

THE NIGERIAN MANUAL OF

Infection Prevention and Control



NIGERIA CENTRE FOR DISEASE CONTROL



The Nigerian Manual of Infection Prevention and Control **THE MAURICE PROJECT**

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About NCDC

The Nigeria Centre for Disease Control (NCDC) is the country's national public health institute with the mandate to protect Nigerians from the impact of communicable diseases of public health significance. It does this through evidence-based prevention, integrated disease surveillance and response activities, using a One Health approach, guided by research and led by a skilled workforce.

NCDC's operations and activities are guided by five key goals:

- To accurately measure the burden of infectious diseases in Nigeria
- To ensure that Nigeria can meet its international obligations as a member of the World Health Assembly
- To develop a Public Health Laboratory Service network to support the detection, prevention and response to critical infectious diseases.
- To reduce the adverse impact of predictable and unpredicted public health emergencies.
- To create an efficiently managed and evidence-based organisation with a clear focus on health promotion and disease prevention.

NCDC currently operates through six departments: Surveillance and Epidemiology, Public Health Laboratory Services, Health Emergency Preparedness and Response, Prevention Programmes and Knowledge Management, Finance & Accounts, and Administration & Human Resources.

Foreword

This national manual on Infection Prevention and Control describes what should be done at the strategic level in all healthcare facilities and across all types of healthcare settings. It outlines the sequence of activities, their respective interactions and the health outcomes to expect. It consists of generic, prescriptive and facility-specific elements. The generic and prescriptive policies are mandatory and collectively represent the fundamental irreducible minimum infection prevention and control processes, procedures and practices. The facility-specific policies should be adapted to fit the scope, nature and level of services provided by the particular facility. If effectively implemented, they will collectively result in a significant reduction in the morbidity and mortality directly associated with healthcare-associated infections, antimicrobial resistance and community outbreaks nationwide.

This manual is based on scientific evidence and international best practice. Every healthcare setting in Nigeria must be clean, safe and hygienic - inside and outside of the premises as well as the immediate surrounding environment. This effort is the primary responsibility of every healthcare worker and must be supported by the continuous availability of potable water and an uninterrupted supply of electricity in all patient care and mission-critical areas - at the very least. The collective responsibility of the local, state and federal governments in enabling this through legislation, regulation and adequate budgetary allocation that will ensure the effective implementation of IPC and related health system policies is recognised. It is imperative that every healthcare facility in Nigeria allocates a budget specifically for the effective implementation of the IPC programme.

All healthcare settings should commence IPC programmes with a baseline assessment or audit of the current status (human and material resources, budget allocation, infrastructure and pertinent data) of IPC using the Assessment Tool provided; with each facility identifying, quantifying and qualifying the gaps that need to be closed. The IPC programme should therefore be implemented beginning with a ramp-up of the requirements in a developmental sequence - starting with what is easiest to achieve at no or minimal cost, what matters most, what is most meaningful and what will have the greatest impact on health outcomes.

FOREWORD

It is recognised that some healthcare facilities have been accredited by internationally recognized bodies such as COHSASA™, JCI™ and SafeCare™ while others have achieved ISO 9001:2015 certification (the standard for quality management system documentation) and ISO 15189 (Medical laboratory accreditation). Such facilities will have implemented all of or even exceeded the IPC practices, measures and procedures outlined in this manual. As they continually improve by focusing on sustainability, effectiveness and innovation, it is expected that they will collectively serve as national benchmarks for IPC Best Practice. For those facilities using this manual for the first time, the outlined policies, measures and practices are an aspirational baseline from which IPC can be ramped up and further developed - resulting in a reduced disparity nationwide.

The NCDC remains firmly and fully committed to providing the technical support necessary to ensure that the outcomes outlined in this manual are achieved in every healthcare setting and to the overall success of this national initiative.



DR. CHIKWE IHEKWEAZU

DIRECTOR GENERAL, NCDC, SEPTEMBER 2021

Acknowledgement

This manual represents the outcome of many months of discussion, deliberations, research, review, observations as well as individual and collective enquiry into the scientific basis and *raison d'être* of infection prevention and control (IPC). Mostly thought leaders in healthcare delivery and service provision, academia, management, policy development and public health – with deep understanding and wide experience have made significant contributions to this document particularly in terms of content, relevance, as well as practice global applicability of the IPC best practices outlined herein. Their enthusiasm, passion, perseverance, professionalism and commitment are recognised. The Principal Investigators sincerely appreciate and commend the contributors for their hard work and particular focus in ensuring that the policies and procedures can be undertaken in any type of healthcare setting in Nigeria to a reasonable degree such that the desired goal of 'the reduction in infection transmission from all areas and activities' is achieved.

We acknowledge the financial support from our collaborating partners the Robert Koch Institute (RKI) and Deutsche Gesellschaft für Internationale Zusammenarbeit through the 'MAURICE' project.

We are grateful and remain indebted to you all.



DR. TOCHI OKWOR

AMR/IPC PROGRAMME COORDINATOR, NCDC.

General Information

1.1 Introduction

Infection Prevention and Control (IPC) is a clinical governance strategy that is fundamental to the delivery of safe healthcare by workers and the provision of safe services for patients. Its effective implementation is the responsibility of every healthcare worker (HCW) and is critical to the effective prevention of the spread of healthcare-associated infections (HAI) and multidrug-resistant organisms (MDRO). The overall goal of IPC is the maintenance of an environment of care which minimises all risks of infection to all patients, staff and visitors.

Policies are fundamental to the implementation of the IPC programme as they give credibility and validity by providing justification (based on scientific evidence) and authorization (by executive-level management). This manual is developed to provide a framework for implementing IPC in all healthcare settings in Nigeria. Beginning in Section 3, the outlined key IPC policies are the minimum recommended during the orientation and induction of all healthcare workers. Each section consists of related policies, references and checklists. Every policy should be implemented individually and audited independently for effectiveness.

All relevant staff should be trained in the effective implementation of these policies and practices (including proficiency assessment) within six months of launching the facility-wide IPC programme. To ensure compliance, healthcare workers must be supported with adequate infrastructure, supplies, supervision as well as tools and resources for monitoring, evaluation and continual improvement of care delivery, service quality and patient safety. These guidelines must be implemented to the fullest extent possible by all healthcare workers in public and private primary, secondary and tertiary healthcare facilities.

Timely, accurate, complete, reliable and valid documentation is critical and must support the audit, monitoring and evaluation of IPC policies, programmes, processes, procedures and practices. The aim is to report significant verifiable,

reliable and valid incremental reductions in morbidity and mortality associated with infection transmission, over specified time frames.

This manual will be updated as soon as it is indicated by national, regional and/or global events or technological and professional developments regarding IPC. It is anticipated that this manual will be available in every Department or Unit and serve as one of the main working documents used by the IPC Committee, IPC Team and IPC Focal person.

The checklist provided at the end of every Policy is designed to help every healthcare facility chart its course and gauge its position, pace and progress in the IPC journey. It is recommended that they are implemented collaboratively and in an integrated and synergistic manner across the various disciplines, services and clinical specialties.

1.2 Objectives

The main objectives of this manual are to:

1. Prevent or reduce HAI and antimicrobial resistant organisms in patients, healthcare workers and visitors in all healthcare settings.
2. Prevent or minimise the risk of outbreaks of HAI
3. Provide a framework for the development and implementation of guidelines, standard operating procedures (SOP), work instructions and work guides in order to establish and embed a safety culture in all healthcare settings.
4. Strengthen and standardize the surveillance of HAI and antimicrobial resistance (AMR) across all healthcare settings.
5. Standardise the effective implementation of IPC best practice in all healthcare settings.

1.3 General Policy Statements

1. An IPC Programme based on the WHO Core components shall be established in every public and private healthcare facility in Nigeria.

2. The IPC Programme shall be effectively and efficiently supervised and supported by appropriate and adequate resources.
3. The IPC Committee shall provide strategic direction, policy oversight and be headed by a Senior Doctor with advanced or certificated training in IPC who liaises directly with the leadership of the healthcare facility.
4. The IPC Team or Focal Person shall be responsible for the day-to-day operations of IPC and ensure awareness and compliance with the applicable policies, guidelines and practices by all staff, patients and visitors.
5. There shall be an appropriate number of certified IPC Practitioners in every healthcare facility (the WHO recommends a ratio of one IPC Practitioner to 250 beds as the minimum).
6. Every healthcare facility shall allocate a budget specifically for the effective implementation of the IPC programme.
7. All healthcare facilities shall have written protocols and SOPs for IPC.
8. Practical training in IPC shall be provided for all existing and all new HCW as part of the general orientation process in the healthcare facility and induction procedures in their respective Departments and Units.
9. Training records maintained for staff shall include evidence of attendance, outcomes of proficiency assessments and completion of work-based IPC assignments or projects where applicable or indicated.
10. All healthcare facilities shall carry out surveillance for HAI and relevant antimicrobial resistant organisms at regular intervals and whenever indicated.
11. Standard Precautions shall be effectively implemented by all persons involved in the care of patients and in all areas where there is contact with patients.
12. All healthcare facilities shall maintain records of compliance with IPC policies, guidelines and practices by HCW including hand hygiene audits using the Hand Hygiene Self-Assessment Framework (HHSAF).
13. The IPC policies and guidelines shall be reviewed every three years or when indicated by new scientific evidence or relevant national or local developments.

1.4 Legal Framework

This manual is guided by existing national policies related to healthcare delivery and service provision. It is recognized that some of these documents are under review while others need to be updated, however the intent and message remain relevant. Some national documents referred to – in part or entirety are

1. Nigerian National Health Act, FMoH 2014
2. National Policy for Infection Prevention and Control, FMoH 2013
3. National Guidelines on IPC for Viral Haemorrhagic Fevers, 2018
4. Interim National Guidelines for Monkeypox Outbreak Response, FMoH/NCDC 2017
5. Nigeria: The National Strategic Plan for Tuberculosis and Leprosy Control (2010-2015), FMoH 2011
6. National Policy on Injection Safety and Healthcare Waste Management, FMoH 2007

1.5 The IPC Programme

All levels of healthcare facilities and types of healthcare settings are required to set up an IPC Programme which includes a governance or administrative structure. The structure should reflect the prevailing local priorities, human resource adequacy and capabilities, material resources, as well as the range, level and volume of services provided in each type of setting.

The minimum requirements for implementing IPC programmes have been outlined by the World Health Organization (WHO). Large healthcare facilities should include the IPC Committee (IPCC) and the IPC Team while a small IPC Team or an IPC Focal Person may be adequate for smaller facilities. The IPC Committees and Teams should be multidisciplinary in composition and be guided by documented and endorsed Terms of Reference..

1.5.1 Governance Structure and Implementation

The governance structure and broad implementation outline the features that are applicable at the facility level. The executive level management, charged with the responsibility and oversight for policy development and implementation, should understand the relationship between the national and facility-level policies and identify the various points-of-fit.

This understanding will promote congruence of contextual interpretations and conformity in application between the national-level policies and the respective facility-level policies across the nation in relation to IPC.

The Federal Government of Nigeria is committed to strengthening the capacity of all public and private healthcare facilities to protect staff, patients and visitors by ensuring that effective IPC Programmes are implemented at all levels of care.

The IPC programmes will be established in line with the WHO core components which collectively form the basis of and provide the framework for effective implementation. Each core component is designed to be implemented at the national and facility levels.

Although this manual is developed for use in healthcare facilities, it is important that healthcare workers are aware of the key recommendations, requirements as well as the executable responsibilities and broad activities that need to be taken at the national level. It is believed that this information will help to provide a better understanding and appreciation not only of IPC but also the significance of the multilevel, multidisciplinary and multisectoral collaboration required to achieve the dual aims of the IPC Programme – preventing HAI and combating AMR through consistent good practice.

The outlined core components underpin the policy framework and strategies for the implementation of IPC in Nigeria.

Table 1: The WHO Core Components for IPC

CORE COMPONENT	ABRIDGED DESCRIPTION
1	The IPC Programme which requires dedicated funding for effective implementation and sustainability
2	IPC Technical Guidelines and Standard Operating Procedures
3	IPC education and training and development of adequate Human Resources to implement the programme
4	Surveillance programme to guide IPC interventions and detect outbreaks which requires the support of the Microbiology laboratory
5	A mechanism for monitoring and evaluating the effectiveness of IPC practices including timely feedback for continual improvement
6	Minimum standards for the environment that address water, sanitation and hygiene as well as the design and layout of healthcare facilities
7	Multimodal strategies that will help to bring about behavioural change
8	Recommendations and coordination of different Ministries and Directorates (Public Health, Hospital services, Quality Improvement, Occupational Health, Environmental Health etc) as required.

Table 2: WHO Core Components - Actions to be Implemented at the Facility Level

CORE COMPONENT	STRUCTURE/ACTIVITY
Organisation of IPC programmes	<ol style="list-style-type: none"> 1. An organisational structure that provides the policy, legal and operational framework for IPC. 2. Defines the scope of activities and is run by at least one trained and appropriately certified HCW. 3. There is an adequate budget to perform the required activities
Technical Guidelines	<ol style="list-style-type: none"> 1. Develop evidence-based guidelines and SOPs for the implementation of IPC that are locally relevant
Human Resources	<ol style="list-style-type: none"> 1. Train IPC Practitioners (specialists) to the appropriate level of competence 2. Train all frontline healthcare workers on standard and transmission-based precautions as a minimum <ol style="list-style-type: none"> a. At orientation b. During induction; and c. Annually
Surveillance of infections and assessment of compliance with IPC practice	<ol style="list-style-type: none"> 1. Identify activities or infections (including antimicrobial resistant organisms) for surveillance to prioritise interventions, identify outbreaks and monitor trends in infection rates. 2. Use standardised definitions, methodology and documentation. 3. Identify the most important pathogens to monitor based on local epidemiology. 4. Utilise the microbiology laboratory for outbreak management and to support all IPC activities
Multimodal strategies	<ol style="list-style-type: none"> 1. The use of behaviour change strategies to achieve compliance with IPC processes and procedures is critical for improved outcomes. 2. Multimodal strategies consisting of several components implemented in an integrated manner have been found to be effective in improving outcome and changing behaviour.

