of times that adds up to the total duration recommended by the ABHR manufacturer's instructions. This could be two or even three times.

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Aseptic Technique

Purpose

To standardize practices that prevent contamination during medical procedures, thereby reducing the risk of infections. This policy ensures that healthcare workers (HCWs) across all facilities adhere to strict protocols when handling sterile equipment, performing invasive procedures, and managing wound care. By promoting uniformity in aseptic practices, the policy aims to enhance patient safety, minimize healthcare-associated infections (HAIs), and improve overall healthcare quality on a national level.

Introduction

The principles of aseptic technique aim to reduce the risk of transmission of pathogens that cause infections by preventing:

- Contamination of wounds, the bladder, circulatory system or other normally sterile sites
- Patient-to-patient transmission of microorganisms
- Caregiver-to-patient and patient-to-caregiver transmission of pathogenic microorganisms
- Environmental contamination that can indirectly contaminate the patient

Definitions

- **Aseptic technique:** A set of infection prevention actions aimed at protecting patients from infection during invasive clinical procedures and management of indwelling medical devices; notably, it is a generic term that is variously defined, interpreted, and used interchangeably with other practice terms, such as clean, sterile, and non-touch technique.
- **Aseptic Non-Touch Technique (ANTT)**: A specific and comprehensively defined type of aseptic technique with a unique theory-practice framework based on an original concept of Key-Part and Key-Site Protection; achieved by integrating Standard Precautions such as hand hygiene and personal protective equipment with appropriate aseptic field management, non-touch technique, and sterilized supplies. It is designed for all invasive clinical procedures and management of invasive medical devices. In the context of infusion therapy, this includes vascular access device (VAD) insertion and management and infusion administration. ANTT

can be successfully implemented as a standalone initiative or as an integral part of a clinical care bundle

- **Clean technique**: refers to practices that reduce the number of infectious agents and should be considered the minimum level of infection control for non-invasive patient-care activities. Practices include personal hygiene, particularly hand hygiene, to reduce the number of infectious agents on the skin; use of barriers to reduce transmission of infectious agents (including proper handling and disposal of sharps); environmental cleaning; and reprocessing of equipment between patient uses.
- **Single Use Device:** is a medical device that is intended for single use only, on an individual patient for a single procedure, and then should be discarded. It should not be reprocessed or reused again even on the same patient. These devices are packaged and marked as "single use" or have the international sign for single use items. Examples: airway circuits, suction catheters, Intravenous sets, needles & syringes, PPE (gowns, gloves) … etc.,
- **Sterile:** Free from all living microorganisms.
- **Sterile technique:** aims to eliminate microorganisms from areas and objects and should be undertaken by all HCWs undertaking invasive medical procedures.

Procedure

A- Aseptic Technique includes hand hygiene, the use of Personal Protective Equipment (PPE), the use of antiseptics and disinfectants, proper reprocessing of medical equipment and instruments and using of single use items (when indicated), as well as environmental cleaning. These elements would be adopted according to the level of asepsis required (clean technique versus surgical technique).

B- **Five essentials' principles in using aseptic technique:**

1) **Sequencing:**
   - Performing a risk assessment
   - Pre-procedure preparation
   - Performing the procedure
   - Post procedure practices, handover and documentation

2) **Environmental control**
   - Clean and disinfect the environmental surfaces using hospital-approved disinfectants.
   - Prior to aseptic procedures, HCWs must ensure there are no avoidable environmental risk factors nearby, such as bed making or patients using commodes.
3) **Hand hygiene as per policy**
4) **Maintenance of aseptic fields**
   - Cleaning and/or disinfection of equipment and patient prior to procedure(s).
   - Before use, sterile packages should always be inspected for signs of contamination such as moisture, tears, discoloration, and expiration as well verification of sterilization indicators.
   - Establishing an aseptic field.
   - Use of sterile equipment.
   - Maintenance of the aseptic field, including protecting the key sites and key parts
   - Use the appropriate recommended antiseptic for each procedure type as well as screening for contraindications such as allergies.
   - 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.
   - Use of a non-touch technique.
5) **Personal Protective Equipment (PPE):** correct selection and use of sterile and non-sterile PPE based on the procedure.

C- Clean Technique

- Wear clean gloves instead of sterile gloves after hand antisepsis where clean technique is indicated.
- Use the "no-touch" dressing technique to prevent contamination of sterile dressings, depending on the type and extent of the procedure.

- 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.
- Wear a clean gown to minimize contamination of clothing, following standard precaution guidelines.

D- Surgical Technique Outside the Operating Room (OR)

Settings outside the OR may not have the capacity to follow the same strict level of surgical asepsis applied in the OR. 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:

- Managing activities to reduce airborne transmission if procedures are performed at the bedside.
- Keeping doors closed during procedures.
- Using physical barriers such as screens.
- Diverting traffic in open units.
- Excluding visitors and unnecessary personnel.
- Avoiding cleaning activities in the area during invasive procedures.
- Providing environmental controls to further reduce contamination.

E- Surgical Technique in the OR

- Strictly adhere to sterile technique in the OR 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.
- 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.
- Wear sterile attire in the sterile field.

- A higher rate of air exchanges and maintenance of positive pressure in relation to the adjacent corridors or spaces is appropriate.
- It is required to have appropriate air duct filters checked and changed at appropriate intervals.
- Maintain environmental controls in the OR by monitoring temperature and humidity.

F- Aseptic Non-Touch Technique - ANTT (example in wound dressing)

- Decontaminate hands
- Assess type and size of sterile field required and assemble and prepare equipment
- Select sterile or clean gloves according to procedure
- Decontaminate hands (immediately prior to performing procedure)
- Put on gloves if indicated at the point where the HCW is exposed to blood, mucous membranes or bodily fluids
- Identify key parts of equipment
- Perform procedure – avoiding contact between key parts and hands or non-sterile surfaces
- Discard used equipment safely
- Remove and discard gloves (if used)
- Decontaminate hands

G- Types of glove use for ANTT (examples)

Sterile gloves	Clean gloves

- Insertion of central venous catheters - Preparation and connection of parenteral nutrition to central venous access - Dressing central venous and arterial devices - Lumbar puncture - Cleaning and re-dressing wounds - Removal and manipulation of surgical drains - Vaginal examination during delivery	- Venepuncture - Blood sampling from a central venous access device or an arterial line - Preparation and administration of intravenous (IV) cytotoxic and irritant drugs - Sampling from a urinary catheter and drains - Removal of wound dressing - Insertion of peripheral cannula - Endotracheal suctioning of respiratory secretions (closed suction)

H- Technique Applicable for Commonly Performed Procedures (examples)

Procedure	Technique	Comments
Taking vital signs	Clean	
Central venous catheter insertion	Sterile	Maximum barrier precautions
Chest drain insertion	Sterile	Maximum barrier precautions
Cervical smear	Clean	Use a single use only speculum
Epidural	Sterile	Surgical HH and maximum barrier precautions
Gastrostomy or jejunotomy tube insertion (endoscopic/ surgical or radiological guidance)	Sterile	Maximum barrier precautions
Lumbar puncture	Sterile	Maximum barrier precautions
Indwelling urinary catheter insertion	Sterile	Routine hand hygiene, sterile gloves
Insertion of breast wires, drainage of breast seromas and biopsies of breast lumps under radiological guidance	Sterile	Maximum barrier precautions
Intermittent urethral catheterisation	Sterile	Sterile gloves and single use disposable apron in hospital
IV medication Preparation for immediate use and administration.	Aseptic non-touch technique	Routine hand hygiene, Clean non-sterile gloves
Wound care for wounds healing by primary intention e.g. surgical wound	Sterile	Routine hand hygiene, Sterile gloves and single use disposable apron

REFERENCES

- APIC chapter 30, Aseptic Technique, Basics principles of infection prevention practices, 2024
- NICE (2014) Healthcare associated infections in primary and community care NICE clinical guideline 139 https://www.nice.org.uk/guidance/cg139 (accessed on 2/9/2024)
- Aseptic Non-Touch Technique (ANTT) Core Clinical Guidelines. ANTT Core Clinical Guidelines (2020). ANTT Clinical Guideline Collections for Hospitals and Community Care. https://www.antt.org/ (accessed 20/05/2025)
- Aseptic technique https://www.cdc.gov/infection-control/hcp/intravascular-catheter-related-infections/summary-recommendations.html recommendations.html (accessed 20/05/2025)
- Aseptic technique: Australian Guidelines for the Prevention and Control of Infection in Healthcare; National Health and Medical Research Council; May 2019 (accessed 02/09/2024)
- Nickel B, Gorski L, Kleidon T, Kyes A, DeVries M, Keogh S, Meyer B, Sarver MJ, Crickman R, Ong J, Clare S, Hagle ME. Infusion Therapy Standards of Practice, 9th Edition. J Infus Nurs. 2024 Jan-Feb 01;47(1S Suppl 1): S1-S285. doi: 10.1097/NAN.0000000000000532. PMID: 38211609.