CORE COMPONENT	STRUCTURE/ACTIVITY
Built Environment	1. The built environment which includes the facility design and WASH infrastructure is critical to the achievement of improved IPC outcomes
Monitoring and Evaluation	<ol style="list-style-type: none"> Promote regular monitoring and evaluation of interventions and outcomes. Strategies should be implemented and reporting lines should be available at the national and facility levels.
Links with Public Health or other services	1. Alliances and collaboration with other departments/units that will enhance IPC outcomes such as: Occupational Health; Works Department; Environmental Health; State IPC Teams; DSNOs; State Epidemiologists and the NCDC

Table 3: Summary of Key Responsibilities of the Various Agencies

LEVEL OF OPERATION	AGENCY	BROAD RESPONSIBILITY
NATIONAL	Federal Ministry of Health	1. Develop national policies and enact legislation for healthcare.
	Nigeria Centre for Disease Control (NCDC)	<ol style="list-style-type: none"> Identify, notify and promote best practice in IPC in line with current scientific evidence Lead on national surveillance and feedback of HAI data and risk assessments. Provide leadership, support and coordination for management of HAI-related and community-based outbreaks Provide strategic direction and focus for IPC and drive performance monitoring and evaluation of IPC

LEVEL OF OPERATION	AGENCY	BROAD RESPONSIBILITY
STATE	Ministries of Health	<ol style="list-style-type: none"> 1. Develop adequate and appropriate State policies and guidelines based on Federal Government policies and legislation for healthcare. 2. Promote, Supervise and Monitor IPC performance of State-owned and private healthcare facilities.
	Local Governments (LGAs)	<ol style="list-style-type: none"> 1. Promote, Supervise and Monitor IPC in primary healthcare facilities and the community in line with State-specific guidelines and requirements.
	Government (Public)	<ol style="list-style-type: none"> 1. Monitor, coordinate and evaluate the implementation of facility-specific IPC programme through audit reports or self-assessments received from the IPC Committee, Team or Focal Person(s).
ACUTE CARE FACILITIES	Private (Individual, Group or Corporate)	<ol style="list-style-type: none"> 2. Monitor compliance and evaluate the effectiveness of IPC practice in collaboration with or under the aegis of second or third party external assessors (through accreditation or benchmarking programmes)
	Faith-based/ Multinational	

Each health facility is required to have a facility-wide IPC programme that involves the Executive Management, the IPC Committee and the IPC Practitioner.

Figure 1: Governance Structure for IPC in Healthcare Facilities

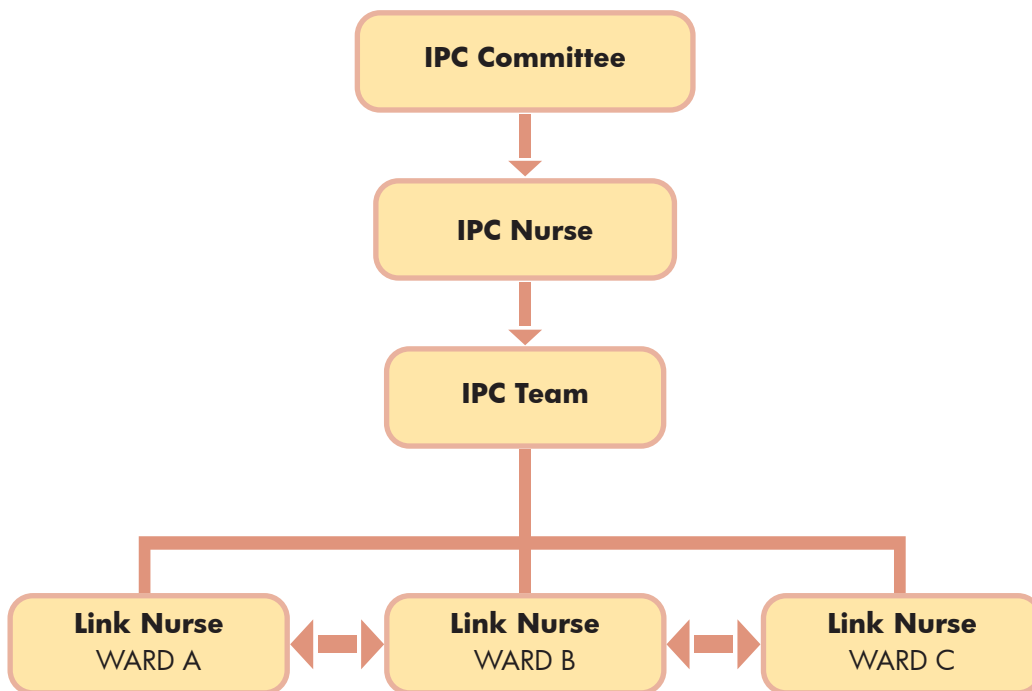
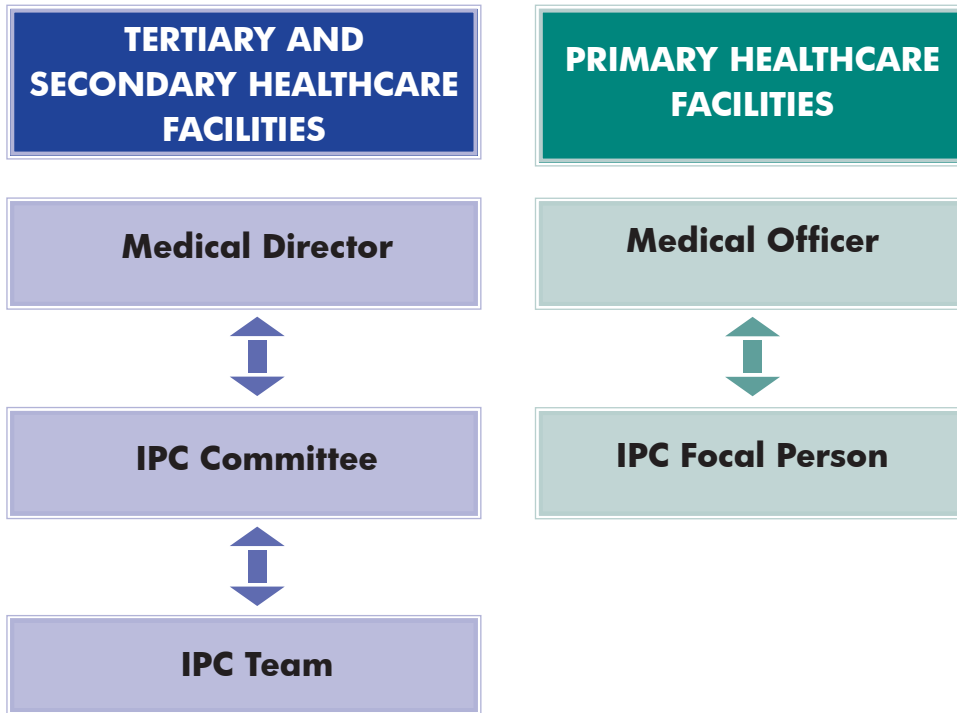


Figure 2: IPC Link System

Table 4. Broad responsibilities of the IPC Committee, Team and Link Nurse

DESIGNATION	EXECUTABLE RESPONSIBILITIES
IPCC	<ul style="list-style-type: none"> • Approve the annual plan for IPC control at the facility-level • Approve the IPC policies • Support the IPC Team and direct resources to address identified problems • Facilitate and support training in IPC • Encourage interdisciplinary and interdepartmental communication • Monitor and evaluate IPC activities and provide supportive supervision • Implement effective advocacy and behavioural change approaches • Ensure availability of appropriate IPC supplies • Ensure IPC activities are included in the budget • Advise on procurement of IPC commodities and equipment • Participate in outbreak investigations of HAIs • Meet regularly and give formal feedback to the executive management and CEO
IPC Team	<ul style="list-style-type: none"> • Prepare the annual action plan for implementing the IPC Programme and obtain approval from the IPCC • Implement approved plans to ensure safe practices • Advise staff about all aspects of IPC needed to maintain a safe environment for patients, staff and visitors • Supervise and monitor daily practices of patient care designed to prevent infection • Formulate IPC policies • Develop Surveillance Programmes for HAIs • Identify problems in the implementation of IPC activities which need to be addressed by or escalated to the IPCC • Develop an annual training plan for HCWs and submit it to the IPCC for approval. • Implement IPC training activities • Ensure availability of supplies and equipment needed for IPC • Report outbreaks to the IPCC and investigate them • Train and monitor link nurses • Submit monthly reports on IPC activities to the IPCC
Link Nurses (usually the Head Nurse in the ward/unit)	<ul style="list-style-type: none"> • Convey the recommendations of the IPC Team to the staff of the ward and give feedback to the IPC Team. • Ensure that IPC activities in the Link Nurses' department are implemented • Report infections (in patients and staff) their respective departments • Maintain good IPC practices in the ward/units • Motivate and encourage good practice • Recognise communicable diseases and initiate patient isolation when necessary

1.5.1.1 IPC Committee

The IPC Committee is required at secondary and tertiary healthcare facilities and should be multidisciplinary. It should be chaired usually by the Infection Control Doctor, the Medical Director or their Representative. The Head of Nursing, the Infection Control Nurse, Representative of Specialty Departments, Facility Epidemiologist/Public Health Physician, Environmental Health Officer, Chief Pharmacist and Microbiologist should be included. The State Disease Surveillance Notification Officer (DSNO) may be a member of the IPCC.

The IPCC should ensure that protocols are in place, capacity building and training of all staff is undertaken, and Executive Management and Staff are notified about pertinent national, regional and global events and developments in IPC. Sub-committees should be formed under the IPCC due to the multidisciplinary reach and impact of IPC. Such committees should submit reports to the IPCC and be invited to the IPCC meetings when required - they include Monitoring and Evaluation, Occupational Health, Waste Management, Logistics, Engineering/Maintenance, Finance, Procurement, Facility Management, Pharmacy, Continuing Professional Development etc.

1.5.1.2 IPC Teams

This team is responsible for the day-to-day operations of the Infection Control Programme and should include an IPC Doctor and Nurse as the minimum. Link Nurses who are usually in charge of a ward (e.g. Medical Ward), staff involved in other aspects of the healthcare system such as the Facility Manager, Supervisors of Housekeeping, Food Services and Laundry Services should be included.

In Primary Healthcare Facilities where the range of services and the staff numbers are limited, a trained IPC Focal Person who reports directly to the Head of the facility is all that is required.

IPC Teams should meet daily to discuss relevant issues. A standing agenda may include updates on surveillance, clusters of infections or outbreaks, observations of IPC Practice, Policy review or revisions, status of educational efforts and follow-up on identified problems e.g. supply, equipment and compliance. Minutes should be prepared for all meetings and disseminated to pertinent stakeholders for timely and appropriate action. Also, any regulation(s) that will facilitate the monitoring of the activities of the wards and other departments should be widely distributed. Feedback from the ward staff should be strongly encouraged.

1.5.2 Staffing (Roles and Responsibilities)

The IPC Programme as a minimum must include:

- a. A physician and a nurse with responsibilities for IPC
- b. A manual of critical IPC policies and guidelines
- c. An educational programme for staff
- d. A clear line of responsibility to senior management

Nurses are involved in all aspects of clinical and patient care and their presence in healthcare settings is ubiquitous. They therefore play a crucial role as members of the IPCC and IPC Team and are usually the IPC Focal Person. Nursing representatives in the different wards that act as liaisons between the IPC Team, Focal Person and the other staff in the ward or unit, are referred to as 'Link Nurses'. They help to:

- a. identify and implement solutions when problems occur
- b. educate and maintain communication
- c. include good nursing practice in line with set standards and policies
- d. encourage hand hygiene and monitor aseptic techniques
- e. limit patient exposure to staff, visitors, other patients and contaminated equipment
- f. maintain IPC supplies and other relevant patient care supplies

1.5.3 The Imperative of Documentation

1.5.3.1 Policies

Infection Prevention and Control is the inherent quality standard for healthcare delivery and service provision and a key success measure for clinical outcomes. It is therefore expected that generic and specific IPC policies will be developed by every healthcare facility. A generic IPC policy is mandatory for every facility while IPC policies that address pertinent aspects will be developed based on the scope of services provided and the type of activities performed.

Policies provide the underlying principle or rationale for a decision or course of action proposed or adopted – usually at the strategic level. They drive and inform the development of procedures. As high-level multidisciplinary documents, all IPC policies should be developed by the IPC Committee, IPC Team and or Focal Person in collaboration with the relevant departments and authorized by the Head of the facility. Policies may be initiated with the aim of introducing a new approach, a change in an existing practice or a procedure in response to observations, regulatory or statutory requirements or evidence-based best practice.

Every HCW is required to be trained in and demonstrate an understanding of each IPC policy – preferably within six months of assuming duties. The signed and dated form confirming successful completion of the respective training programmes should be included in their personal files. Policies should be indexed and audited for compliance and effectiveness at least annually. Audit reports should include observations, actions to be taken and recommendations for improvement when indicated. A template to guide facilities in this regard is included in Appendix A.

1.5.3.2 Standard Operating Procedures

A procedure details the sequence of steps involved in performing an activity. When it has been established, adopted and accepted

as the official or preferred method and is performed in the same manner by all those involved regardless of their location, role or designation in the organisation, it is referred to as a 'Standard Operating Procedure' (SOP). The main objective is to optimize effectiveness by minimising variation. It is important to establish SOPs for critical IPC activities and practices such as hand washing, use of alcohol-based hand rub, use of Personal Protective Equipment (PPE), injection safety, post-exposure prophylaxis, sharps disposal, waste management etc.

With increasing level of detail, collectively, the effective implementation of policies, processes and procedures will help to ensure consistency and compliance with IPC practices across the various healthcare settings nationwide. Work Instructions or Work Guides provide the most detailed description of a task or an activity. They are usually applied when precision and accuracy are required or when a performer with minimal knowledge needs to be 'instructed exactly' how to perform a specific task or activity. These are particularly valuable when training staff how to launder different types of hospital linen; prepare disinfectant solutions; operate particular equipment, appliance, device or handle a particular instrument. Job Aids are usually written for individual tasks and include illustrations for ease of understanding. Tasks are identified one at a time in a stepwise order with instructions on when and how to start and stop.

1.6 References

1. Minimum requirements for Infection Prevention and Control. Geneva: World Health Organization; 2019. Licence: CC BY-NC-SA 3.0 IGO.
2. Guidelines on core components of infection prevention and control programmes at the national and acute health care facility level. Geneva: World Health Organization; 2016. Licence: CC BY-NC-SA 3.0 IGO.

1.7 Checklist

1.7.1 Strategic Activities

1. All the policies outlined in this Manual are approved and endorsed by the Head of the healthcare facility
2. All policies required to support or complement the effective implementation of these policies are readily accessible to all relevant HCW
3. All IPC policies and related governance documents are configured, indexed, filed appropriately and maintained by the IPCC, IPC Team or IPC Focal Person
4. All policies in this Manual are implemented in all Departments/Units
5. The Organisational Chart for the healthcare facility includes the Head of the IPCC and indicates reporting lines and relationships
6. The IPCC is multidisciplinary in composition and includes the Head of the healthcare facility or his/her Representative
7. A dedicated IPC budget is presented and audited annually
8. Relevant IPC signage and notices (appropriately endorsed) are strategically displayed in the healthcare facility and updated when indicated

1.7.2 Operational Activities

1. The responsibilities of the IPCC are outlined in the Terms of Reference and included in their respective individual Job Descriptions
2. The duties of respective members of the IPC Team and/or IPC Focal Person are included in their respective individual Job Descriptions
3. Improvements in IPC that occur in different Departments/Units as a direct result of IPC Programme are identified, documented and shared with all HCW
4. At least one HCW is responsible for IPC in every Department/Unit and liaises with the IPC Team or IPC Focal person when indicated
5. IPC Training Needs Analysis, Training Plan, Training Programme, Training Reports (coverage, attendance, completion, effectiveness and outcomes) are available and disseminated to the relevant HCW

6. IPC is included in the Orientation and respective Induction training for all HCW
7. The IPCC, IPC Team and/or IPC Focal Person are known by all HCW
8. Scheduled and spot process and compliance audits of IPC policy, activities and practices are conducted and documented
9. All legal and regulatory documents are available and used/referred to by the IPC Committee, IPC Team or IPC Focal Person as required
10. All IPC documents are arranged in a chronological manner, and stored safely and securely

1.7.3 Documents and Records

1. The IPCC (Terms of Reference, Letters of Appointment, Meeting (Schedules, Minutes, Attendance Records, Action Plans, Recommendations and Outcomes)
2. Facility-wide IPC records (maintained centrally by the IPCC and local reports are maintained by Heads of Departments/ Units)
3. Proficiency Assessments of HCWs (key IPC Practices and Procedures in Standard and Transmission-based Precautions)
4. Quality Improvement Log (changes that occur in different Departments/ Units as a direct result of the IPC Programme)
5. SOPs, Work Instructions, Work Guides and Job Aids (for all key IPC practices and activities)
6. IPC data (analysed for trends, effectiveness and opportunities for improvement)
7. Audit Reports (key IPC practices and activities)
8. IPC Programme Monitoring and Evaluation reports (monthly or quarterly)
9. Implemented Corrective and Preventive Actions (monthly or quarterly)
10. Relevant IPC signage and notices (appropriately endorsed)

Disease Transmission in Healthcare Settings

2.1 Introduction

Infectious diseases are caused by pathogenic microorganisms (viruses, bacteria, protozoa, fungi, prions and helminths). These disease-causing microorganisms leave their source and are transmitted to another host either directly (person to person) or indirectly (contact with contaminated environment, fomites and equipment) in healthcare settings. The transmission of pathogenic microorganisms to a new host does not always result in disease as the new host may become colonized by the new microorganism without any signs or symptoms.

2.2 The Chain of Infection Transmission

WHAT

The series of events that must occur before a microorganism can be transferred from one host to another are referred to as the Chain of Transmission. An infection can therefore be prevented by breaking any link in this chain. Infection Prevention and Control measures and practices are designed to break any of these six links.

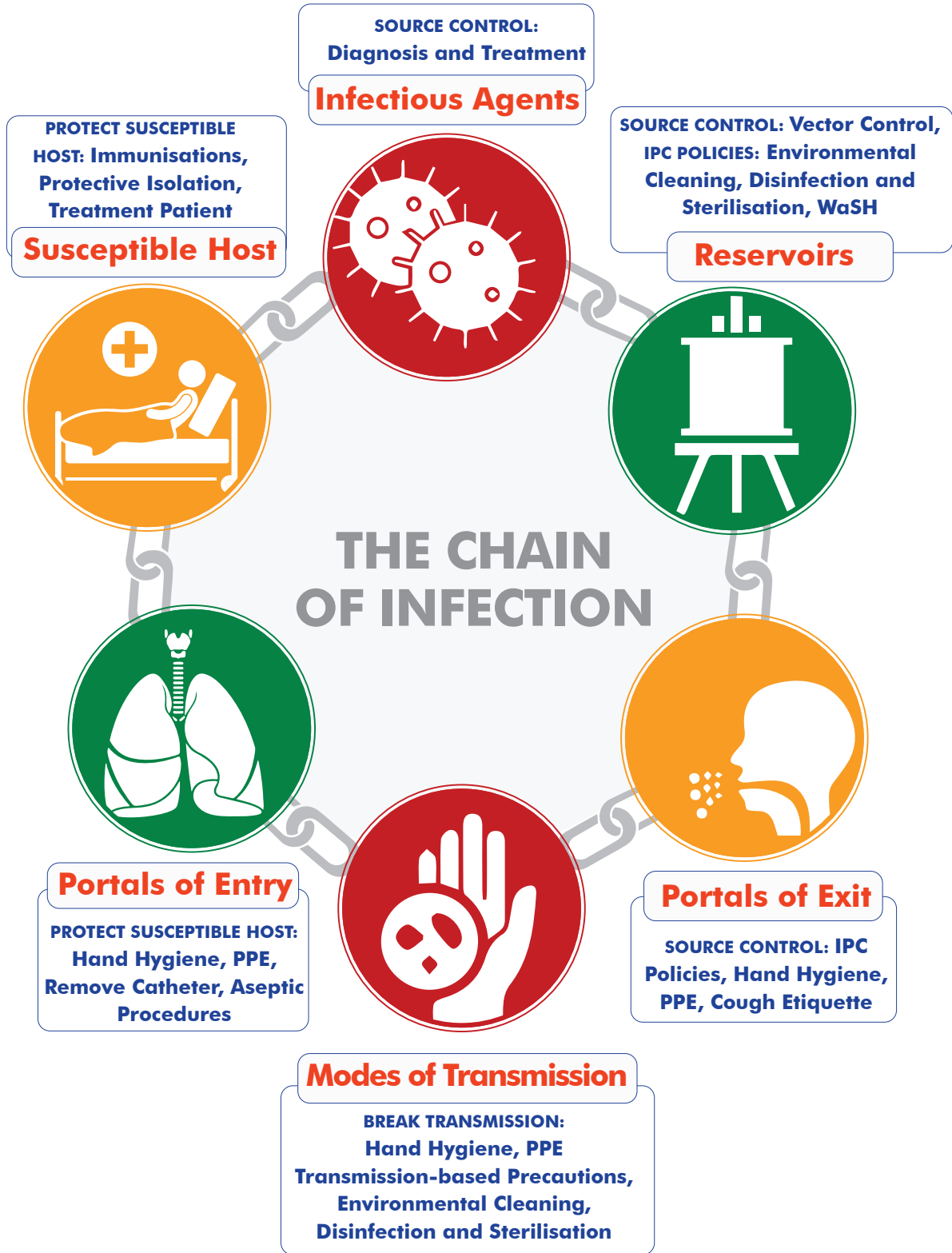


Figure 3: The Chain of Infection (Ogunsola and Okwor 2018)

HOW

1. **Aetiology (infectious agent)** — Bacteria, viruses, fungi, prions and parasites
Break the chain by eliminating or inactivating the agent; preventing the agent from exiting the reservoir (e.g. sterilising surgical instruments; cleaning and disinfecting contaminated or dirty surfaces; providing safe drinking water; adopting safe food handling and preparation practices; establishing immunisation programmes; treating infectious individuals; and practicing good hand hygiene).
2. **Reservoir** is the principal habitat in which the infectious agent lives, grows and multiplies such as the human body, animals and the environment (water and food).
Break the chain by appropriate handling and disposal of blood and body fluids; adopting safe food practices; monitoring of water quality; controlling vectors and treating infectious individuals.
3. **Portal of exit** is the path by which an infectious agent leaves the reservoir such as any break in the skin surface, exudation of blood, secretion of body fluids and excretions.
Break the chain by covering coughs and sneezes, using PPE to prevent or contain the transfer of blood and body fluids, performing appropriate hand hygiene and covering draining wounds. Do not go to work if you have exudative (wet) lesions or weeping dermatitis.
4. **Mode of transmission** – how the infectious agent travels from a reservoir to a susceptible host or from place to place. The primary routes of transmission in healthcare settings and facilities are:
 - a. **Contact – direct** in which the infectious agent is spread from person to person or **indirect** in which the infectious agent is spread through contact with a contaminated surface or an inanimate object.
 - b. **Droplet** – large particles produced when an infected person sneezes, talks or coughs are dispersed widely on horizontal surfaces in the immediate vicinity leading to indirect or direct contact transmission. Droplets from coughs and sneezes can travel for up to a distance of 2 metres.

- c. **Airborne** – infectious organisms contained within droplet nuclei (up to five microns in size) or dust particles in the air are widely dispersed by air currents and inhaled by a susceptible host.
- d. **Common-vehicle transmission** – a single contaminated source (e.g. food, multi-dose vials, intravenous fluid, equipment or medical devices) serves as a means of transmitting infection to many hosts.
- e. **Vector-borne diseases** – the infectious agent is spread by direct contact with insects, birds and animals or indirectly through contact with their excretions or secretions.

Break the chain by using appropriate barriers, adopting safe practices, spatial separation, engineering controls, hand hygiene, environmental sanitation and equipment disinfection/sterilisation.

- 5. **Portal of entry** into a susceptible host through a break in the mucous membrane or skin. All portals of entry have natural protective barriers which are normally effective but may allow the entry of microorganisms if they become damaged or compromised by the use of invasive medical devices (e.g. catheters).

Break the chain by performing appropriate hand hygiene, using aseptic techniques when required, wearing appropriate PPE, using invasive devices only when necessary and ensuring that food and water are safe for use at the point of consumption.

- 6. **A susceptible host** exists when the normal balance between microorganisms and their host is disturbed by invasive procedures, drug therapy, extremes of age (infants and elderly), poor nutrition, radiation therapy, chemotherapy, burns, chronic diseases and conditions that can cause an altered immune status e.g. diabetes.

Break the chain by appropriate and timely immunizations, good nutrition, identification and treatment of high-risk patients as well as protective

2.3 Healthcare-Associated Infections (HAI)

WHAT

An infection acquired by a patient in a healthcare facility that was not present or incubating at the time of admission and which may present after discharge is called a healthcare-associated infection. All HCW are at risk of developing HAI during contact with a patient or a contaminated surface.

Healthcare-associated infections can be classified as endogenous (from a person's own microbial flora) or exogenous (from the environment or another person). Most HAI are endogenous. The most common HAI in adults and children are Catheter-Associated Urinary Tract Infections (CAUTI), Catheter-Associated Blood Stream Infections (CABSI), Ventilator-Associated Pneumonia (VAP) and Hospital Acquired Pneumonia (HAP) and Surgical Site Infections (SSI). Most infections are caused by gram-positive bacteria (e.g. *Staphylococcus spp.* and *Enterococcus spp.*) and gram-negative bacteria (*Escherichia coli*, *Klebsiella pneumoniae*, *Pseudomonas aeruginosa*, *Acinetobacter spp.*) which may be sensitive or resistant to antibiotics. Epidemic-prone diseases such as Lassa fever, Yellow fever, Tuberculosis and Cholera often start within the community and become amplified in the healthcare facility.

2.4 Preventing Disease Transmission

WHAT

Infection Prevention and Control involves the strategies, measures and practices applied to break the chain of transmission in all areas during healthcare delivery and service provision. These strategies target different links in the chain e.g. covering a cough prevents the exit of the pathogen and hand hygiene prevents the route of transmission.

WHEN

Standard Precautions are the routine activities that must be practiced on all patients - they include hand hygiene; respiratory hygiene; cleaning, disinfection and sterilisation of reusable instruments, devices and equipment; and the appropriate handling and management of all waste generated during healthcare delivery.

Transmission-based Precautions are additional measures, activities and procedures which are undertaken when there is a highly infectious disease with a known route of transmission. All staff are individually and collectively responsible for preventing the transmission of microorganisms during healthcare delivery and service provision. The outlined guidelines are applicable to all HCW in every healthcare facility regardless of the size, type and volume of services offered or level of care provided.

HOW

1. All patients as well as their blood and body fluids should be treated as potentially infectious.
2. Hand hygiene should be performed appropriately, effectively and in a timely manner in accordance with the 'WHO Five Moments of Hand Hygiene'.
3. Standard Precautions should be applied when in contact with any patient, blood, body fluid and when handling samples.
4. Aseptic Technique should be performed whenever indicated.
5. Healthcare waste (including sharps) should be managed appropriately in keeping with the healthcare facility policy.
6. Patients should be isolated according to the healthcare facility policy.
7. Housekeeping practices including pest control and linen management should be performed in accordance with the respective hospital policies.
8. Effective personal hygiene should be maintained by all healthcare workers at all times.
9. Food and personal belongings should be stored appropriately and safely in designated locations.
10. Infection Control Policies and Protocols should be written and adherence by all HCW should be evaluated through process and compliance audits.

2.5 Point-of-Care Risk Assessment**WHAT**

A Point-of-Care Risk Assessment (POCRA) is a tool that enables healthcare workers to determine what additional steps need to be taken to protect themselves, the patients they directly care for as well as others within the environment of care. It should be carried out before each interaction with the patient or their environment in order to determine the most appropriate intervention required to break the chain of transmission.

HOW

Before assessment and without touching the patient, assess the:

1. *Patient* for the following high-risks of contaminating the environment
 - a. Inability to clean hands or cover cough
 - b. Uncontrolled or uncontained diarrhea

- c. Uncontrolled respiratory symptoms
 - d. Fever, skin rashes or vomiting
 - e. Uncontained draining wounds or skin lesions
2. *Type of environment* that will present a high risk for the patient
 - a. Shared space – multi-bed, shared bathrooms
 - b. Crowded spaces e.g. waiting areas such as outpatient departments, pharmacy
 - c. Shared equipment or medical devices
 3. *Procedure(s)* to be performed and the respective potential risks

After the assessment

1. *Minimise risk* by using avoidance procedures e.g. when taking a history in the clinic, the risk of contact with droplets can be reduced by avoiding sitting face-to-face and performing cough etiquette
2. *Prevent transmission* by applying Standard Precautions (i.e. appropriate use of hand hygiene, personal protective equipment, respiratory hygiene, procedures for the prevention of needlestick injury, effective management of patient care equipment and devices, environmental cleaning, safe linen management and waste management).

2.6 References

1. Centers for Disease Control and Prevention. Principles of epidemiology, 2nd ed. Atlanta: U.S. Department of Health and Human Services; 1992
2. Healthcare without avoidable infections: The critical role of Infection Prevention and Control. World Health Organization 2016; WHO/HIS/SDS/2016.10
3. Guidelines on core components of infection prevention and control programmes at the national and acute health care facility level. Geneva: World Health Organization; 2016. Licence: CC BY-NC-SA 3.0 IGO.
4. Minimum requirements for infection prevention and control. Geneva: World Health Organization; 2019. Licence: CC BY-NC-SA 3.0 IGO.
5. Interim Practical Manual supporting national implementation of the WHO Guidelines on Core Components of Infection Prevention and Control Programmes. Geneva: World Health Organization; 2017. Licence: CC BY-NC-SA 3.0 IGO. Cataloguing-in-Publication (CIP) data. CIP data are available at <http://apps.who.int/iris>.

6. Improving infection prevention and control at the health facility: Interim practical manual supporting implementation of the WHO Guidelines on Core Components of Infection Prevention and Control Programmes. Geneva: World Health Organization; 2018 (WHO/HIS/SDS/2018.10). Licence: CC BY-NC-SA 3.0 IGO. Cataloguing-in-Publication (CIP) data. CIP data are available at <http://apps.who.int/iris>.