Transmission-based Precautions

Purpose

To establish standardized practices across healthcare settings to prevent the spread of infections. The national transmission-based precautions policy outlines the required precautions that must be followed in addition to standard precautions by all Healthcare Workers (HCWs) when providing care to patients who may be infected or colonized with certain infectious agents.

Introduction

- Transmission-Based Precautions are used when the route(s) of transmission of the infectious agent is (are) not completely interrupted using Standard Precautions alone.
- The Infection Control team shall provide regular and ongoing education to all HCWs on transmission-based precautions, conduct audits, and offer feedback to ensure continuous adherence to standard precautions.
- Healthcare institutions should ensure that all staff have the necessary resources and training to comply with this policy.

Definitions

- **Transmission-Based Precautions (TBP):** are the second tier of basic infection control and are to be used in addition to Standard Precautions for patients who may be infected or colonized with certain infectious agents for which additional precautions are needed to prevent infection transmission. There are three types of TBP that can be used alone or in combination for diseases that have multiple routes of transmission:
  - Contact Isolation Precautions
  - Droplet Isolation Precautions
  - Airborne Isolation Precautions
- **Contact Transmission:** it occurs by direct contact or indirect contact.
  - Direct-Contact Transmission: a direct body surface-to-body surface contact and physical transfer of microorganisms between a susceptible host and an infected or colonized person.
  - Indirect-Contact Transmission: contact of a susceptible host with a contaminated intermediate object usually inanimate, such as contaminated instruments or dressings, or contaminated gloves not changed between patients.

- **Droplet Transmission:** transmission occurs when droplets (> 5 microns) containing microorganisms generated from the infected person (during coughing, sneezing, talking and during the performance of certain procedures such as endotracheal suctioning and bronchoscopy) are propelled a short distance through the air and deposited on the hosts conjunctivae, nasal mucosa or mouth.
- **Airborne Transmission:** occurs by dissemination of either airborne droplet nuclei (small particle, 5 microns or smaller in size, of evaporated droplets containing microorganisms which remains suspended in the air for long periods of time) or dust particles containing the infectious agent. Microorganisms carried in this manner can be widely dispersed by air currents and may become inhaled by a susceptible host within the same room or over a longer distance from the source patient, depending on the environmental factors.
- **Vector Borne Transmission** occurs when vectors such as mosquitoes, flies, rats and other vermin transmit microorganisms. Diseases via biting insects is currently not a major problem in the UAE, however insects such as cockroaches can carry pathogenic organisms on their bodies and in their digestive tracts. This may infect the hospital environment, including food and sterile supplies; therefore, storage of supplies in a clean well-ventilated area is essential.

Procedures

A- Proper Patient Placement: Patient placement is a two-step process that is informed by a risk assessment followed by prioritization of the seriousness of the infection and any competing patient needs. Collaboration or consultation with IPC should be sought at once whenever necessary.

- **Step one: risk assessment:** Placement of patients in any clinical area should be assessed according to the following, including but not limited to:
- Whether the patient is suspected or known to be colonized or infected with a highly transmissible or epidemiologically significant pathogen.
- Whether the patient has signs and symptoms that raise suspicion of the presence of an infectious condition taking into consideration the clinical predictors of transmission

such as broken skin, open and draining wounds, poor hygiene practices, incontinence, clinical symptoms such as diarrhea, vomiting, coughing, sneezing.

- **Step two: prioritization:**
  - Single rooms are preferred for all patients requiring isolation due to infectious conditions and are always indicated for patients requiring airborne precautions (ideally in airborne infection isolation room - AIIR).
  - Consideration of competing needs must also be considered for those patients who are most at risk from infection including: Immunocompromised/neutropenic, patient with burns, patients who undergone organ transplantation, premature neonates, geriatric or elderly patients, patients with invasive lines/indwelling catheters and pregnant.
  - **Cohorting** of eligible patients can be considered for the following in consultation with infection control team:
    - Patients with the same pathogenic organism, species and/or strain.
    - Patients who do not require airborne isolation precaution.
    - Patients should be physically separated (> three feet apart) from each other. Draw the privacy curtain between beds to minimize opportunities for direct contact.
    - Change personal protective equipment (PPE) and perform hand hygiene between contact with patients in the same room

B- Contact precautions:

- Use contact and standard precautions for patients with known or suspected infections that represent an increased risk for contact transmission.
- Ensure appropriate patient placement in a single patient space or room if available in acute care hospitals or cohort patients colonized or infected with the same pathogen and are suitable roommates.
- Prioritize patients with conditions that may facilitate transmission (i.e., uncontained drainage, stool incontinence) for single-patient room placement.
- In long-term and other residential settings, make room placement decisions balancing risks to other patients.

- In ambulatory settings, place patients requiring contact precautions in an exam room or cubicle as soon as possible.
- Use PPE appropriately, including gloves and gown for all interactions that may involve contact with the patient or the patient's environment. Donning PPE upon room entry and properly discarding before exiting the patient room is done to contain pathogens.
- Limit transport and movement of patients outside of the room for medically-necessary purposes. When transport or movement is necessary:
    - Notify the destination department/facility of the patient’s isolation status prior to transport.
    - Cover or contain the infected or colonized areas of the patient's body.
    - Remove and dispose of contaminated PPE and perform hand hygiene prior to transporting patients.
    - Don clean PPE to handle the patient at the transport location.
- Use disposable or dedicated patient-care equipment (e.g., blood pressure cuffs). If common use of equipment for multiple patients is unavoidable, clean and disinfect such equipment before using on another patient.
- Prioritize cleaning and disinfection of the rooms of patients on contact precautions ensuring rooms are frequently cleaned and disinfected (e.g., at least daily or prior to use by another patient if outpatient setting) focusing on frequently touched surfaces and equipment in the immediate vicinity of the patient.
- Discontinue isolation precautions in consultation with the Infection control staff.

Figure 1: Contact Precautions Poster

C- Droplet precautions:

- Use droplet and standard precautions for patients known or suspected to be infected with pathogens transmitted by respiratory droplets.
- Put a mask on the patient and provide education on hand hygiene and cough etiquette.
- Place the patient in a single room if possible. In acute care hospitals, if single rooms are not available, cohort patients who are infected with the same pathogen and are suitable roommates.
- Prioritize patients who have excessive cough and sputum production for single-patient room placement.
- In long-term care and other residential settings, make decisions regarding patient placement on a case-by-case basis considering infection risks to other patients in the room and available alternatives.

- In ambulatory settings, place patients who require Droplet Precautions in an exam room or cubicle as soon as possible and instruct patients to follow Respiratory Hygiene/Cough Etiquette recommendations.
- Don mask upon entry into the patient room or patient space.
- Limit transport and movement of patients outside of the room to medically necessary purposes. If transport or movement outside of the room is necessary:
  - Notify the destination department/facility of the patient's isolation status prior to transport.

  - Instruct patient to wear a mask and follow Respiratory Hygiene/Cough Etiquette.
- Instruct visitors to follow droplet precautions.
- Discontinue isolation precautions in consultation with the Infection control staff.

Figure 2: Droplet Precautions Poster

D- Airborne precautions:

- Use airborne and standard precautions for patients known or suspected to be infected with pathogens transmitted by the airborne route such as pulmonary tuberculosis, measles and chickenpox.
- Put a mask on the patient and provide education on hand hygiene and cough etiquette.
- Ensure appropriate patient placement in a well-functioning/monitored airborne infection isolation room (AIIR).
- In settings where Airborne Precautions cannot be implemented due to limited engineering resources, mask and place the patient in a private well-ventilated room (with portable HEPA filter if available) with the door closed until the patient is either transferred to a facility with an AIIR or returned home.
- Restrict susceptible healthcare personnel from entering the room of patients known or suspected to have measles, chickenpox, disseminated zoster, or smallpox if other immune healthcare personnel are available.
- Use a fit-tested hospital-approved N95 (or equivalent) or higher-level respirator for healthcare personnel.
- Limit transport and movement of patients outside of the room for medically necessary purposes. If transport or movement outside an AIIR is necessary:
  - Notify the destination department/facility of the patient's isolation status prior to transport.
  - Instruct patient to wear a mask and follow Respiratory Hygiene/Cough Etiquette.
  - HCWs transporting patients who are on Airborne Precautions do not need to wear a mask or respirator during transport if the patient is wearing a mask and skin lesions are covered.
- Immunize susceptible persons as soon as possible following unprotected contact with vaccine-preventable infections (e.g., measles, varicella or smallpox).
- Check visitors for their immune status to the disease and instruct them regarding the use of protective apparel and proper infection control practices while in the isolation room.