2.7 Checklist

2.6.1 Activities

1. Procedures, processes and practices to break the each of the links in the chain are identified and effectively implemented by all HCWs at the respective points of care
2. Relevant training is provided for respective HCW including certification training for IPC Committee members, IPC Team and IPC Focal Person
3. Training materials and resources for Standard Precautions and Hand Hygiene are readily accessible to HCW at the points-of-use
4. Effectiveness of IPC training is monitored and evaluated and improvements are verified by trends in data, adoption of best practice and behavioural change
5. Point-of-care risk-assessment is available at every patient care area and compliance is monitored and documented
6. IPC signage is strategically displayed especially at every point of hand hygiene

2.6.2 Documents and Records

1. IPC training materials and resources (hard copy, electronic copy, audio-visual)
2. SOPs for all activities and practices that will break the respective links in the chain of disease transmission
3. SOP for point-of-care risk assessment
4. Training schedules, attendance and coverage (by Department/Unit)
5. Compliance audits and identified behavioural change

Standard Precautions

Infection Prevention and Control

Best IPC practice is based on the assumption that every patient, healthcare worker and visitor) is potentially infectious. The sustainability of this premise and the consistent practice of breaking as many links as possible in the chain of infection combine to create a culture of compliance by every healthcare worker, every patient and every visitor. Infection Prevention and Control is therefore the responsibility of every healthcare worker.

The IPC Team is responsible for ensuring that appropriate training, education and support is available to help HCWs maintain proper standards and minimise risks of infection transmission. The executive level management is responsible for ensuring that a designated budget is accessible for the procurement of adequate and appropriate IPC supplies. The implementation of all IPC practices, measures and procedures in every healthcare setting must be guided by appropriate and applicable policies.

3.1 Policy 1 – Infection Prevention and Control

3.1.1 Intent

To ensure that the transmission of infection between everyone within and in the immediate surroundings of the healthcare setting is reduced to the barest minimum by compliance with all IPC policies and practices in all areas at all times. The practice of IPC should be accorded the highest priority by all healthcare workers, patients and visitors.

3.1.2 Policy Statement

Infection prevention and control is the inherent quality assurance standard for healthcare delivery and service provision. Every facility shall have an overarching general IPC policy that outlines the scope, areas, location, activities and procedures that have a potential for the transmission of infection. The policy shall also guide the administration, governance, implementation as well as the monitoring and evaluation of all activities, practices and procedures that need to be undertaken to ensure that infection transmission, healthcare-associated-infections and antimicrobial resistance

are minimised within the facility as well as the immediate surroundings to the fullest extent possible. This overarching generic IPC policy shall recognize related and associated policies that are required in order to ensure that IPC is integrated in a synergistic manner across all Departments and Units in the facility – clinical and non-clinical.

3.1.3 Background

The healthcare setting is the environment with the greatest potential for infection transmission. Everyone should therefore be protected from infection, and when it is identified or detected, adequate and appropriate measures (Standard and Transmission-based Precautions) should be implemented efficiently, effectively and promptly. This means that the infrastructure should be available, and resources and supplies must be continually accessible to those who need them, at the time they are needed and they should be used conscientiously, rationally and judiciously.

3.1.4 Responsibility

Every healthcare worker in collaboration with the IPC Committee, IPC Team or Focal Person who in turn have multisectoral and interdisciplinary oversight of IPC across the entire facility. The overall responsibility for IPC resides with the Heads of the healthcare facilities. They should be aware not only of the scope of activities but also of the outputs, outcomes and impact - on the facility and its various stakeholders.

3.1.5 Scope

Standard Precautions; Transmission-based Precautions; Decontamination, Disinfection, and Sterilisation of devices, equipment and instruments; Injection Safety; Safe collection and handling of specimens; Management of blood and body substance spills; Identification and Reporting of Notifiable Diseases; Medication administration, storage and handling; Antimicrobial Resistance; Disease Surveillance; Outbreak Management; Immunisation of Healthcare Workers' and Healthcare Waste Management.

3.1.6 Procedure

The details of associated policies are documented in the applicable sections of this manual. Implementation shall be based on the WHO multimodal strategies and in accordance with best practice supported by scientific evidence and proven concepts. Consideration should be given to the available resources, peculiar facility characteristics, constraints and other limitations during implementation to ensure that the objectives of each policy and procedure are achieved in the most practical and sustainable manner.

3.2 Policy 2 – Standard Precautions

3.2.1 Intent

Standard precautions are measures and practices designed to prevent and control the transmission of blood-borne and other microorganisms from recognised and unrecognised sources during healthcare delivery and service provision.

3.2.2 Policy Statement

Standard precautions must become embedded in the culture of every healthcare facility and a routine aspect of the daily practice of every HCW. Collectively, these fundamental IPC precautions should be adopted as the minimum standard of care for all patients. A broad policy on standard precautions that will be adopted and implemented in the applicable areas of the healthcare facility must be developed. Hand hygiene and the use of PPE are mandatory aspects of this general policy.

3.2.3 Background

Preventing the transmission of microorganisms between patients involves patient safety and care quality measures while the Occupational Health Unit is responsible for preventing transmission between staff and minimizing spread in the internal and external environments. It is the duty of every HCW to protect themselves, patients, visitors and other staff from HAI by ensuring compliance with all necessary Standard Precautions at all times. The following Standard Precautions shall be practiced by all HCW every time and everywhere healthcare is delivered: Hand Hygiene;

Use of Personal Protective Equipment; Respiratory Hygiene (Cough Etiquette); Prevention of needlestick injuries; Environmental Cleaning; Decontamination, Disinfection and sterilisation of patient care equipment and medical devices; Safe Linen Management and Healthcare Waste Management.

3.2.4 Responsibility

All HCWs responsible for and involved (directly or indirectly) in patient care in collaboration with the IPC Committee, IPC Team and IPC Focal Person.

3.3 Policy 3 – Hand Hygiene

3.3.1 Intent

To ensure the adoption of hand hygiene as the single most important means of preventing the transmission of infection to the patient and the HCW; to describe the indications and techniques for performing effective hand hygiene and ensure compliance with the various procedures by all staff, patients and visitors.

3.3.2 Policy Statement

Routine hand hygiene is mandatory for all healthcare workers and care givers in every healthcare facility. It must be performed effectively every time.

3.3.3 Background

Hand hygiene is a major component of Standard Precautions against the transmission of infection between the patient, the healthcare worker and their families. Appropriate hand hygiene minimises microorganisms acquired on the hands during care delivery, when there is contact with blood, body fluid, secretions, excretions as well as known and unknown contaminated equipment or surfaces. The technique, timing and duration of hand hygiene practice need to be correct in order for it to be an effective means of preventing the spread of infection.

The WHO describes five moments that hand hygiene must be performed during provision of healthcare to prevent the transmission of microorganisms

to susceptible individuals. These five moments recognize the importance of the technique as well as the location where hand hygiene is carried out. The concept of the 'patient zone' is integral to recognising when to perform hand hygiene. The patient zone is the immediate surrounding of a patient and typically includes the intact skin of the patient, all inanimate surfaces that are touched by or in direct physical contact with the patient such as the bed rails, bedside table, bed linen, infusion tubing and other medical equipment. Other 'high touch' or frequently touched surfaces by HCW while caring for the patient include monitors, knobs, buttons and door handles. This zone is considered to be primarily contaminated by the patient's flora. The performance of effective hand hygiene is predicated on the understanding of the patient zone.

3.3.4 Responsibility

Every HCW, patient, contractor, vendor, supplier and visitor to any area within as well as the immediate surroundings of the healthcare facility. The IPC Committee, IPC Team and IPC Focal Person have joint oversight for promoting effective implementation while the Head of the facility has overall responsibility for health outcomes.



Figure 4: Probable areas of contamination during patient care.

Source: WHO, 2009

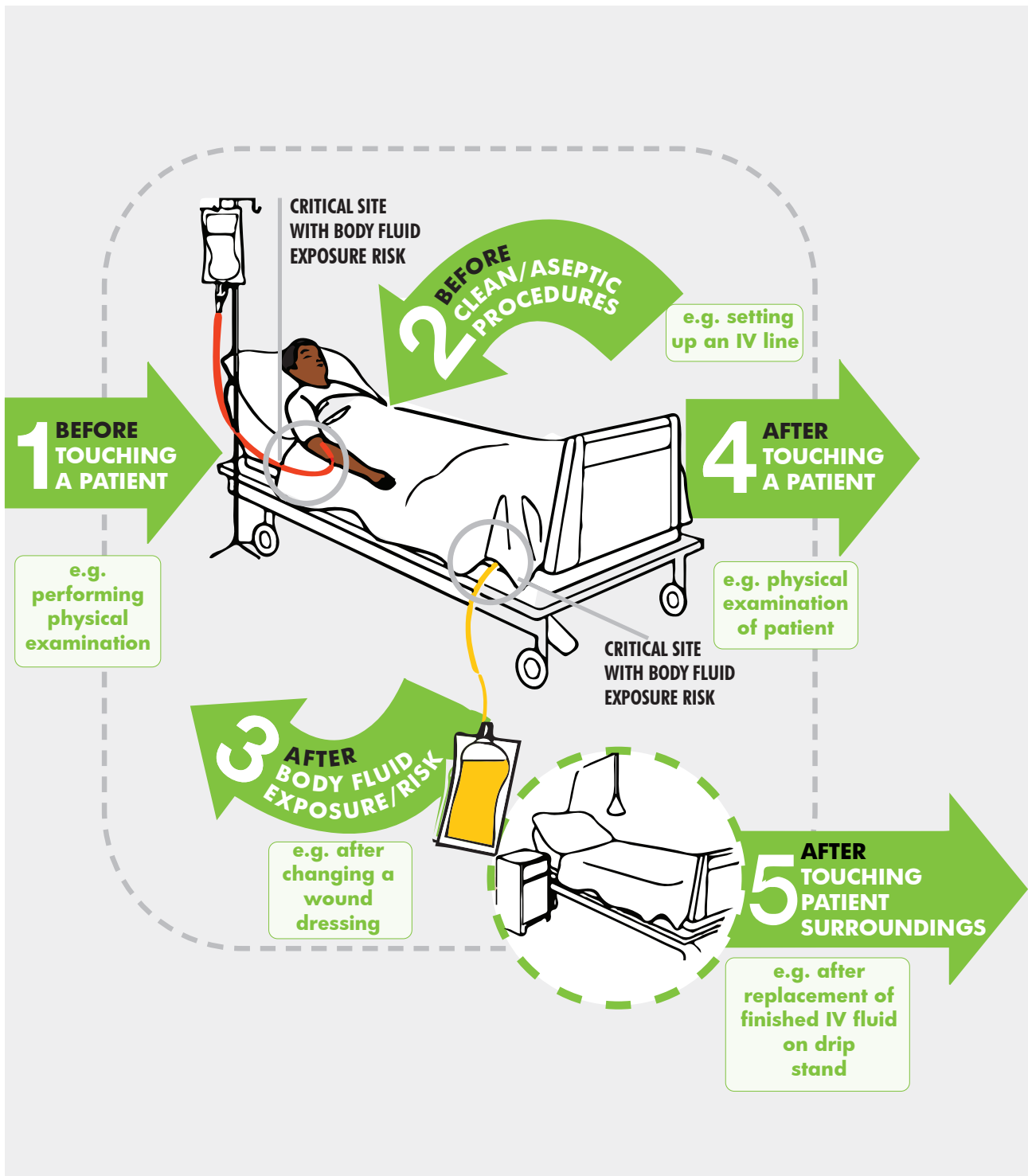


Figure 5: Five Moments for Hand Hygiene

*Adapted from World Health Organisation

Table 5: Rationale for the 5 moments for Hand Hygiene

MOMENT 1: Before touching the patient	<p>When? Clean your hands before touching a patient when approaching him/her</p> <p>Why? To protect patients against harmful germs carried on your hands</p> <p>Examples: Shaking hands, helping a patient to move around, clinical examination</p>
MOMENT 2: Before clean / Aseptic Procedure	<p>When? Clean your hands immediately before putting on gloves for any aseptic task or procedure</p> <p>Why? To protect the patient against harmful germs including the patient's own germs from entering his/her body</p> <p>Examples: Oral and dental care, secretion aspiration, wound dressing, catheter insertion, injectable medications</p>
MOMENT 3: After body fluid exposure/risk (even if gloves are worn)	<p>When? Clean your hands immediately after an exposure to body fluids or excretions, mucous membranes, non-intact skin or wound dressings and after glove removal</p> <p>Why? To protect yourself and the healthcare environment from harmful germs</p> <p>Examples: Oral/dental care, secretion aspiration, drawing and manipulating blood or body fluids, inserting or removing catheters, emptying of urinal or urine bag, faeces, handling waste</p>
MOMENT 4: After contact with patient	<p>When? Clean your hands after touching a patient and her/his immediate surroundings, when leaving the patient's side</p> <p>Why? To protect yourself and the healthcare environment from harmful germs</p> <p>Examples: Shaking hands, helping a patient to move around and when conducting clinical examination</p>
MOMENT 5: After contact with patient surroundings	<p>When? Clean your hands after touching any object or furniture in the patient's immediate surroundings, such as inanimate surfaces and objects (including medical equipment) when leaving – even if the patient has not been touched in the patient zone (immediate vicinity of the patient)</p> <p>Why? To protect yourself and the healthcare environment from harmful germs</p> <p>Examples: Changing bed linen, perfusion speed adjustment, change of IV fluid bag</p>

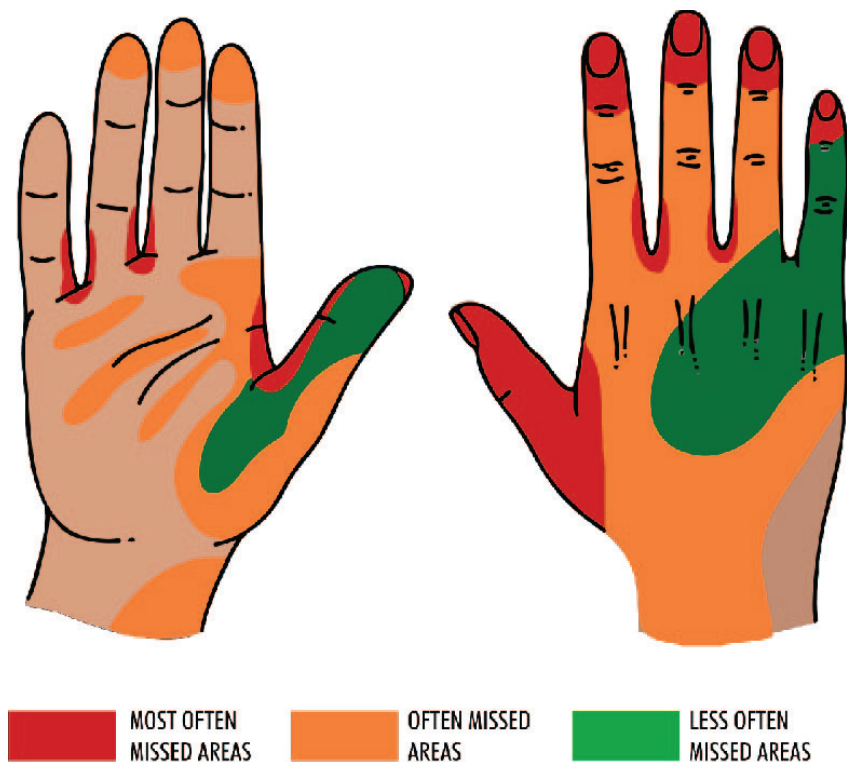
WHEN**Some other indications for Hand Hygiene:**

1. On resumption at work
2. When leaving work
3. Before and after eating
4. Before preparing food (including baby food, breast milk etc.)
5. After using the toilet, blowing one's nose and sneezing

Techniques for Hand Hygiene**WHAT**

The technique for hand hygiene is designed to ensure that all surfaces of the hand are effectively cleaned because certain areas of the hand are often missed when hands are washed casually.