Figure 3: Airborne Precautions Poster

E- Type and Duration of Precautions Recommended for Selected Infections and Conditions

The type and duration of precautions recommended for infections and conditions are available from the Centers for Disease Control and Prevention (CDC) Guideline for Isolation Precautions: Preventing Transmission of Infectious Agents in Healthcare Settings (updated on September 2024) under the following link: https://www.cdc.gov/infection-control/hcp/isolation-precautions/appendix-a-type-duration.html (accessed 20/05/2025).

References:

- 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.).
- CDC, Transmission-Based Precautions, https://www.cdc.gov/infection-control/hcp/basics/transmission-based-precautions.html, accessed on 20/5/2025.
- 2007 Guideline for Isolation Precautions: Preventing Transmission of Infectious Agents in Healthcare Settings, https://www.cdc.gov/infection-control/media/pdfs/guideline-isolation-h.pdf?CDC_AAref_Val=https://www.cdc.gov/infectioncontrol/pdf/guidelines/isolation-guidelines-H.pdf, accessed on 20/5/2025

MDRO management

Introduction

- Multi drug resistant organisms (MDROs) present significant clinical and infection prevention and control (IPC) challenges in healthcare settings. Some bacteria are naturally resistant to certain types of antimicrobials, whilst others develop or acquire resistance.
- The prevention and control of MDROs is a national priority - one that requires all healthcare facilities to assume responsibility. Successful prevention and control of MDROs requires administrative and scientific leadership, as well as financial and human resource commitment. Resources must be made available for IPC, including expert consultation, laboratory support, adherence monitoring, and data analysis.

MDRO definitions

- **MDRO**s: are microorganisms, predominantly bacteria, that are resistant to one or more classes of antimicrobial agents.
- **MRSA:** Methicillin-Resistant *Staphylococcus aureus* includes *S. aureus* cultured from any specimen that tests oxacillin-resistant, cefoxitin resistant, or methicillin-resistant by standard susceptibility testing methods, or any laboratory finding of MRSA (includes but not limited to PCR or other molecular based detection methods).
- **VRE:** Vancomycin-Resistant Enterococci includes *Enterococcus faecalis, Enterococcus faecium,* or *Enterococcus species* unspecified that is resistant to vancomycin, by standard susceptibility testing methods or a laboratory finding of VRE (includes but not limited to PCR or other molecular based detection methods).
- **CRE:** Carbapenem-Resistant Enterobactriales include any *Escherichia coli, Klebsiella oxytoca, Klebsiella pneumoniae*, *Klebsiella aerogenes* or *Enterobacter spp*. testing resistant to imipenem, meropenem, doripenem, ertapenem, meropenem/vaborbactam, or imipenem/relebactam by standard susceptibility testing methods (specifically, minimum inhibitory concentrations of ≥4 mcg/mL for doripenem, imipenem, meropenem, meropenem/vaborbactam, and imipenem/relebactam or ≥2 mcg/mL for ertapenem) OR by production of a carbapenemase (specifically, KPC, NDM, VIM, IMP,

OXA-48) demonstrated using a recognized test (examples: polymerase chain reaction, metallo-β-lactamase test, modified-Hodge test, Carba-NP).

- **MDR-Acinetobacter:** Any *Acinetobacter spp*. testing non-susceptible (specifically, either resistant or intermediate) to at least one agent in at least 3 antimicrobial classes of the following 6 antimicrobial classes: Aminoglycosides, Carbapenems, Fluoroquinolones, β-lactam/β-lactam β-lactamase inhibitor combination, Cephalosporins, Sulbactam.
- ***Candida auris*:** is an emerging fungal pathogen with serious global health threat, it is commonly multidrug-resistant and can cause serious invasive infections in patients and/or subsequent mortalities.

WHO bacterial priority pathogens list:

The WHO list includes 15 families of antibiotic-resistant pathogens, grouped into critical, high and medium categories of priority for Research and Development and for public health measures. It has been shown to be a valuable health tool for guiding AMR surveillance, prevention and control.

1- **Critical group:** *Acinetobacter baumannii* carbapenem-resistant, *Enterobacterales* third-generation cephalosporin-resistant, *Enterobacterales* carbapenem-resistant.

2- **High group:** *Salmonella Typhi* fluoroquinolone-resistant, *Shigella spp*. fluoroquinolone-resistant, *Enterococcus faecium* vancomycin-resistant, *Pseudomonas aeruginosa* carbapenem-resistant, Non-typhoidal *Salmonella* fluoroquinolone-resistant, *Neisseria gonorrhoeae* third-generation cephalosporin, and/or fluoroquinolone-resistant, *Staphylococcus aureus* methicillin-resistant.

3- **Medium group:** Group A *Streptococci* macrolide-resistant, *Streptococcus pneumoniae* macrolide-resistant, *Haemophilus influenzae* ampicillin-resistant, Group B *Streptococci* penicillin-resistant

MDRO prevention:

- The leadership of healthcare facilities shall make MDRO prevention and control an organizational patient safety priority, based on the prevalence of MDROs in the facility and the community.
- Healthcare facilities shall identify experts who can provide consultation and expertise for analyzing epidemiologic data, recognizing MDRO problems, or devising effective control strategies, as needed.
- Healthcare facilities should monitor and improve staff adherence to recommended practices for **Standard precautions** and **Contact precautions** during all care activities on patients infected or colonized with MDROs.
- The IPC team shall monitor the incidence of HAIs caused by MDROs in the facility and necessary action plans shall be implemented as appropriate to control these HAIs.
- The facility should implement systems to designate patients known to be colonized or infected with a targeted MDRO and to notify receiving healthcare facilities and personnel prior to transfer of such patients within or between facilities.
- The IPC team shall provide updated feedback at least annually to healthcare providers and administrators on facility and patient-care-unit trends in MDRO infections, including information on changes in prevalence and incidence, problem assessment and performance improvement plans.
- The IPC team shall provide education and training on risk and prevention of MDRO transmission during orientation and periodic educational updates for HCPs
- The facility shall ensure that:
    - A multidisciplinary process is in place to review local susceptibility patterns (antibiograms), and antimicrobial agents included in the formulary, to foster appropriate antimicrobial use.
    - Systems are implemented to prompt clinicians to use the appropriate agent and regimen for the given clinical situation.
    - Clinicians are provided with antimicrobial susceptibility reports and analysis of current trends, updated at least annually, to guide antimicrobial prescribing practices.

- Standardized laboratory methods are used and published guidelines are followed for determining antimicrobial susceptibilities of targeted and emerging MDROs.

- The infection control team shall ensure that:
  - Clinical microbiology labs (in-house and outsourced) promptly notify infection control or a medical director/designee when a novel resistance pattern for that facility is detected.
  - The laboratory prepares facility-specific antimicrobial susceptibility reports; monitor reports for evidence of changing resistance that may indicate emergence or transmission of MDROs.
  - Trends in incidence of target MDROs in the facility are monitored over time to determine if additional interventions are needed.

Infection Control measures to prevent transmission of MDRO:

A- Isolation precautions:

- Follow Standard Precautions during all patient encounters in all settings in which healthcare is delivered.
- Use Contact Precautions routinely for all patients infected or colonized with MDROs.
- Use masks when performing splash generating procedures and in circumstances where there is evidence of transmission from heavily colonized sources (e.g., burn wounds).
- In ambulatory settings, 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- Patient placement:

- Place patients with known or suspected MDRO colonization/infection in single rooms. Give highest priority to those patients who have conditions that may facilitate transmission, e.g., uncontained secretions/excretions.
- When single-patient rooms are not available, cohort patients with the same MDRO in the same room or patient-care area.

- When cohorting patients with the same MDRO is not possible, place MDRO patients in rooms with patients who are at low risk for acquisition of MDROs and associated adverse outcomes from infection and are likely to have short lengths of stay.

C- Environmental measures:

- Prioritize room cleaning of patients on Contact Precautions. Focus on cleaning and disinfecting frequently touched surfaces (e.g., bedrails, bedside commodes, bathroom fixtures in the patient's room, doorknobs) and equipment in the immediate vicinity of the patient with the facility approved disinfectant on a more frequent schedule compared to that for minimal touch surfaces (e.g., horizontal surfaces in waiting rooms).
- For *C. auris* and *C. difficile*, use a hospital approved disinfectant effective against these organisms (such as chlorine solution/wipes) for cleaning and disinfection of the environment (patient's room, OT, radiology, etc.) and the shared equipment.
- When feasible, dedicate noncritical medical items to use on individual patients known to be infected or colonized with MDROs.
- Thorough terminal cleaning and disinfection of environment and reusable equipment must be done upon discharge of the patient.