Areas of the hands which are frequently contaminated before performing hand hygiene, are shown in Figure 6.



Reference: Taylor, LJ An evaluation of handwashing techniques. *Nursing Times*. January 1978.

Figure 6: Frequently Missed Areas During Hand Hygiene

3.3.5 Hand Hygiene Techniques

WHAT

The hand hygiene techniques can be performed using two methods

1. Hand washing with soap and water mechanically removes microorganisms from the hands which are then washed away with water.
2. Hand rubbing with alcohol based solutions (60% to 80% alcohol (they are less effective at higher concentrations). The alcohol hand rub acts by killing the microorganisms on the surface skin.

HOW

1. Remove any jewellery that will prevent any surface of the hands from being cleaned effectively
2. Select a comfortable water temperature (where applicable)
3. Wet hands under running water
4. Apply soap to cover all surfaces of the hands
5. Rub palm to palm thoroughly
6. Place the right palm over the left dorsum with interlaced fingers and vice versa
7. Place palm to palm with fingers interlaced
8. Align the backs of fingers to the opposing palms with fingers interlaced
9. Perform rotational rubbing of the left thumb clasped in the right palm and vice versa
10. Perform rotational rubbing backward and forward with clasped fingers of the right hand in the left palm and vice versa
11. Rinse the hands thoroughly under running water to remove all soap residue, while holding hands in the upward position over the sink
12. Dry the hands with a paper towel; and
13. Turn the faucet off with the used paper towel

All steps in the correct sequence are essential for effectiveness.

Minimum duration – 40–60 seconds. – 40–60 seconds. *Quietly humming the Happy Birthday song' twice while performing steps 3–10 can help to maintain the timing.*

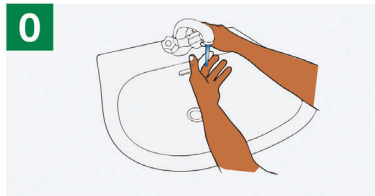
3.3.6 Hand Wash Stations

WHAT

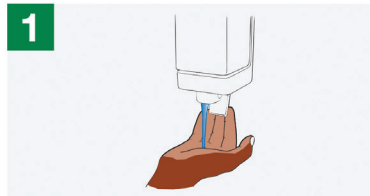
1. Must be located at or close to the point-of-care
2. Should be dedicated to hand washing and not be used for washing medical equipment and other items
3. Plugs should be removed from the wash hand basins to discourage the use for washing other items
4. The water stream should be aligned with the water outlet drain to prevent splash-back
5. If possible, elbow-operated, non-touch or sensor activated taps should be provided
6. Liquid soap and paper towels should be placed near the sink
7. A lined and covered waste container (preferably pedal-bin or one with a swing cover) should be available close to the wash hand basin
8. A laminated poster of the steps for performing effective hand washing should be displayed on the wall above the wash hand basin and in the line of view 'talking wall'

WASH HANDS WHEN VISIBLY SOILED! OTHERWISE, USE HANDRUB

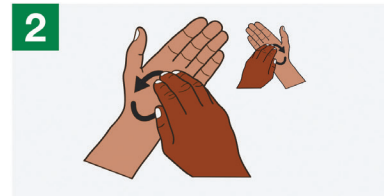
 Duration of the entire procedure: 40-60 seconds



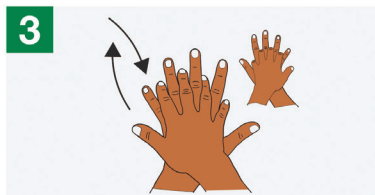
0 Wet hands with water;



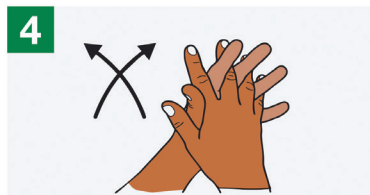
1 Apply enough soap to cover all hand surfaces;



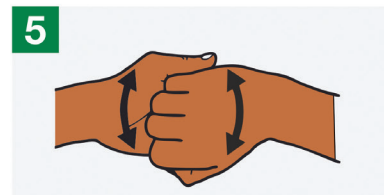
2 Rub hands palm to palm;



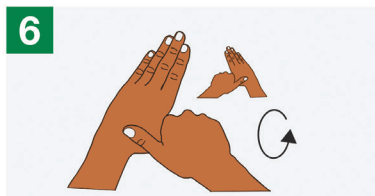
3 Right palm over left dorsum with interlaced fingers and vice versa;



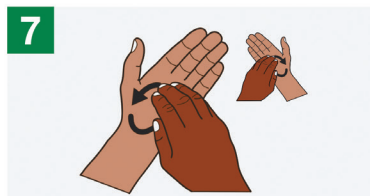
4 Palm to palm with fingers interlaced;



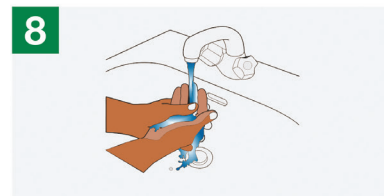
5 Backs of fingers to opposing palms with fingers interlocked;



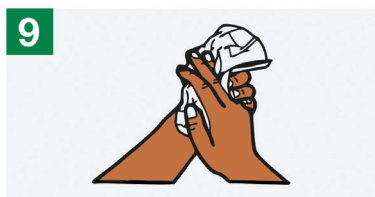
6 Rotational rubbing of left thumb clasped in right palm and vice versa;



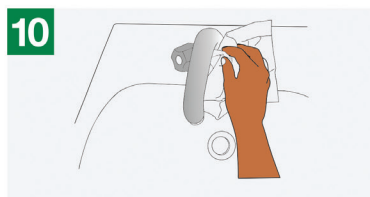
7 Rotational rubbing, backwards and forwards with clasped fingers of right hand in left palm and vice versa;



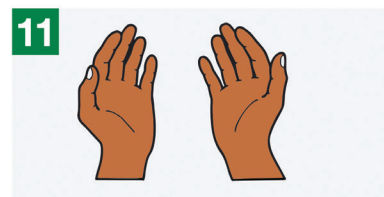
8 Rinse hands with water;



9 Dry hands thoroughly with a single use towel;



10 Use towel to turn off faucet;



11 Your hands are now safe.

Figure 7: How to Handwash (WHO)

3.3.7 Hand Drying

WHAT

Hand drying is a critical step in reducing the bacterial load on the hands after hand hygiene as microorganisms can be transferred more easily to and from wet hands.

WHY

The use of disposable paper towels is the ideal method in healthcare settings. A disposable paper towel must never be reused. If paper towels are not available, single-use cloths are acceptable. They must be washed, dried and ironed before they are reused.

Hands must not be rubbed while drying as this may cause cracking (excoriation) and may lead to bacterial colonisation.

HOW

1. Suspend both hands over the sink and shake off excess water
2. Reach for the disposable paper towel and detach the desired length (single dispensable sheets are ideal) or pick a single-use cloth.
3. Pat all surfaces until they are dry (do not rub the tissue or cloth against the wet skin)
4. Discard the used paper towel into the covered waste container (if it has a swing cover, move the cover with the used paper towel)
5. The skin should be patted dry and not rubbed.
6. If towels are not available, raise both hands above the shoulders and allow them to air dry naturally.
7. If a dryer is available, suspend both hands under it and rotate until all surfaces are dry

Minimum duration for effectiveness - 10 to 15 seconds

3.3.8 Hand Rubbing With ABHR

WHAT

This technique is the most effective, most convenient and quickest hand hygiene method available.

Alcohol-based hand rub (ABHR) is the preferred product for routine hand hygiene in healthcare settings when the hands **are not visibly soiled**. It is fast-acting and has the greatest killing ability against a wide range of microorganisms. It is also portable as HCWs can carry small bottles of ABHR attached to their clothing as they move around in the healthcare facility. This continuous availability promotes compliance. Hand rubbing with alcohol-based solutions (60% to 80%) kills the microorganisms on the skin surface. Alcohol is less effective at concentrations above 80%.

HOW

1. Apply to dry and visibly clean hands;
2. Rub hands vigorously to apply hand antiseptic to all surfaces of hands (steps 2 to 7 in *Figure 8*); and
3. Allow hands to dry.



Note: Use only soap and water when dealing with spore-forming bacteria and/or when hands are visibly soiled.

RUB HANDS FOR HAND HYGIENE! WASH HANDS WHEN VISIBLY SOILED

 **Duration of the entire procedure: 20-30 seconds**



Figure 8: Steps in Performing Alcohol Based Hand Rub Hand Hygiene (WHO, 2009)

HOW

1. Apply at least 3mls of ABHR into the palm of the left hand.
2. Pour the ABHR into the right palm and dip the tips of the left fingers into the pool.
3. Rub palm to palm.
4. Place the right palm over the left dorsum with interlaced fingers and vice versa.
5. Place palm to palm with fingers interlaced.
6. Align the backs of fingers to opposing palms with fingers interlaced.
7. Perform rotational rubbing of the left thumb clasped in the right palm and vice versa.
8. Perform rotational rubbing backward and forward with clasped fingers of the right hand in the left palm and vice versa.
9. Make sure the hands are completely dry before performing any task.

Minimum duration for effectiveness - 20 to 30 seconds

3.3.9 Surgical Hand Hygiene

WHAT

The hand rubbing technique for surgical hand preparation must be performed on clean and dry hands. On arrival in the Operating Room (OR) and after donning the appropriate clothing, cap, and mask, hands must be washed with soap and water. When removing gloves after the surgical procedure, hands must be rubbed with an alcohol-based formulation or washed with soap and water if any residual talc or biological fluid is present.

HOW**Preparation**

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

1. Remove all jewellery and wristwatch before entering the OR.
2. Wash hands and arms up to the elbows with an antimicrobial soap before entering the OR.
3. Use a nail cleaner when performing the first surgical hand scrub of the day

3.3.9.1 Surgical Hand Scrub with Antimicrobial Soap

1. Start timing and then scrub each side of each finger, between the fingers and the back and front of the hand for two minutes.
2. Using a disposable sponge, scrub the arms, keeping hands higher than the arms at all times.
3. Wash each side of the arm from wrist to the elbow for one minute, repeating the process on the other hand and arm.
4. Discard the disposable sponge in the covered and lined waste container.
5. Rinse hands and arms by passing them through the water in one direction (from fingertip to elbow), always keeping the hands above the elbows.
6. Proceed to the OR holding hands above the elbows.
7. Dry hands with a sterile towel and use aseptic technique to put on gloves. NB: The duration of the entire procedure depends on the ingredients and the manufacturer's instructions (can range from 3-5 minutes).
8. **Do not use** brushes. They have been shown to increase bacterial counts on the hands.

3.3.9.2 Surgical Hand Rub with the Hospital-approved Alcohol-based Preparation

HOW

1. Start timing.
2. Use sufficient product to keep hands and forearms wet with the hand rub throughout the procedure.
3. Put enough ABHR to cover all surfaces up to the forearms in the palm of your left hand, using the elbow of your other arm to operate the dispenser
4. Dip the fingertips of your right hand in the hand rub to decontaminate under the nails (5 seconds)
5. Smear the hand rub on your right forearm up to the elbow. Ensure that the entire skin area is covered by using circular

movements around your forearm until the hand rub has fully evaporated (10–15 seconds)

6. Repeat steps 4-6 but put the ABHR in the palm of your right hand and cover the left arm for 15–20 seconds (images 1-10)
7. Put enough ABHR in the palm of your left hand, using the elbow of the other arm to operate the dispenser. Rub both hands at the same time up to the wrists, and ensure that all the steps represented in images 12–17 are followed (20–30 seconds)
8. Cover the entire surface of your hands up to the wrist with ABHR, rubbing palm against palm with a rotating movement
9. Rub the back of your left hand, including the wrist, moving the right palm back and forth, and *vice versa*
10. Rub palm against palm back and forth with your fingers interlinked
11. Rub the back of your fingers by holding them in the palm of the other hand with a sideways back and forth movement
12. Rub the thumb of your left hand by rotating it in the clasped palm of the right hand and *vice versa*
13. Repeat the illustrated sequence in Figure 8 image 7 (60 seconds) for the number of times corresponding to the total duration recommended by the manufacturer for surgical hand preparation with an ABHR.
14. Proceed to the OR holding the hands above the elbows
15. Allow hands and forearms to dry before donning sterile surgical gown and gloves

All these steps will need to be repeated 2–3 times depending on the ingredients and the manufacturer's instructions.

Minimum duration for effectiveness –60 seconds

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.



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

2 Dip the fingertips of your right hand in the handrub to contaminate under the the elbow of your other arm (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.



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

12 Rub palm against palm back and forth with fingers interlinked.

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

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

15 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..

Figure 9: Technique for Surgical Hand Rub

3.3.10 Care of the Hands

HOW

1. Fingernails must be kept short - not extending more than 3 mm beyond the fingertips
2. Artificial nails should not be used as they contribute to HAIs and serve as a reservoir for pathogens.
3. Cuticles – the skin on the hands and forearms – must be intact and free of lesions. Non-intact skin areas with waterproof dressing must be covered. If covering them in this manner is not possible, HCW with skin lesions should not participate in any surgical procedures until the lesions are completely healed.
4. Healthcare workers with exudative lesions or vesicular dermatitis should not be involved in direct patient care and handling of patient care equipment until the condition is resolved.
5. Medical assessment should be sought if dermatological conditions such as exudative and vesicular lesions are suspected.

3.3.11 Local Production of ABHR

WHAT (Requirements)

1. Container
 - a. 10-litre glass or plastic bottles with screw-threaded stoppers (image 1); or 50-litre plastic tanks (preferably translucent polypropylene or high-density polyethylene for visual estimation of volume and level (image 2); or
 - b. Stainless steel tanks with a capacity of 80-100 litres to allow mixing without overflowing (images 3 and 4)
2. Wooden, plastic or metal paddles for mixing (image 5)
3. Measuring cylinders and measuring jugs (images 6 and 7)
4. Plastic or metal funnel for pouring or transferring the liquids
5. Storage containers

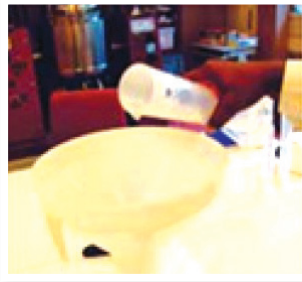
- a. 100 ml plastic bottles with leak-proof tops (image 8); or
500 ml glass or plastic bottles with screw tops (image 8)
6. An alcoholmeter: the temperature scale is at the bottom and the ethanol concentration (percentage v/v) is at the top (images 9 - 11)



Figure 10: Materials for Preparing Alcohol-based Hand Rub Solution

HOW

- 1** The alcohol for the formula to be used is poured into the large bottle or tank up to the graduated mark.



- 2** Hydrogen peroxide is added using the measuring cylinder.



- 3** Glycerol is added using a measuring cylinder. As glycerol is very viscous and sticks to the wall of the measuring cylinder, it should be rinsed with some sterile distilled or cold boiled water and then emptied into the bottle/tank.



- 4** The bottle/tank is then topped up to the 10litre with sterile distilled or cold boiled water.



- 6** The solution is mixed by shaking gently where appropriate or by using a paddle.



- 5** The lid or the screw cap is placed on the tank/bottle as soon as possible after preparation, in order to prevent evaporation.

- 7** Immediately divide the solution into its final containers (e.g. 500ml or 100 ml plastic bottles), and place the bottles in quarantine for 72 hours before use. This allows time for any spores present in the alcohol or the new/re-used bottles to be destroyed.

Figure 11: Preparation of Alcohol-based Hand Rub

3.3.11.1 Quality Control

WHAT

Pre-production Analysis

This should be made every time an analysis certificate is not available to guarantee the titration of alcohol (i.e. local production). Verify the alcohol concentration with the alcoholmeter and make the necessary adjustments in volume in the preparation formulation in order to obtain the final recommended concentration.

Post-production Analysis

This is mandatory if either ethanol or an isopropanol solution is used. Use the alcoholmeter to control the alcohol concentration of the final use solution. The acceptable limits should be set at $\pm 5\%$ of the target concentration (75% – 85% for ethanol).

The alcoholmeter shown in Figure 12 is for use with ethanol. If used to control an isopropanol solution, a 75% solution will show 77% ($\pm 1\%$) on the scale at 25°C.

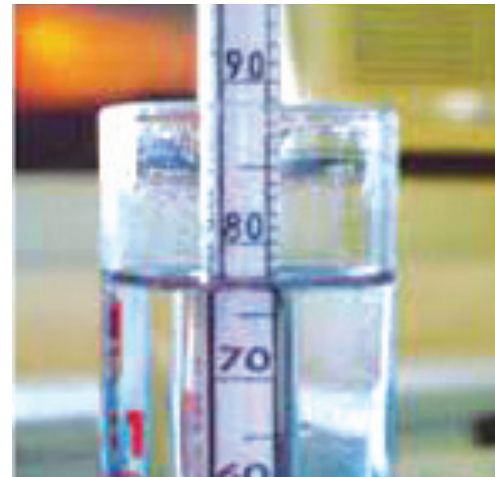
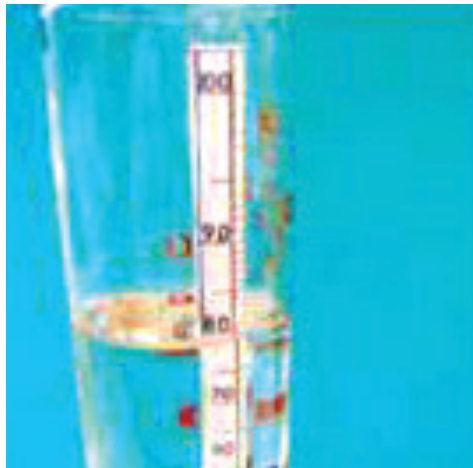


Figure 12: Alcoholmeter

3.3.11.2 Labelling of ABHR

WHAT

Labelling should be in accordance with national guidelines and should include the following as a minimum:

1. *Name*: of preparing institution/facility
2. *Production Date*
3. *Batch Number*
4. *Preparation Type*: WHO-recommended hand rub formulation
5. *Composition*: ethanol or isopropanol, glycerol and hydrogen peroxide

6. *Precautions*
 - a. For external use only
 - b. Avoid contact with eyes
 - c. Keep out of the reach of children
 - d. Keep away from flame and heat
7. *Instructions for Use:* Apply a palmful and cover all surfaces of the hands. Rub hands until dry

3.3.11.3 Production and Storage Facilities

WHAT

1. Production and storage facilities should ideally be air conditioned or cool rooms. No naked flames or smoking should be permitted in these areas.
2. WHO-recommended hand rub formulations should not be produced in quantities exceeding 50-litres locally or in central pharmacies that do not have specialised air-conditioning and ventilation systems.
3. Undiluted ethanol is highly flammable and may ignite at temperatures as low as 10°C, therefore production facilities should directly dilute it to the concentration stipulated above. The flashpoints of ethanol 80% (v/v) and of isopropyl alcohol 75% (v/v) are 17.5°C and 19°C respectively.
4. National safety guidelines and local legal requirements for the storage of ingredients and the final product must be adhered to.

3.3.11.4 Raw materials

WHAT

Alcohol is the active component in the formulations, however, certain aspects of other components should be considered. All raw materials used should be free of viable bacterial spores. The raw materials for inclusion/consideration are listed in Table 6.

Table 6: Raw Materials for Inclusion/Consideration in the Preparation of ABHR

MATERIAL	PROPERTY AND PURPOSE
<p>Hydrogen peroxide H₂O₂</p>	<ul style="list-style-type: none"> • The low concentration (3–6%) is intended to eliminate contaminating spores in the bulk solutions and recipients. It is not an active substance for hand antisepsis. • Adds an important safety aspect, however its use might be complicated by its corrosive nature. • It may be difficult to procure in some countries. • Its availability and the possibility of using a stock solution with a lower concentration should be assessed.
<p>Glycerol and other humectants or emollients</p>	<ul style="list-style-type: none"> • Increases the acceptability of the ABHR. • Other humectants or emollients may be used for skin care, provided that they are affordable, available locally, miscible in both water and alcohol, non-toxic and hypoallergenic • Glycerol is chosen because it is safe and relatively cheap. A lower percentage may be considered to reduce stickiness of the ABHR.
<p>Potable water</p>	<ul style="list-style-type: none"> • Sterile distilled water is preferred, however boiled and cooled tap water may be used in preparation as long as it is free of visible particles.
<p>Other additives</p>	<ul style="list-style-type: none"> • It is strongly recommended that no ingredients other than those specified should be added to the formulation. • If additives are to be used, full justification must be provided and its safety, compatibility with the other ingredients and all relevant details should be indicated on the ABHR label
<p>Gelling agents</p>	<ul style="list-style-type: none"> • No data are available to assess the suitability of adding gelling agents to WHO-recommended liquid formulations • They could potentially increase production difficulties and costs and may compromise antimicrobial efficacy.
<p>Fragrances</p>	<ul style="list-style-type: none"> • The addition is not recommended because of the risk of allergic reactions

3.3.12 References

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8. Hepatitis C Virus Infection From Unsafe Injection Practices at an Endoscopy Clinic in Las Vega, Nevada, 2007-2008. *Clin Infect Dis.* 2010 Aug 1;51(3):267-73. doi: 10.1086/653937..Gutelius B, Perz JF, Parker MM, Hallack R, Stricof R, Clement EJ, Lin Y, Xia GL, Punsalang A, Eramo A, Layton M, Balter S.
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10. Transmission of Hepatitis C Virus During Myocardial Perfusion Imaging in doi: 10.1016/j.amjcard.2011.03.010. Epub 2011 Apr 29).

3.3.13 Checklist

All healthcare workers are trained in hand hygiene techniques and procedures at orientation and induction.

All healthcare workers are assessed for proficiency in hand hygiene techniques and procedures at least annually.

Hand washing facilities are available in Examination Rooms, Isolation Rooms and all patient-care areas.

Wash hand basins are provided with the equipment necessary for both social and aseptic hand washing techniques.

Wash hand basins meet the minimum outlined specifications.

Water (running or stored in containers), liquid soap, alcohol-based hand rub as well as disposable paper towels or single-use towels are always available at hand wash stations.

Laminated posters illustrating hand hygiene technique are displayed above every wash hand basin in the direct line of sight of users.

Compliance of healthcare workers with the '5 Moments for Hand Hygiene' is audited (minimum of 60 observations a month across all applicable areas in the healthcare facility).

The results of monthly Hand hygiene audits are analysed and submitted to the IPCC and corrective measures are implemented as indicated.

Alcohol-based hand rub is freely available to all healthcare workers and patients as well as visitors who require it.

Alcohol-based hand rub produced in the healthcare facility is properly labelled.

Alcohol-based hand rub produced in the healthcare facility is stored under appropriate conditions.

3.4 Policy 4 – Personal Protective Equipment

3.4.1 Intent

To create an effective physical barrier between the infectious agent and the healthcare worker or patient

3.4.2 Policy Statement

All HCW must be provided with adequate and appropriate personal protective equipment required to prevent the transmission of infection.

3.4.3 Background

Personal protective equipment (PPE) refers to specialised clothing or equipment worn by HCW to protect them from exposure to or contact with infectious agents and prevent contamination of work areas. Effective PPE creates an impervious physical barrier between the infectious pathogen and the wearer. It offers protection by preventing contamination of hands, eyes, mucous membranes and/or personal clothing. They include gloves, masks, goggles, face shields, fluid resistant aprons/gowns and boots.

3.4.4 Responsibility

All HCW involved in the care and handling of patients as well as contaminated, surfaces, items and substances.

3.4.5 Critical IPC Practices

Decision-making about the selection and appropriate use of PPE must be based on a risk assessment of the possible types of infectious agents, their mode of transmission and the anticipated exposure (duration and volume). The risk of contamination of the clothing, skin or mucous membranes of HCWs by patients' blood, body substances, secretions or excretions should also be considered.

3.4.5.1 Wearing PPEs

WHERE

They should be worn in a protected environment and not outside the area of immediate or direct use. Protective clothing used in areas where there is a high risk of contamination (e.g. OR) must be removed before leaving the area. They should not be worn where there is a lower risk of contamination. Clothing that has been in contact with patients should not be worn outside the patient-care area (e.g. toilet, canteen or administrative offices).

Gloves

WHEN

Gloves should be worn when there may be exposure to blood, body fluids, secretions or excretions; when handling contaminated equipment or devices; and when touching contaminated work surfaces, mucous membranes and non-intact skin. It is important that HCW are able to identify specific clinical situations when gloves should be worn and changed and those where their use is not required. Gloves should not be used with oil-based hand lotions or creams, or stored in areas with extremes of temperature.

Types of Gloves Used in Healthcare Settings

1. **Latex:** The most commonly available and used type. They are elastic, usually cream in colour and come in various sizes and lengths. They are either short (extending a few inches beyond the wrists) or long (extending to the elbows); and either sterile or non-sterile. The increasing number of healthcare workers who are allergic to latex have prompted the introduction of latex-free alternatives.
2. **Nitrile:** They are less commonly available than latex gloves and a good alternative for healthcare workers who are allergic to latex. They also come in various sizes and lengths but are less elastic than latex gloves. They are more resistant to puncture and chemicals. They are available in a wide range of colours and may be sterile or non-sterile. Sterile gloves are used for surgical or invasive procedures, pelvic and obstetric examinations, handling of pathological specimens and processing of laboratory samples.
3. **Vinyl:** They are usually non-sterile and are used for non-clinical activities.
4. **Utility (household):** They are made of puncture and abrasive-resistant nitrile compound or reinforced latex. They usually have mild embossments for an improved tactile feel and may be flock-lined for easy donning and removal. They are not sterile and are used mainly for general tasks such as cleaning and decontamination of instruments, equipment and contaminated surfaces; housekeeping and linen handling. Heavy duty utility gloves are used when handling human remains, performing mortuary tasks; as well as handling and disposal of contaminated waste. Heat-resistant utility gloves are used when operating autoclaves, steam sterilisers or hot air ovens.
5. **Plastic:** They are non-sterile and used mainly to prevent direct contact with an item or object. They are not recommended for clinical use and are not applicable in healthcare settings.

Healthcare workers should be accurately informed about and effectively trained regarding the moment(s) for donning and removing gloves.