D- Decolonization:

- Make appropriate use of decolonization therapy for patients or staff during limited periods of time, as a component of MRSA control program. When possible, consult with physicians with expertise in infectious diseases and/or healthcare epidemiology on a case-by-case basis.
- When decolonization for MRSA is used, perform susceptibility testing for the decolonizing agent (e.g. Mupirocin) against the target organism in the individual being treated.
- Because Mupirocin-resistant strains may emerge and because it is unusual to eradicate MRSA when multiple body sites are colonized, do not use topical Mupirocin routinely for MRSA decolonization of patients as a component of MRSA control programs in any healthcare setting.

- Limit decolonization of staff found to be colonized with MRSA to persons who have been epidemiologically linked as a likely source of ongoing transmission to patients. Consider reassignment of staff if decolonization is not successful and ongoing transmission to patients persists.
- Regimens and efficacy of decolonization protocols for VRE and MDR-GNB have not been established.

E- Duration of contact precaution:

- There is no international standardized recommendation regarding when to discontinue isolation.
- Many infection control programs worldwide discontinue Contact Precautions when three or more surveillance cultures for the target MDRO are repeatedly negative over the course of a week or two in a patient who is not on antimicrobial therapy, especially in the absence of a draining wound, profuse respiratory secretions, or evidence implicating the specific patient in ongoing transmission of the MDRO within the facility.

F- Discharge planning:

In general, MDROs do not present a risk to people in the community. Patients may be discharged home even if still colonized with MDROs. However, discharge to other healthcare facilities requires careful liaison. It is important that all relevant healthcare professionals, i.e. ambulance staff, doctors, receiving ward staff, etc, aree made aware that the patient is colonized or infected with MDRO.

G- Screening of Healthcare Workers (HCWs) and the Environment:

- Do not screen HCWs or the environment because it is not typically indicated and incurs unnecessary costs unless there is epidemiologic evidence implicating the healthcare staff member as a source of ongoing transmission.
- Management of outbreaks will be coordinated by the IC staff and will require the cooperation of medical, nursing, laboratory and other departments.

H- Active surveillance cultures:

- Develop and implement protocols to obtain active surveillance cultures (ASC) for targeted MDROs from patients in populations at risk (e.g., patients in intensive care, burn, bone marrow/stem cell transplant, and oncology units; patients transferred from facilities known to have high MDRO prevalence rates; roommates of colonized or infected persons; and patients known to have been previously infected or colonized with an MDRO).
- Obtain ASC from areas of skin breakdown and draining wounds. In addition, include the following sites according to target MDROs:
  - **MRSA**: Sampling the anterior nares, axilla and groins is usually sufficient.
  - **VRE**: Stool, rectal, or perirectal samples.
  - **CRE**: Stool, rectal, or perirectal samples.
  - **MDR-GNB:** Endotracheal tube aspirates or sputum should be cultured if a respiratory tract reservoir is suspected, (e.g., *Acinetobacter* spp.).
  - ***C. auris*:** one composite swab of the patient's bilateral axilla and groin regions.

References:

1. CDC Management of Multidrug-Resistant Organisms in Healthcare Settings
2. Multidrug-resistant organisms (MDRO) Management summary of recommendations
3. 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.)

4. WHO Bacterial Priority Pathogens List, 2024, accessed on 6/8/2024: https://iris.who.int/bitstream/handle/10665/376776/9789240093461-eng.pdf?sequence=1
5. Multidrug-Resistant Organism & Clostridioides difficile Infection (MDRO/CDI) Module, accessed on 6/8/2024: https://www.cdc.gov/nhsn/pdfs/pscmanual/12pscmdro_cdadcurrent.pdf

Surveillance of Healthcare-Associated Infections

Introduction:

- Surveillance is an essential component of infection prevention and control (IPC) programs.
- Surveillance activity should support a system that can identify risk factors for infection and other adverse events, implement risk reduction measures, and monitor the effectiveness of interventions.

- Surveillance programs should be based on sound epidemiological and statistical principles and in accordance with current recommended practices and should consist of defined elements.
- Surveillance programs in healthcare organizations should be integrated to include IPC, performance improvement, patient safety, emergency preparedness, and public health activities.
- The surveillance program shall be evaluated periodically to assess its usefulness and ability to meet the organization's objectives and make revisions according to the annual risk assessment and as needed.

Definitions:

- **Surveillance:** A systematic method of collecting, consolidating and analyzing data concerning the distribution and determinants of a given disease, event or condition within a population.
- **Healthcare- associated infection (HAI):** A localized or systemic condition resulting from an adverse reaction to the presence of an infectious agent(s) or its toxin(s) and that was not present or incubating at the time of admission to the healthcare facility.

Purposes:

Surveillance can be used for the following purposes:

- Measure the burden of a disease (or other HAIs), including changes in related factors, the identification of populations at high risk, and the identification of new or emerging health concerns
- Guide the planning, implementation, and evaluation of programs to prevent and control disease, injury, or adverse exposure
- Determine baseline and endemic rates of occurrence of a disease or event
- Provide data to conduct a facility risk assessment, respond to an infectious disease emergency, such as a pandemic.
- Detect and investigate clusters or outbreaks
- Assess the effectiveness of prevention and control measures and monitor the occurrence

of adverse outcomes to identify potential risk factors

- Provide information that can be used by an organization to target performance improvement activities and measure the efficacy of interventional and performance improvement efforts
- Observe practices, such as hand hygiene, central line insertion, and sterilizer performance monitoring, to promote compliance with recommendations and standards
- Detect and report notifiable diseases to the health department and Identify organisms and diseases of epidemiological importance, such as multidrug-resistant organisms (MDROs) and tuberculosis, to prevent their spread
- Ensure compliance with national regulations and mandatory reporting requirements.
- Meet requirements of accrediting agencies, such as the Joint Commission
- Provide information for the education of healthcare personnel
- Monitor injuries and identify risk factors for injuries of personnel
- Detect a bioterrorist event or an emerging infectious disease

Surveillance methodologies:

- **Total or whole house surveillance:** All HAIs are monitored in the entire population of a healthcare facility. When total house surveillance is conducted, an overall facility infection rate should not be calculated; rather, rates should be calculated for specific HAIs such as CLABSIs or SSIs.
- **Targeted surveillance:** Targeted surveillance focuses on particular care units (e g. ICU), invasive procedures (surgery), and organisms of epidemiological significance (MRSA). This type of surveillance focuses on high-risk, high-volume procedures and HAIs.
- **Combined Surveillance:** many infection prevention and control programs use a combination of targeted and modified total house surveillance. Eg. CAUTI surveillance from ICUs and selected HAIs and laboratory reports from facility wide locations.

HAI surveillance definitions:

- Infection control surveillance definitions and methodology are adopted from the National Healthcare Safety Network (NHSN) Patient Safety Component Manual. The manual is updated on yearly basis, therefore Infection control professionals (ICPs) shall review the patient safety component summary of updates on regular basis.
- ICPs shall ensure that all definitions related to HAI surveillance, including those for specific infections and conditions, are standardized and aligned with national and international guidelines.
- Staff who are responsible for collecting and managing surveillance data must have adequate training in reviewing medical records, interpreting clinical notes, applying standardized criteria for identifying cases, and using appropriate statistical and risk adjustment methods.
- Surveillance data shall be validated, analyzed and shared with the departments concerned on a regular basis; an action plan shall be developed and implemented when set target is not met.

Surveillance program design:

1. Select the surveillance methodology
2. Assess and define the population (s) to be studied (denominator)
3. Choose the event to monitor (numerator)
4. Determine the time period for observation
5. Identify surveillance criteria (case definitions)
6. Identify data elements to be collected
7. Determine the methods for data analysis, data collection and management
8. Design an interpretive surveillance report
9. Identify recipient of the surveillance report
10. Develop a written surveillance plan
11. Surveillance program evaluation

Benchmarking and comparing the data:

- There are currently few validated external benchmarks that can be used for inter facility comparisons of HAIs and other adverse events.
- External benchmarks that can be used by healthcare facilities include:
    - The UAE national surveillance benchmark
    - The National Healthcare Safety Network (NHSN)/Centers for Disease Control and Prevention (CDC) database

Basic statistical measures used for Surveillance:

Measures of frequency	
Ratio	A comparison of two quantities, calculated by dividing one quantity by the other.
Proportion	A fraction or a percentage where numerator is a part of denominator and can be used to measure amount of disease attributable to a risk factor.
Rate	A measure of the frequency where an event occurs in a defined population over a specific period of time.
Incidence	Measures the number of new cases, episodes or events in a specified population at a given period of time.
Prevalence	It is the frequency of existing cases in a defined population at a given point in time.
Attack rate	In case of short-term fluctuation of disease like outbreak, attack rate is used instead of incidence rate; it is expressed in percentage and measures the severity of disease outbreak.
Secondary attack rate	It measures the number of new cases developing among susceptible within incubation period after they are exposed to a primary case.
Measures of central tendency	
Mean	It is calculated by summing the values of a given variable and dividing by the number of observations.
Median	It is the middle value when the data are ordered by values, such that half of the variable's values fall above it and half fall below.
Mode	It is the value that occurs the most often for a given variable. While it can be used with quantitative data, it is generally more useful for categorical data.
Measures of Association	

Correlation	It measures the direction and magnitude of a relationship between two quantitative variables. The resulting correlation coefficient (r) always falls between –1 and +1. The farther is from zero, the stronger the identified relationship. A negative relationship means there is an inverse relationship between the two variables: as one variable increases, the other decreases. A positive relationship means that the two variables increase (and decrease) together, such as an orthopaedic SSI rate increasing as the number of times staff enter and exit the surgical suite increases.
Relative risk	It also called risk ratio, is used with prospective studies, including cohort studies, to compare the risk of an event occurring in an exposed group to the risk of it occurring in an unexposed group.
Sensitivity	Ability of test to identify correctly all those who have the disease
Specificity	Ability of a test to identify correctly those who do not have disease

References:

- 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.)
- Association for Professionals in Infection Control (APIC) and Epidemiology, Inc. (2014). Chapter 11: Surveillance in APIC Text of infection control and epidemiology (4th ed.)

National KPI for Infection Prevention and Control

Purpose

To establish a standardized national system for Healthcare-Associated Infection (HAI) surveillance, aimed at facilitating intra and inter-country comparisons, optimizing local improvements in Infection Prevention and Control (IPC), and ensuring the safety and quality of healthcare services.

Introduction

- The national HAI surveillance system shall facilitate benchmarking across healthcare facilities. Data gathered will be utilized to promote best practices and continuous improvement in IPC implementation.

- Feedback on Key Performance Indicators (KPIs) related to HAIs should be provided to healthcare facilities regularly. This feedback shall be utilized for safety and quality improvement purposes, rather than for punitive measures.
- Surveillance data must be accurate, efficiently collected, and used to inform actionable steps to improve health outcomes at both local and national levels.
- All staff involved in the data collection, analysis, interpretation, and quality control of HAI surveillance at healthcare facilities and national levels must be trained and competent.
- Surveillance data shall inform the development and updating of the national strategic plan for HAI surveillance. The plan shall focus on priority infections and areas requiring improvement.

Procedure

- Facility-based HAI surveillance shall be performed to guide IPC interventions and detect outbreaks with timely feedback of results to healthcare workers and relevant stakeholders.
- The National IPC Subcommittee shall identify, collect, and analyze HAI data at the national level to establish national benchmarks.
- The National IPC Subcommittee shall ensure that all healthcare facilities use standardized surveillance definitions. IPC staff must be educated and competent in these standards.
- Healthcare facilities shall submit HAI surveillance data regularly and within the timeline set by the Ministry of Health and Prevention (MOHAP). Consistent and timely data submission is critical for accurate national surveillance.
- The national benchmarks will be shared with all healthcare facilities. These benchmarks will be used to compare local data and to drive quality improvement initiatives within each facility.
- The national HAI surveillance data will guide the formulation and update of the national strategic plan for HAI surveillance. This plan will identify areas for

improvement, prioritize infections, and develop a national action plan to mitigate infection risks.

Monitoring and Evaluation

The National IPC Subcommittee will regularly review the effectiveness of this policy, ensuring that the surveillance system remains responsive to emerging trends and challenges in healthcare-associated infections. Continuous feedback will be sought from healthcare facilities to refine and improve the system.

National KPIs

A- <u>Healthcare-associated Infection (HAIs)</u>

1- **Surgical Site Infections (SSI) rate**: defined as the percentage of patients meeting the CDC/NHSN criteria for SSI within 30 days or 90 days of the following surgeries:
   a. Appendectomy (30 days)
   b. Caesarian section (30 days)
   c. Knee Replacement surgery (90 days)
   d. Hip Replacement surgery (90 days)
   e. Coronary Artery Bypass Graft (90 days)
   f. Laminectomy (30 days)
   g. Craniotomy (90 days)

2- **Central line-associated bloodstream infections (CLABSI) rate:** defined as the number of CLABSI per 1000 central line-days in the following settings:
   a. Adult and pediatric Intensive Care Units (ICUs)
   b. Neonatal ICUs
   c. Wards

3- **Catheter-associated urinary tract infection (CAUTI) rate:** defined as the number of CAUTI per 1000 urinary catheter-days in the following settings:
   a. Adult and pediatric ICUs
   b. Wards

4- **Ventilator-associated Event VAE rate:** defined as the number of IVAC plus (IVAC and PVAP) per 1000 ventilator days in the adult ICUs.

B- Hand Hygiene:

Hand hygiene (HH) compliance rates: defined as the percentage of HH actions performed (hand rub and handwash) when opportunities/indications for HH occur during the reporting period.

References

- WHO global strategy on Infection Prevention and Control https://iris.who.int/bitstream/handle/10665/376751/9789240080515-eng.pdf Accessed: 20/5/2025
- Definitions of HAIs as per NHSN patient safety component manual: https://www.cdc.gov/nhsn/pdfs/pscmanual/pcsmanual_current.pdf Accessed: 20/5/2025
- Hand hygiene methodology as per WHO Hand hygiene technical reference manual https://www.who.int/publications/i/item/9789241598606 Accessed: 20/5/2025

Prevention of Catheter-Associated Urinary Tract Infection (CAUTI)

Purpose

To provide standardized guidelines and strategies to reduce the incidence of Catheter-Associated Urinary Tract Infection (CAUTI) across healthcare facilities. This policy aims to improve patient safety, ensure consistent infection prevention practices, and promote accountability through monitoring and reporting systems.

Definitions

- **Urinary tract infections (UTI):** are defined using Symptomatic Urinary Tract Infection (SUTI) criteria and Asymptomatic Bacteremic UTI (ABUTI) as per CDC/NHSN surveillance definitions.
- **Indwelling Urinary Catheter (IUC):** A drainage tube that is inserted into the urinary bladder through the urethra, is left in place, and is connected to a drainage bag (including leg bags). IUCs are often called Foley catheters. IUCs used for intermittent or continuous irrigation are also included in CAUTI surveillance. Catheters not meeting the IUC definition may include but is not limited to condom or straight in-and-out catheters.
- **Catheter-associated UTI (CAUTI):** A UTI where an IUC was in place for more than two consecutive days in an inpatient location on the date of event or the day before, with day

of device placement being Day 1. If an IUC was in place for more than two consecutive days in an inpatient location and then removed, the date of event for the UTI must be the day of device discontinuation or the next day for the UTI to be catheter-associated.

CAUTI prevention guidelines

Education and training:

- Ensure that all healthcare workers who take care of patients with IUCs are given periodic training regarding techniques and procedures for urinary catheter insertion, maintenance, and removal.
- Ensure that education includes CAUTI prevention, urine culture stewardship, proper collection of urine, other complications of urinary catheterization, and alternatives to indwelling catheters.
- Periodically assess knowledge of and adherence to guidelines for all personnel involved in the insertion and maintenance of IUC.
- Provide performance feedback to relevant staff on compliance to standards and guidelines related to urinary catheter insertion and care and CAUTI rates.
- Educate patients and caregivers on catheter care CAUTI risks and signs of infection to encourage early reporting

Appropriate Urinary Catheter Use

- Insert IUC only for appropriate indications and leave in place only as long as Indications remain.
- Minimize urinary catheter use and duration of use in all patients when clinically indicated, particularly those at higher risk for CAUTI or mortality from catheterization such as women, the elderly, and patients with impaired immunity.
- Consider other methods for bladder management such as intermittent catheterization, or external male or female collection devices, when appropriate.
- Avoid use of IUC in patients for management of incontinence.
- Use IUC in operative patients only as necessary, rather than routinely. Remove the

catheter as soon as possible postoperatively, preferably within 24 hours, unless there are appropriate indications for continued use.

- Appropriate Indications for Indwelling Catheter use include:
    - Acute urinary retention or bladder outlet obstruction.
    - Need for accurate measurements of urinary output in critically ill patients.
    - Perioperative use for selected surgical procedures such as urologic surgery or other surgery on contiguous structures of the genitourinary tract, anticipated prolonged duration of surgery.
    - To assist in healing open sacral or perineal wounds in incontinent patients when alternative supplies for protective wound or managing incontinence are not feasible.
    - Patients requiring prolonged immobilization (e.g., potentially unstable thoracic or lumbar spine, multiple traumatic injuries such as pelvic fractures).
    - To improve comfort for end-of-life care if needed.