Table 7: Gloves used in Healthcare Settings

TYPE OF GLOVES	ILLUSTRATION	INDICATIONS FOR USE
Sterile		Surgical or invasive procedures, pelvic obstetric examinations, handling of pathological specimens, sample processing in the laboratory.
Heavy duty		Corpse handling, mortuary tasks; handling or disposal of contaminated waste
Household Utility		Cleaning and decontamination of instruments, equipment and contaminated surfaces; housekeeping; linen
Heat resistant/ Thermal proof		Working with autoclaves, steam sterilisers, hot air ovens

Technique for donning and removing non-sterile examination gloves

When the hand hygiene indication occurs before a contact requiring glove use, perform hand hygiene by rubbing with an alcohol-based handrub or by washing with soap and water

HOW TO DONN GLOVES

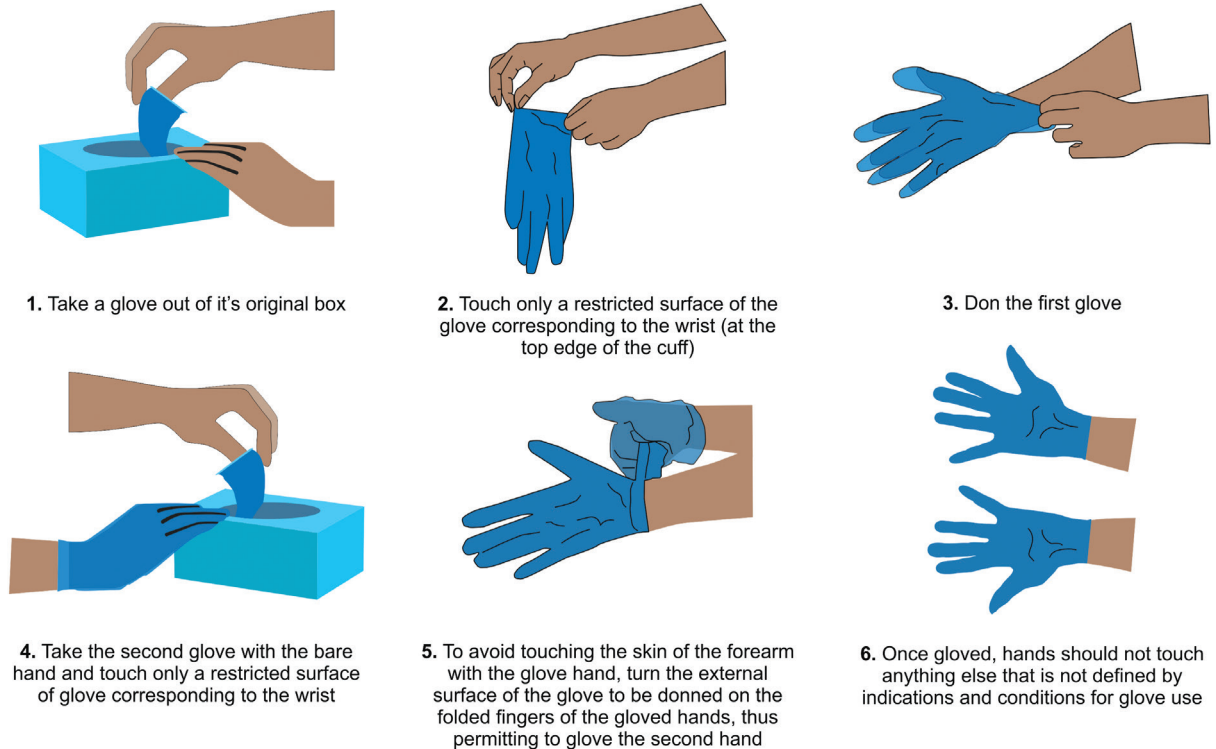


Figure 13: Donning (Wearing) Gloves

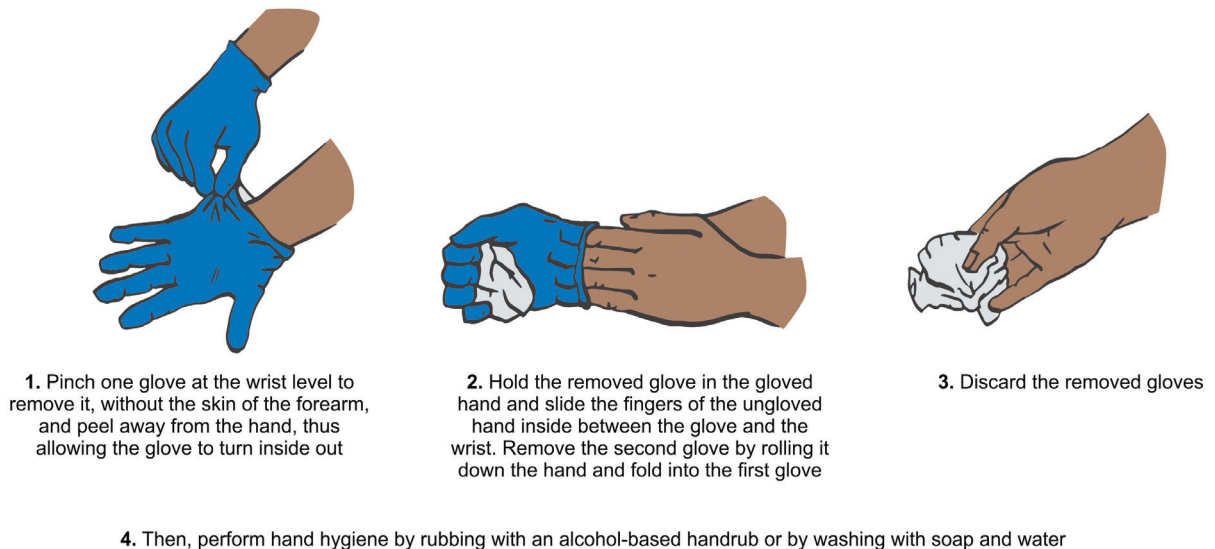


Figure 14: Doffing (Removing) used or contaminated gloves



Figure 15: The Glove Use Pyramid (WHO)

WHAT

Every HCW should receive training in and be familiar with the Glove Use Pyramid. Regular process and compliance audits for glove use including donning and doffing should be undertaken by members of the IPC Team or IPC Focal Person to promote and encourage acculturation.

Table 8 :DOs and DO NOTs of Glove Use

DO	DO NOT
<ul style="list-style-type: none"> • Select the appropriate type of glove for the procedure or task • Wear the correct type and size appropriate for the activity to be performed • Wear gloves when it can be reasonably anticipated that contact with blood or other potentially infectious material, mucous membranes or non-intact skin will occur • Change or remove gloves during patient care if moving from a contaminated body site to either another body site (including non-intact skin, mucous membrane or a medical device) within the same patient or the environment • Remove gloves after any procedure with a patient • Always change gloves between patients • Carry out hand hygiene before donning and after doffing gloves • Change surgical gloves periodically during prolonged surgical procedures • Keep all fingernails trimmed short when wearing gloves • Pull gloves up over cuffs and gown • Use water-soluble (not fat-containing) hand lotions and moisturizers to prevent hands from drying, cracking and chapping • Appropriately dispose of gloves before leaving the patient's room or procedure area 	<ul style="list-style-type: none"> • Use as an alternative to hand hygiene • Use gloves after expiry dates • Reuse disposable (single-use) gloves • Use oil-based or fragranced (perfumed) hand lotions, creams and moisturizers when donning gloves • Store gloves in areas where there are extremes in temperature

Source: (Tanzania) 2009)

3.4.6 Face Masks

WHAT

Face masks (medical, procedure, dental, surgical or isolation) can be single-use or reusable, however only the disposable type is recommended and acceptable for routine use in healthcare settings. Masks protect mucous membranes of the mouth and nose of the healthcare worker when there is a risk of body fluid exposure to these sites. They are designed to minimise fluid penetration and absorption. They also reduce the dispersal of aerosols during coughing and sneezing. Disposable masks should never be reused. They should be disposed of according to the facility protocol for healthcare waste management. Paper and cloth masks should not be used by HCW at any time.

Masks **must:**

1. Be changed when they become soiled or wet
2. Never be reapplied after they have been removed – they are single use items
3. Not be left dangling around the neck or suspended under the chin
4. Not be touched in front while wearing or removing it
5. Be discarded appropriately in a covered waste container after use and hand hygiene should be performed immediately after touching or discarding a used mask

WHEN

Medical masks must be used when undertaking patient care activities and procedures that are likely to generate splashes, spurts or sprays of blood and body fluids.

HOW

1. Face masks have ear loops, a pliable nose clip and are generally loose-fitting.
2. Individual fit is achieved by adjusting the ear loops and pressing the nose clip firmly against the bridge of the nose.
3. The outside of the mask should have the folds facing downwards.
4. The lower part should be pulled under the chin.

3.4.6.1 Respirators and Filtering Face Pieces





WHAT

The term “respirator” is used interchangeably with N95 (USA) which is the equivalent of FFP2 (European Standard Filtering Face Piece); FFP3 (UK); KF94 (Korean Filter); and KN95 (China) respirators.

WHEN

They are used as airborne precautions to protect the wearer from liquid and airborne particles. Respirators are especially useful in preventing the inhalation of tiny infectious particles such as *Mycobacterium tuberculosis*. Fit-testing and seal-checking of respirators are prerequisites for effective use.



Table 9: Masks - Types and Features

WHAT	WHEN (INDICATIONS FOR USE)	
 <p>N95</p>  <p>FFP2</p>  <p>KN95</p>	<ul style="list-style-type: none"> • N95 Respirator (respiratory protection device, particulate respirator). • It has a raised dome or duckbill, pliable metal nose bridge and consists of 4-5 layers - outer and (polypropylene); central (charged polypropylene); with ties at the crown and bottom of the head. Filtration occurs by mechanical impaction and electrostatic capture. Elasticated bands around the ear lobes. 	<ul style="list-style-type: none"> • Routine care of patients on Airborne Precautions; High-risk procedures (e.g. bronchoscopy) when the patient's infectious status is unknown; Procedures that involve aerosolisation of particles that may contain specific known pathogens. Fit-testing and seal-checking are required for effective use
 <p>Single-use</p>	<ul style="list-style-type: none"> • Single-use face mask (medical, patient-care, general purpose mask) Pleated face; 2 - 3 polypropylene layers; fluid resistant. Filtration is by mechanical impaction 	<ul style="list-style-type: none"> • Procedures that: generate splashes or sprays of large droplets of blood and body substances; involve the production of secretions and handling of excretions; involve routine care of patients requiring droplet precautions; and require a surgical aseptic technique (to protect patients from exposure to infectious agents carried in the mouth or nose of a HCW)

Adapted from (NHMRC n.d.)

HOW

Table 10: Donning and Doffing Face Masks and Respirators

DONING	
	<ul style="list-style-type: none"> • Secure ties at the middle of the head and neck or elastic bands around the ear lobes • Fit flexible band to the nose bridge • Fit snugly to the face and below the chin • Fit-check respirator by placing your fingers over your nose and mouth
DOFFING	
	<ul style="list-style-type: none"> • Grasp the bottom ties or elastic of the mask/respirator, then the ones at the top, and remove without touching the front • Discard in waste container • Perform hand hygiene immediately

3.4.7 Face and Eye Protection**WHAT****Eye protectors**

Face shields (visors) and goggles are used when there is a risk of blood or body fluid splashing onto the eyes and face of HCW during procedures or while cleaning instruments. Eye protectors require decontamination before reuse.

They should completely cover the front and sides of both eyes, thereby preventing the penetration of any splashing fluids or particles. Personal glasses are not suitable substitutes.

They are used for general clinical examinations (e.g. medical, physiotherapy, nursing care and routine observation); procedures that generate splashes or sprays (e.g. dental procedures, nasopharyngeal aspiration, emptying

wound drainage or catheter bags); and procedures that involve the mouth and respiratory tract and (e.g. intubation, nasopharyngeal suction and dental procedures). They are also used when caring for patients requiring droplet or airborne precautions.









Protective Eye Goggles



Face Shields

Figure 16: Eye protectors

Table 11: Donning and Doffing Goggles and Face Shields

DONNING	
  	<ul style="list-style-type: none"> • Place goggles over eyes or glasses and adjust to fit • Place face shield over face and adjust to fit
DOFFING	
  	<ul style="list-style-type: none"> • Remove goggles or face shield from the back by lifting head band and without touching the front of the goggles or face shield • If item is reusable, place in designated receptacle for reprocessing. Otherwise, discard immediately in the waste container • Perform hand hygiene immediately

3.4.8 Gowns and Aprons

WHAT



Figure 17: Gowns and Plastic Aprons

Gowns and aprons must be worn when there is a risk of splashing of blood or body fluids onto the skin or clothing of HCW. They are designed to protect uniforms and other clothing from wetness and soiling during direct patient care.

Gowns are used to protect the exposed body areas of HCW and prevent contamination of clothing with blood, body substances and other potentially infectious material. Aprons and gowns are to be used when entering the room of a patient requiring contact precautions.

Plastic aprons may be single-use or reusable. After adequate reprocessing, reusable aprons are recommended for general use, to protect clothes that cannot be taken off when there is the possibility of sprays or spills. Unused aprons should be placed in clear sealed packaging or bags and stored in an appropriate area away from potential contamination.

The type of apron or gown required depends on the degree and duration of contact with infectious material as well as the potential for blood and body fluids to penetrate clothes or skin:

1. A clean non-sterile apron or gown is generally adequate to protect the skin and prevent soiling of clothing during procedures and/or patient-care activities

2. A fluid-resistant apron or gown should be worn when there is a risk that clothing may become contaminated with blood, body fluids, secretions or excretions.
3. Clinical and laboratory coats or jackets worn over personal clothing are considered PPE for the purposes of IPC. These items of clothing may need to be changed depending on the nature of the activity and the duration, frequency and extent of exposure to potential pathogens.

WHEN

The following should be considered when choosing the appropriate type of gown e.g. full-body long-sleeved gowns are appropriate for widely dispersed splashes and high-volume spills or spurts. Gowns should be selected based on the following aspects of the activity or procedure:

- a. Probable type of infectious agents
- b. Volume of body substances likely to be encountered
- c. Extent and type of exposure to blood and body substances

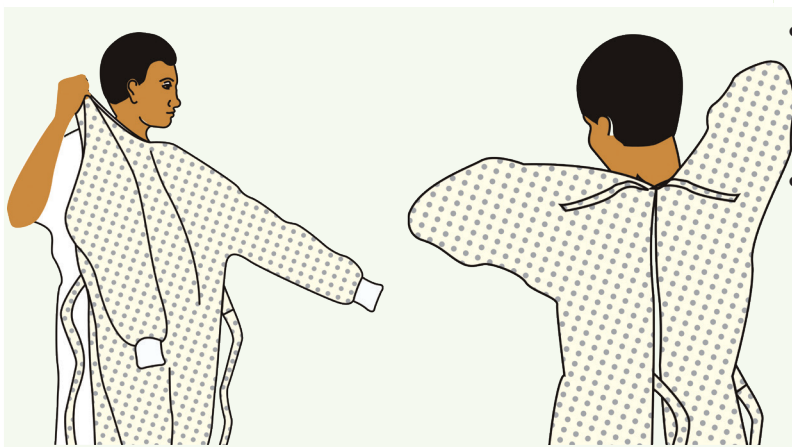
Full coverage of the arms and body front (from neck to the mid-thigh or below) ensures that clothing and exposed upper body areas are protected. However, if a fluid-resistant full body gown is required, it is always worn in combination with gloves and other appropriate PPE as indicated.

Removal of aprons and gowns before leaving the patient-care area (the room or anteroom) prevents possible contamination of the environment outside the patient's room.