Proper Techniques for Insertion of Urinary Catheter

- Ensure that only properly trained and competent healthcare workers who know the correct technique of aseptic catheter insertion and maintenance are given this responsibility.
- Require supervision by experienced staff when trainees insert and remove catheters to reduce the risk of infectious and traumatic complications related to IUC placement.
- Consider working in pairs to help perform patient positioning and monitor for potential contamination during placement.
- Ensure that supplies necessary for aseptic technique for catheter insertion are readily available.
- Perform hand hygiene immediately before and after insertion or any manipulation of the catheter device or site.
- Insert IUC using aseptic technique and sterile equipment.
- Use sterile gloves, drape, sponges, an appropriate antiseptic sterile solution for

periurethral cleaning, and a sterile single-use packet of lubricant jelly for insertion.

- Use a standardized insertion checklist to ensure adherence to aseptic technique
- Properly secure IUC after insertion to prevent movement and urethral traction.
- Unless otherwise clinically indicated, consider using an IUC with the smallest feasible diameter, consistent with good drainage, to minimize urethral trauma.
- Consider other catheter types and sizes when warranted for patients with anticipated difficult catheterization to reduce the likelihood that a patient will experience multiple, sometimes traumatic, catheterization attempts.
- Consider using a bladder scanner to assess urine volume in patients undergoing intermittent catheterization to assess urine volume and reduce unnecessary catheter insertions.

Proper Techniques for Urinary Catheter Maintenance

- Following aseptic insertion of the IUC, maintain a sterile, continuously closed drainage system and unobstructed urine flow.
- Daily necessity check Perform and document a daily assessment of catheter necessity during rounds, with prompt removal if no longer indicated.
- If breaks in aseptic technique, disconnection of tubing, or leakage occur, replace the catheter and collecting system using aseptic technique and sterile equipment.
- Consider using urinary catheter systems with preconnected, sealed catheter-tubing junctions.
- Keep the catheter and collecting tube free from kinking which can increase stasis within the bladder, increasing infection risk.
- Remind bedside caregivers, patients and transport personnel to keep the collecting bag below the level of the bladder at all times. Do not rest the bag on the floor.
- Empty the collecting bag regularly using a separate, clean collecting container for each patient; avoid splashing and prevent contact of the drainage spigot with the nonsterile collecting container.
- Use Standard Precautions, including the use of gloves and gown as appropriate, during any manipulation of the catheter or collecting system.

- Change catheters and drainage bags only based on clinical indications such as infection, obstruction, or when the closed system is compromised.
- Unless clinical indications exist, do not use systemic antimicrobials routinely as prophylaxis to prevent CAUTI in patients requiring either short or long-term catheterization.
- Do not clean the periurethral area with antiseptics to prevent CAUTI while the catheter is in place. Routine hygiene (e.g., cleansing of the meatal surface during daily bathing or showering) is appropriate.
- Unless obstruction is anticipated (e.g., as might occur with bleeding after prostatic or bladder surgery) do not perform bladder irrigation.
- If obstruction is anticipated, perform closed continuous irrigation.
- Do not routinely irrigate the bladder with antimicrobials.
- Do not routinely instill antiseptic or antimicrobial solutions into urinary drainage bags.
- Do not clamp indwelling catheters prior to removal.
- Empty urine in drainage bags at least once each shift using a clean container designated for that patient only, ensuring not to contaminate the outlet valve.
- Use gloves and practice hand hygiene before and after handling the drainage device.
- Perform periodic audits of maintenance practices and provide unit-specific feedback to staff

Catheter Materials

- If the CAUTI rate is not decreasing after implementing a comprehensive strategy to reduce rates of CAUTI and when standard CAUTI prevention measures fail, consider using the selective use of antimicrobial/antiseptic-impregnated catheters in accordance with evidence-based guidelines, taking into consideration its cost effectiveness.
- Consider using hydrophilic catheters rather than standard catheters for patients requiring intermittent catheterization.
- Consider using Silicone catheters in place of other catheter materials to reduce the risk of encrustation in long-term catheterized patients who have frequent obstruction.

Specimen Collection

- Obtain urine samples aseptically.
- If a small volume of fresh urine is needed for examination (i.e., urinalysis or culture), aspirate the urine from the needleless sampling port with a sterile syringe/cannula adapter after cleansing the port with a disinfectant.
- Collect urine culture samples before starting antibiotics on patients with suspected UTI.
- Facilitate timely transport of urine samples to laboratory. If timely transport is not feasible, consider refrigerating urine samples or using sample collection cups with preservatives.
- Do not conduct routine bacteriologic monitoring of catheterized patients.
- Adapt an institutional protocol for appropriate indications for urine cultures in patients with and without IUC and request doctors to identify an appropriate indication for urine culturing when placing an order for urine culture.

Surveillance and Quality Improvement Programs

- Conduct surveillance for CAUTI when indicated by facility-based risk assessment.
- Ensure that sufficiently trained HCP and technology resources are available to support surveillance for catheter use and outcomes.
- Use standardized methodology for performing CAUTI surveillance following CDC/NHSN criteria.
- Compare CAUTI rates with national or international benchmarks (e.g., NHSN) and share results with staff quarterly.
- Consider implementing the CAUTI prevention bundle in all areas where IUCs are used.
- Implement quality improvement (QI) programs or strategies to enhance appropriate use and duration of indwelling catheters and to reduce the risk of CAUTI based on a facility risk assessment.

References:

- SHEA/IDSA/APIC Practice Recommendation, Strategies to prevent catheter-associated urinary tract infections in acute-care hospitals: 2022 Update
- HICPAC Guidelines for prevention of catheter-associated urinary tract infections 2009 (updated 2019).
- CDC/NHSN, Urinary Tract Infection (Catheter-Associated Urinary Tract Infection [CAUTI] and Non-Catheter-Associated Urinary Tract Infection [UTI]) Events (January 2025).

Prevention of Central Line-Associated Bloodstream Infection (CLABSI)

Purpose

To provide standardized guidelines and strategies to reduce the incidence of central line-associated bloodstream infections (CLABSI) across healthcare facilities. This policy aims to improve patient safety, ensure consistent infection prevention practices, and promote accountability through monitoring and reporting systems. By aligning national efforts, the policy supports quality care, reduces healthcare costs, and strengthens overall infection control programs.

Definitions

- **Primary bloodstream infection (BSI):** A laboratory Confirmed Bloodstream Infection (LCBI) that is not secondary to an infection at another body site as per CDC/NHSN surveillance definitions.
- **Secondary BSI:** A BSI that is thought to be seeded from a site-specific infection at another body site.
- **Secondary BSI Attribution Period (SBAP)**: the period in which a blood specimen must be collected for a secondary BSI to be attributed to a primary site of infection. This period includes the Infection Window Period (IWP) combined with the Repeat Infection Timeframe (RIT). It is 14-17 days in length depending upon the date of event.
- **Central line (CL):** An intravascular catheter that terminates at or close to the heart, or in one of the great vessels that is used for infusion, withdrawal of blood, or hemodynamic monitoring.
- **Central line days**: the number of days a central line has been accessed.

- **Central line-associated BSI (CLABSI):** A laboratory confirmed bloodstream infection where an eligible BSI organism is identified, and an eligible central line is present on the LCBI Date of Event or the day before.

CLABSI prevention guidelines

Education and training:

- Educate and train personnel responsible for insertion and maintenance of intravascular catheters regularly. Periodically assess knowledge, competency and adherence to guidelines.
- Educate patients and families on the purpose of the central line, infection prevention measures, and early signs of infection.
- Ensure appropriate nurse-to-patient ratio and limit use of float nurses in ICUs whenever possible.

Selection of Catheters and Sites:

- Select catheters on the basis of the intended purpose and duration of use, known infectious and non-infectious complications (e.g., phlebitis and infiltration), and experience of individual catheter operators
- Avoid using the femoral vein for central venous access in adult patients.
- Select a subclavian site, rather than a jugular or a femoral site, in adult patients to minimize infection risk for non-tunneled CVC placement.
- Avoid the subclavian site in hemodialysis patients and patients with advanced kidney disease, to avoid subclavian vein stenosis.
- Use an all-inclusive catheter cart or kit and ultrasound guidance for catheter insertion.
- Use a CL with the minimum number of ports or lumens essential for the management of the patient.
- When adherence to aseptic technique cannot be ensured, such as during a medical emergency, replace the catheter as soon as possible preferably within 48 hours.

Hand Hygiene and Aseptic Technique (refer to Hand Hygiene policy)

- Perform hand hygiene, either by washing hands with soap and water or with alcohol-based hand rub solutions.
- Hand hygiene should be performed before and after palpating catheter insertion sites as well as before and after inserting, replacing, accessing, repairing, or dressing an intravascular catheter.
- Palpation of the insertion site should not be performed after the application of antiseptic, unless aseptic technique is maintained.
- Maintain aseptic technique for the insertion and care of intravascular catheters.

Maximal Sterile Barrier Precautions

- Use maximal sterile barrier precautions, including the use of a cap, mask, sterile gown, sterile gloves, and a sterile full body drape, for the insertion of CLs, or guidewire exchange.
- Use a standardized central line insertion checklist to ensure full compliance
- Sterile gloves should be worn for the insertion of arterial, central, and midline catheters.
- Use new sterile gloves before handling the new catheter when guidewire exchanges are performed.
- Use a sterile sleeve to protect pulmonary artery catheters during insertion.

Skin Preparation

- Prepare clean skin with a >0.5% chlorhexidine preparation with alcohol before central venous catheter insertion and during dressing changes. If there is a contraindication to chlorhexidine, tincture of iodine, an iodophor, or 70% alcohol can be used as alternatives.
- Antiseptics should be allowed to dry according to the manufacturer's recommendation prior to placing the catheter.

Catheter Site Dressing Regimens

- Use either sterile transparent chlorhexidine-containing dressings, or gauze dressing to cover the catheter site.
- If the patient is diaphoretic or if the site is bleeding or oozing, use gauze dressing until this is resolved.

- Replace catheter site dressing if the dressing becomes damp, loosened, or visibly soiled.
- Do not use topical antibiotic ointment or creams on insertion sites because of their potential to promote fungal infections and antimicrobial resistance.
- Replace dressings used on CL sites every 2 days for gauze dressings and at least every 7 days for transparent dressings and perform site care with a chlorhexidine-based antiseptic.
- Replace transparent dressings used on tunneled or implanted CVC sites no more than once per week (unless the dressing is soiled or loose), until the insertion site has healed.
- Monitor the catheter sites visually when changing the dressing or by palpation through intact dressing on a regular basis, depending on the clinical situation of the individual patient. If patients have redness or tenderness at the insertion site, fever without obvious source, or other manifestations suggesting local or bloodstream infection, the dressing should be removed to allow thorough examination of the site.

Hub/access port cleansing

- Disinfect hubs, needleless connectors, and injection ports prior to use with an appropriate antiseptic (e.g., 70% alcohol) for at least 15 seconds.
- Manufacturer recommendations regarding cleansing and changing antiseptic-containing hub/connectors cap/port should be followed.

Patient Cleansing

- Bathe ICU patients aged >2 months with chlorhexidine preparation/wipe on a daily basis.

Catheter Securement Devices

- Use a suture less securement device to reduce the risk of infection for intravascular catheters whenever possible.

Antimicrobial/Antiseptic Impregnated Catheters and Cuffs

- Use of chlorhexidine/silver sulfadiazine or minocycline/rifampin -impregnated CVC may be considered in patients under specific conditions such as:
    - Hospital units or patient populations with a CLABSI rate above institutional goals despite compliance with essential CLABSI prevention practices

- Patients with limited venous access and a history of recurrent CLABSI.
- Patients at heightened risk of severe sequelae from CLABSI (e.g., patients with recently implanted intravascular devices such as a prosthetic heart valve or aortic graft).

Systemic Antibiotic Prophylaxis

- Do not administer systemic antimicrobial prophylaxis routinely before insertion or during use of an intravascular catheter to prevent catheter colonization or CLABSI.

Antibiotic Lock Prophylaxis, Antimicrobial Catheter Flush and Catheter Lock Prophylaxis

- Use prophylactic antimicrobial lock solution in patients with long term catheters who have a history of multiple CLABSI despite optimal maximal adherence to aseptic technique.

Anticoagulants

- Do not routinely use anticoagulant therapy to reduce the risk of catheter-related infection in general patient populations.

Perform daily assessment of the need for the CL and promptly discontinue CLs

- Nursing staff should be encouraged to notify physicians of CLs that are unnecessary on daily basis.
- If patients have infection at the insertion site, CL must be removed and inserted in another place if needed.

Replacement of CVCs, Including PICCs and Hemodialysis Catheters

- Do not routinely replace CVCs, PICCs, hemodialysis catheters, or pulmonary artery catheters to prevent catheter-related infections.
- Do not remove CVCs or PICCs based on fever alone. Use clinical judgment regarding the appropriateness of removing the catheter if infection is evidenced elsewhere or if a non-infectious cause of fever is suspected.
- Do not use guidewire exchanges routinely for non-tunneled catheters to prevent infection.
- Do not use guidewire exchanges to replace a non-tunneled catheter suspected of infection.

Replacement of Administration Sets

- In patients not receiving blood, blood products or fat emulsions, replace administration

sets that are continuously used, including secondary sets and add-on devices, at intervals of up to 7 days.

- Intermittently used administration sets should be changed every 24 hours.
- Needles to access implantable ports shall be changed every 7 days.
- Replace tubing used to administer blood, blood products, or fat emulsions (those combined with amino acids and glucose in a 3-in1 admixture or infused separately) within 24 hours of initiating the infusion.
- Replace tubing used to administer propofol infusions every 6 or 12 hours, when the vial is changed, according to the manufacturer's recommendation.

Surveillance and Quality Improvement Programs

- Conduct surveillance for CLABSI following the facility-based risk assessment.
- Ensure that sufficiently trained HCP and technology resources are available to support surveillance.
- Use standardized methodology for performing CLABSI surveillance following CDC/NHSN criteria.
- Compare CLABSI rates with national and international (e.g NHSN or regional benchmarks) and share results with staff on regular basis.
- Consider implementing the CLABSI prevention bundle in all areas where central lines are used.
- Implement quality improvement (QI) programs or strategies to enhance appropriate use and duration of central venous catheters and to reduce the risk of CLABSI based on the facility risk assessment.

References:

- SHEA/IDSA/APIC Strategies to prevent central line-associated bloodstream infections in acute-care hospitals: 2022 Update.
- CDC Guidelines for the Prevention of Intravascular Catheter-Related Infections, 2011 (updated 2017).
- NHSN, Bloodstream Infection Event (Central Line-Associated Bloodstream Infection and Non-central line-associated Bloodstream Infection) (January 2025).
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Appendix: CLABSI prevention bundle

The CLABSI Prevention Bundle presents the best evidence-based practices to prevent CLABSI and enhance patient safety. **Healthcare facilities may incorporate additional evidence-based elements tailored to their specific needs and settings.** To ensure high compliance and effectiveness, facilities should prioritize:

- Continuous training of healthcare personnel
- Ongoing adherence monitoring
- Periodic policy reviews

These measures help maintain best practices and sustain effective CLABSI prevention strategies over time:

Central line insertion bundle

1. Perform hand hygiene before catheter insertion
2. Select the subclavian site to minimize infectious complications unless clinically contraindicated
3. Use an alcoholic chlorhexidine antiseptic for skin preparation unless contraindicated
4. Adhere to maximum sterile barrier precautions during catheter insertion
5. Maintain sterile field/technique during catheter insertion

Central line maintenance bundle

1. Perform hand hygiene before and after touching or accessing a device
2. Daily review of necessity of central line and remove unnecessary lines. Inspect the dressing and insertion site at least daily or per institutional policy. Flush per institutional policy
3. Disinfect catheter hubs, needleless connectors, and injection ports before each access with alcohol or other facility-approved pad. Disinfectant caps may be used per institutional policy
4. Ensure daily bathing with an antiseptic wipe or solution (such as chlorhexidine gluconate). If antiseptic is contraindicated, ensure daily bathing with soap and water
5. Change IV tubing, needleless access devices, and all add-on devices (such as extension sets and filters) per institutional policy. Label the tubing and ensure tubes are within ‘use-by’ date
6. Change transparent dressings every 7 days and sterile gauze dressings at least every 2 days. Change the dressing more often if it becomes wet, loose, or visibly soiled. Label the dressing with the date and time changed or per institutional policy
7. Use a securement method, such as an adhesive or integrated securement device, to stabilize and secure the device.
8. Educate patients about the signs and symptoms of an infection and how to protect themselves

References:

1. Association for Professionals in Infection Control and Epidemiology, CENTRAL LINE-ASSOCIATED BLOODSTREAM INFECTION PREVENTION BUNDLE, October 2024

2. Centers for Disease Control and Prevention. Intravascular Catheter-related Infection (BSI) Prevention Guidelines. April 12, 2024.

3. Buetti N, Marschall J, Drees M, et al. Strategies to prevent central line-associated bloodstream infections in acute-care hospitals: 2022 Update. Infection Control & Hospital Epidemiology. 2022;43(5):553-569. doi:10.1017/ice.2022.87.

4. Infusion Nurses Society. Infusion Therapy Standards of Practice, 9th Edition. 2024.

Prevention of Surgical Site Infections (SSI)

Purpose

To provide standardized guidelines and strategies to reduce the incidence of Surgical Site Infections (SSI) across healthcare facilities. This policy aims to improve patient safety, ensure consistent infection prevention practices, and promote accountability through monitoring and reporting systems.

Definitions

- **Surgical Site Infection (SSI):** is an infection that occurs after surgery in the part of the body where the surgery took place. SSIs can sometimes be superficial infections involving the skin only. Other SSIs are more serious and can involve tissues under the skin, organs, or implanted material.
- **Superficial incisional SSI:** involves only skin and subcutaneous tissue of the incision.
- **Deep incisional SSI:** involves deep soft tissues of the incision (for ex, fascial and muscle layers).
- **Organ/Space SSI:** involves the organ/space tissues (deeper than the fascia/muscle).

SSI prevention guidelines

Pre-operative outpatient care

- Implement perioperative glycemic control and use blood glucose target levels lower than 150 mg/dL in patients with and without diabetes.
- Encourage smoking cessation 4 to 6 weeks prior to the operation.
- Advise and educate patients with malnutrition or obesity to improve nutritional status and to refer to a nutritionist for intervention.
- Identify and treat any infection remote to the surgical site before elective operation or postpone the operation until the infection has been resolved.
- Perform MRSA screening/decolonization for patients undergoing cardiovascular,

orthopedic,

neurosurgery or surgery with implant or prosthesis.

- Educate patients on SSI risks, signs, and prevention measures: hand hygiene, preoperative shower, smoking cessation, and avoiding shaving the surgical site.
- Educate pregnant women on the importance of reducing unnecessary C-sections and its associated risks.

Pre-operative Inpatient care:

- Reduce the pre-operative stay as much as possible.
- Instruct patients to shower/bathe with either antimicrobial or nonantimicrobial soap prior to surgery.
- Implement perioperative glycemic control (<150 mg/dL) in patients with and without diabetes.
- Screen patients undergoing orthopedic and cardiothoracic procedures and decolonize those with known nasal carriage of S. aureus with an anti-staphylococcal agent. Decolonize surgical patients in other procedures at high risk of staphylococcal SSI, such as those involving prosthetic material.
- Do not remove hair at the operative site unless it interferes with the operation; If necessary, remove it using clippers immediately before the operation, outside the operating room. Do not use razors.
- Administer antimicrobial prophylaxis according to evidence-based standards and guidelines, prior to the surgical incision when indicated (depending on the type of operation).
- Use a combination of parenteral and oral antimicrobial prophylaxis prior to elective colorectal surgery.
- Use antiseptic-containing preoperative vaginal preparation agents for patients undergoing cesarean delivery or hysterectomy prior to surgery.

Intraoperative:

- Ensure that all personnel entering the semi-restricted and restricted areas of surgical

suite wear scrub clothes made of non-linting material, freshly laundered at the hospital-approved laundry facility, and exchanged when leaving the facility. Change scrub clothes when they become visibly soiled or wet with blood or body fluids.

- Wear clean or covered shoes specific to the operating room (OR), which include non-slip, closed-in and washable materials.
- Ensure that all personnel entering the surgical suite have hair covered by surgical cap (facial hair to be covered as well). When fabric head coverings are used, ensure that these are hospital laundered daily and changed between dirty or contaminated cases and prior to subsequent cases even if not visibly soiled.
- Always wear surgical mask in restricted areas, whenever there is a surgery/procedure in progress or setup for a sterile procedure has begun. Use a new mask for each surgery and as they become moist or contaminated. Do not store masks in pockets or bags, left hanging on the neck, or placed on hair coverings for later reuse.
- Wear eye protection to prevent the exposure to blood/body fluids splashes in the eyes, as regular glasses are not sufficient for adequate protection.
- Remove hand and wrist jewelry before beginning the surgical hand scrub procedure. Do not wear rings during surgical procedures; and ensure that necklaces and earrings are either removed or contained within the scrub attire.
- Keep nails short (1/4 inch or less), ensure that no staff wears artificial nails or nail polish.
- Allow only authorized personnel within surgical suite and minimize operating room traffic

  to minimize air turbulence. Keep OR doors closed during surgery except as needed for passage of essential equipment, personnel, and the patient.
- Ensure that proper attire is worn by all people entering the restricted area.
- Follow appropriate surgical hand preparation by scrubbing with either a suitable antimicrobial soap and water or using a suitable alcohol-based handrub before donning sterile gloves.
- Use alcohol-containing preoperative skin preparatory agents in combination with an

antiseptic, select antiseptic agent by considering its efficacy, spectrum and duration of activity, side effects and

patient's skin requirements/allergies. Remove all gross soil and debris before skin preparation. Follow manufactural recommendation for the correct procedure to apply the antiseptic agent and the contact time. Tight long sleeves, laundered by the hospital approved laundry, may be worn to cover arms when performing skin antisepsis.

- Strictly adhere to all basic principles of sterile technique throughout the surgical procedure.
- For procedures not requiring hypothermia, maintain normothermia (temperature > 35.5°C) during the perioperative period.
- Maintain optimal oxygenation during surgery and in the recovery period to ensure that hemoglobin saturation of more than 95% is maintained.
- Minimize operative time as much as possible without sacrificing surgical technique and aseptic practice.
- Use antiseptic-impregnated sutures as a strategy to prevent SSI.

Post-operative

- Protect primary closure incisions with sterile dressing for 24-48 hours post-operatively.
- Use impervious plastic wound protectors for gastrointestinal and biliary tract surgeries.
- Consider use of negative pressure dressings in patients who may benefit.
- Discontinue prophylactic antibiotics within 24 hours after surgery end time (48 hours for cardiac operations).
- Maintain glucose levels below (150 mg/dl) up to 24 hours post operatively.
- Use sterile technique for changing or removing surgical wound dressings on any type of surgical incision.
- Do not apply antimicrobial agents (i.e., ointments, solutions, or powders) to the surgical incision with the aim of preventing SSI.
- Observe the wound for signs of infection (redness, tenderness, pain, pus, fever, gap in the wound,

  inflammation…etc.).

- Educate the patient and their families about SSI prevention including proper hand hygiene practices. Provide instructions for wound care at home and guidance on when and whom to contact for signs of infection.

Other essential practices

- Implement policies and practices to reduce the risk of SSI for patients that align with applicable evidence-based standards, rules and regulations.
- Adhere to hospital policies on standard and transmission-based precautions during pre, intra and poet-operative phases.
- Educate surgeons and perioperative personnel about SSI prevention measures.
- Use a checklist and/or bundle to ensure compliance with best practices to improve patient safety.
- Observe and review practices and the environment of care in the preoperative clinic, post anesthesia care unit, surgical intensive care unit and surgical ward, and in central sterile reprocessing.
- Sterilize all surgical equipment according to the device manufacturer's validated parameters: cycle type, time, temperature, pressure, and dry time. Maintain traceability of all sterilized surgical instruments through lot number tracking and documentation in the patient record.
- Ensure the operating room HVAC system maintains positive air pressure with HEPA filtration, provides at least 20 air changes per hour (ACH) including fresh air (at least 15 when 20 ACH is not achievable), controls temperature (20°–23°C) and humidity (20%–60%), and undergoes regular inspection, maintenance, and timely reporting of any deviations.
- Maintain a clean, disinfected OR environment for each patient by following approved protocols and products, cleaning before, between, and after cases; ensure staff are trained in infection prevention and PPE use; clean surfaces top-down from least to most contaminated; disinfect all patient-contact and high-touch areas; properly dispose of waste and soiled materials; manage chemical spills per policy.
- Perform terminal cleaning of all OR areas including surgical suites, utility rooms, scrub

sinks, and corridors at least once every 24 hours, ensuring thorough disinfection of all surfaces, equipment, and high-touch items while following injury prevention practices and equipment-specific cleaning protocols.

SSI surveillance

- Perform prospective surveillance for SSI based on risk assessment.
- Provide ongoing SSI rate feedback to surgical and perioperative personnel and leadership
- Measure and provide feedback to healthcare workers regarding rates of compliance with process measures.

References:

- SHEA/IDSA/APIC Strategies to prevent surgical site infections in acute-care hospitals: 2022 Update
- CDC, Surgical Site Infection (SSI) Prevention Guideline, 2017
- CDC/NHSN, Surgical Site Infection Event (SSI), January 2025.
- WHO global guidelines for the prevention of surgical site infection, 2018
- Association for Professional in Infection Control (APIC) and Epidemiology, Inc. (2014, revised 2019). Chapter 69: Surgical Services. In APIC Text of infection control and epidemiology (4th ed.)
- Joint Commission International (2018). Evidence-Based Principles and Practices for Preventing Surgical Site Infections. [Accessed 12 August 2025]