Aprons and gowns should be removed in a manner that prevents contamination of clothing or skin. The outer, 'contaminated', side of the gown is turned inward and rolled into a bundle, and then discarded into a designated covered container for waste or used linen in order to contain contamination. After removal, reusable aprons should be placed in covered receptacles containing disinfectant prior to reprocessing

HOW

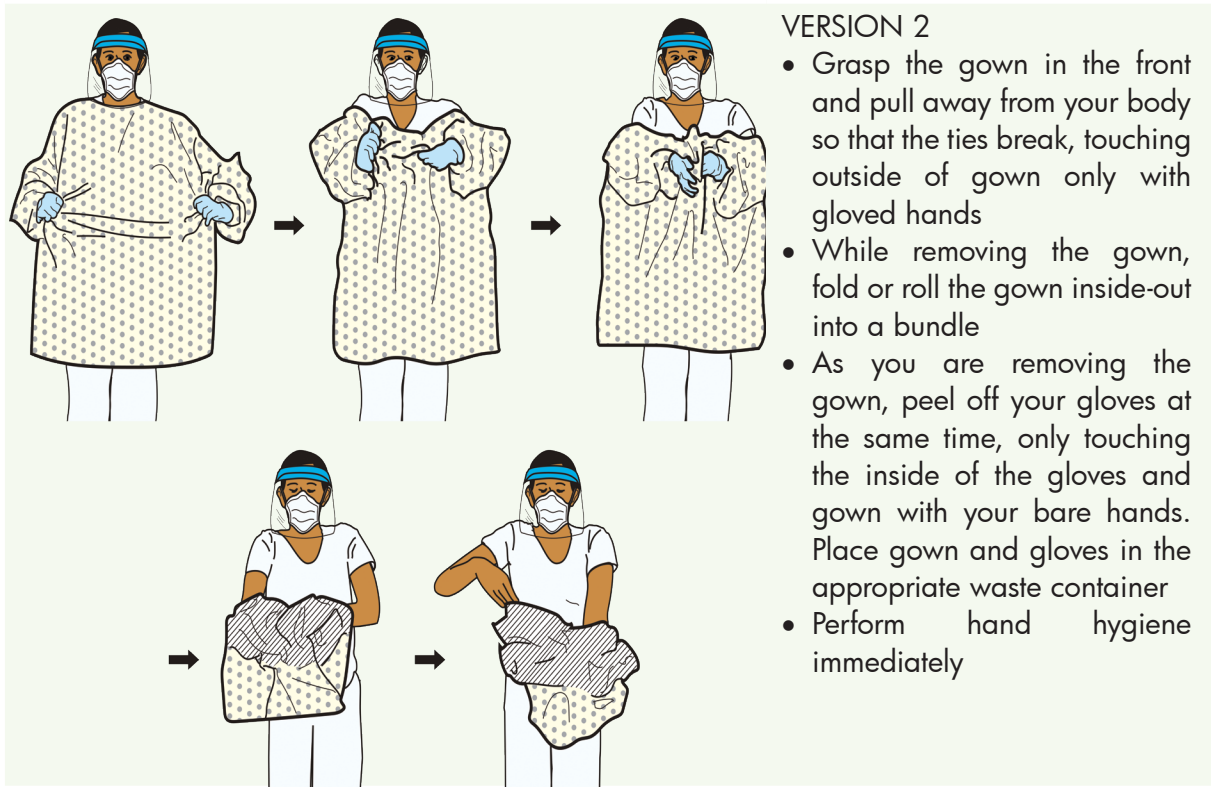
Table 12: Donning and Doffing Aprons and Gowns

DONNING

- Fully cover the torso from neck to knees, arms to end of wrists, and wrap around the back
- Fasten at the back of the neck and around the waist

DOFFING**VERSION 1**

- Unfasten gown ties, ensuring that sleeves do not touch your body when reaching for the ties
- Pull gown away from neck and shoulders, touching the inside of the gown only
- Turn the gown inside out
- Fold or roll into a bundle and discard in a waste container if disposable
- If reusable, place it in the designated container for reprocessing. The container should be appropriately labelled
- Perform hand hygiene immediately



Protective Footwear

WHAT



Figure 18: Shoe Covers and Boots

These should be worn when there is a risk of blood/body fluid splashes, leaks or large spillages to the legs and feet based on risk assessment. Boots should be of waterproof material and must be kept clean and free of contamination from blood or other body fluid spills. The soles should have some grip to avoid sliding on wet or slippery floors. Shoe covers should be used in areas where dry particles or contaminants are anticipated and are usually for short durations e.g. Visits by the IPC Focal Person to the Laboratory, CSSD or Sterile Storage Room.

WHEN

Boots are worn to protect feet from injury by sharps, dripping fluids or heavy items that may accidentally fall on them (e.g. Laundry, Operating Room, Terminal Waste Depository). They should be washed and hung upside down or inside out to dry thoroughly after use. Boots should be labelled by size and marked with the initials of the designated user when supplies are adequate to permit this system

3.4.9 Reference

1. (Tanzania) 2009; World Health Organization (WHO) n.d.

3.4.10 Checklist

1. HCWs know the type of PPE to use for their routine duties activities. This knowledge is assessed at least one a year
2. HCWs are proficient in donning and doffing the PPE they use
3. HCWs have been trained in the Glove Use Pyramid
4. The appropriateness of PPE selection and use by HCW is observed and documented at least once a year.
5. HCWs using respirators and FFP are proficient in fit-testing and seal-checking.
6. SOPs and/or User Guides are available for the different types of PPE.
7. The PPE inventory is audited for functional status, adequacy and storage conditions at least once a year.

8. Reusable PPE is appropriately cleaned and stored.
9. SOPs for the withdrawal of defective or unserviceable PPE are accessible to all pertinent staff.
10. The list of PPE required for different types of activities and procedures is accessible to all staff in the respective Departments/Units.

3.5 Policy 5 - Respiratory Hygiene

3.5.1 Intent

Respiratory hygiene (cough etiquette) is designed to minimise the risk of transmission of respiratory pathogens.

3.5.2 Policy Statement

All patients and healthcare workers with coughs must comply with Standard Precautions to prevent or reduce the dispersal of microorganisms into the environment.

3.5.3 Background

Coughing and sneezing are spontaneous acts of infection transmission by the dispersal of microscopic droplets which transport infectious agents to the surrounding environment. These droplets may remain suspended in the air for an appreciable period or settle on horizontal surfaces from where they can be further spread by contaminated hands.

3.5.4 Responsibility

All HCW involved in the handling and care of patients

3.5.5 IPC Practices

When sneezing or coughing

WHAT

1. Always turn your face away from others
2. Cover your nose and mouth with disposable paper tissue which should be immediately thrown into a lined and covered waste container.
3. Carry out hand hygiene immediately afterwards

4. If there is no disposable paper tissue, cough or sneeze into your flexed elbow
5. Wash your hands with soap and water or perform hand hygiene with an ABHR immediately afterwards

Cover your Cough

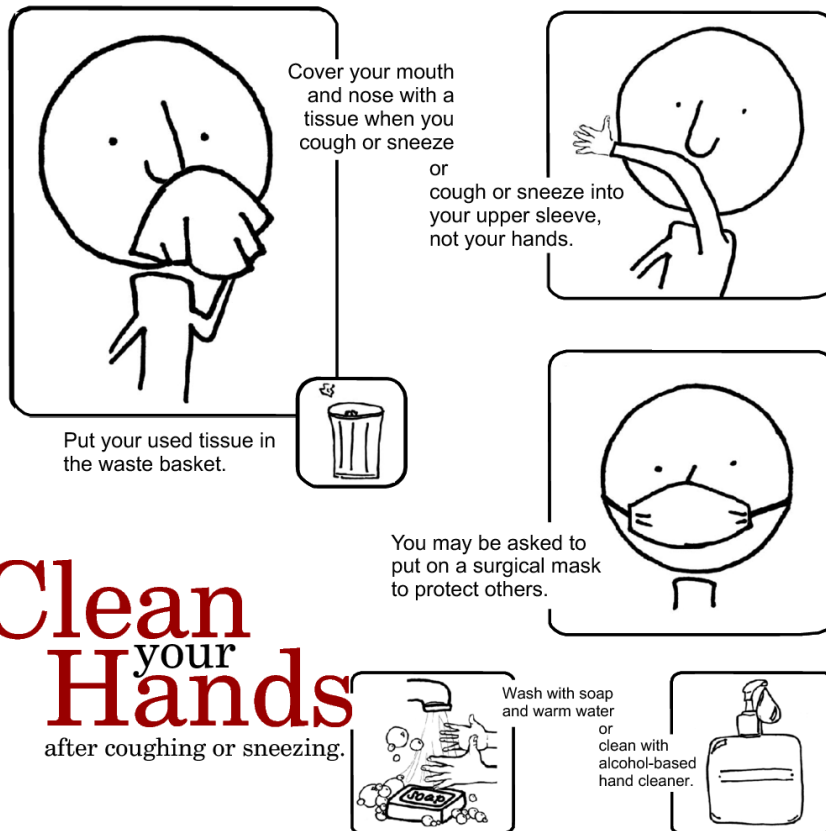


Figure 19: Cough Etiquette

3.5.6 Implementing Cough Etiquette During an Outbreak of Epidemic-prone Respiratory Infection

HOW

A. Screen patients to identify persons with respiratory symptoms:

1. During the triage process (screening of patients before entry into an enclosed part of the facility), a designated HCW should ask each adult and any child capable of coughing forcefully about any existing respiratory symptoms.
2. The questions should be asked before patients wait in line or sit in the Waiting Area for long periods in order to Register or obtain services.
3. On entry into an Examination Room with the Clinical Officer, the screening questions will be repeated during history taking along with other questions to be asked.

B. Patients who are identified as presumptive cases should be immediately:

1. Informed about the importance of cough etiquette and advised about the precautions to take in order to minimise transmission (e.g. spitting in open areas should be prohibited).
2. Where feasible, disposable paper towels should be provided with the following instructions:
 - a. Their mouths and noses should be covered with the tissue when coughing or sneezing
 - b. They should sneeze or blow their noses into the tissue provided. This should be discarded immediately after use into a covered waste container and hand hygiene should be performed immediately afterwards. Alternatively, where available, patients should be:

- i. Given a face mask and asked to wear it when disposable tissues or face masks are not available.
 - ii. Instructed to cough into their elbows (preferably, clothed elbow) or lift their arm and cover their nose and mouth with the inner surface of the raised arm or forearm whenever they cough or sneeze.
 - iii. Taught other avoidance measures that will minimise contact with droplets when coughing or sneezing such as turning the head away from others.
 - iv. Advised to wash their hands with soap and water or use ABHR after appropriate disposal of the used tissue or face mask before leaving the area or healthcare facility
3. Descriptive signs and visual aids illustrating the cough etiquette should be displayed at entrances and in strategic places (e.g. patient registration areas, clinic waiting areas, bleeding or sample collection areas).
4. Wash hand basins should be provided and conveniently located.
5. Supplies for hand washing (potable water, liquid soap, paper towels for drying hands or wall-mounted ABHR) should be provided to the fullest extent feasible.
6. Ensure that there is good cross-ventilation in the waiting areas especially for patients with respiratory symptoms. They should be prevented or strongly discouraged from waiting in enclosed spaces.
7. A system should be established where patients with presumptive respiratory illnesses are promptly attended to in order to reduce exposure to others.
8. In common waiting areas, spatial separation of at least 2 metres by those with respiratory symptoms should be encouraged and maintained by the sitting arrangements and seat placement.

Table 13: Cough Etiquette - Summary

<p>Role of health care worker: Screening and instruction of patients</p>	<ul style="list-style-type: none"> • At Triage or Screening on entry to the healthcare facility, a designated HCW should ask each adult and any child capable of coughing forcefully about respiratory symptoms • Patients with symptoms should be informed about the importance of and how to perform cough etiquette • Patients should be instructed to lift their arms and cover their noses and mouths with the inner surface of their arms and forearms (inner elbow area) when they cough or sneeze • Symptomatic patients should be given disposable paper tissue and instructed to cover their mouths and noses when they cough (alternatively face masks should be provided) • Patients should be instructed to dispose of the used tissues or masks in the covered waste containers provided • Patients should be taught avoidance measures that minimise contact with droplets when coughing or sneezing, such as: turning the head away from others, covering the nose and mouth with tissue where available or going outside the room to cough or sneeze
<p>IPC Measures and Practice</p>	<ul style="list-style-type: none"> • Post signs at entrances and strategic places with instructions for patients and other persons with symptoms • Provide resources and instructions for performing hand hygiene in or near waiting areas; provide conveniently-located sinks and supplies for hand washing • During periods of increased prevalence of respiratory infection in the communities, offer masks to coughing patients and other symptomatic persons upon entry into the facility • Encourage them to maintain spatial separation, ideally a distance of at least 2 metres • Instruct them to cough or sneeze into the inner elbow area • Advise patients to cover the nose and mouth when sneezing, coughing, wiping and blowing the nose and dispose of all used tissues promptly into a covered waste bin • Advise patients to wash hands with soap and water after coughing, sneezing, using tissues or after contact with respiratory secretions

Source: WHO

3.5.7 Checklist

1. The documented protocol for Cough Etiquette is known by all HCWs.
2. All HCWs are able to perform cough etiquette competently.
3. A separate waiting area is available for patients with signs and symptoms of respiratory infection.
4. Patients with signs and symptoms of respiratory infection should be seen before other patients or in separate Examination Rooms if available.
5. Hand hygiene stations and supplies are available at strategic points.
6. Designated covered and lined waste containers are accessible in close proximity to the hand washing stations.
7. Posters illustrating cough etiquette are displayed strategically in Outpatient Waiting Areas.
8. Triage for respiratory conditions is performed by HCW in all Outpatient Waiting Areas.
9. Compliance with the triage procedure is monitored periodically by the IPC Team or Focal Person.

3.6 Policy 6 – Injection Safety

3.6.1 Intent

To ensure that all injections administered to patients are safe for the patient, do not harm the healthcare worker and are disposed of in a manner that is not dangerous to the community.

3.6.2 Policy Statement

Injections should only be administered when there is no suitable alternative oral medication that can be prescribed or dispensed by a competent healthcare worker. Wherever possible, safety-engineered (Reuse Prevention (RUP) syringes are preferred.

3.6.3 Background

Unsafe injection practices (including reusing injection equipment) increase the risk of transmission of infections such as blood-borne diseases, skin abscesses, and can cause nerve damage and/or paralysis of the area around the injection site.

Many outbreaks of viral and bacterial infections have been associated with injection administration. The risk of infection transmission is increased when medications are administered intravenously (IV) or when contaminated medicines are reused. Sharps are infectious waste capable of causing cuts or puncture wounds to the skin regardless of contamination with blood or body fluids. They include needles, syringes, scalpels, lancets, scissors, broken ampoules or bottles, capillary tubes, pipettes, slides and any item that can be easily broken and produce sharp fragments.

3.6.4 Responsibility

All HCW involved in administering injections to patients in collaboration with the IPC Committee, IPC Team and the IPC Focal Person.

3.6.5 Healthcare Workers can be Injured

WHEN

1. Recapping, re-sheathing, bending or breaking needles or lancets.
2. Breaking ampoules of injections.
3. They are stuck by someone carrying unprotected sharps.
4. Handling or disposing of waste that contains used sharps.
5. Patients move suddenly during injection administration.
6. Sharps are found in unexpected places (such as used linen).
7. Procedures involve the use of many sharps and hands are not immediately visible.
8. Working with sharps in confined spaces or poorly lit areas.

WHAT

Table 14. Injection Safety Recommendations

S/N	RECOMMENDATION
1	Use aseptic technique when preparing and administering medications
2	Clean the access diaphragms of medication vials with 70 per cent alcohol before inserting a device into the vial
3	Never administer medications from the same syringe to multiple patients, even if the needle is changed or the injection is administered through an intervening length of intravenous tubing
4	Do not reuse a syringe to enter a medication vial or solution
5	Do not administer medications from single-dose or single-use vials, ampoules, bags or bottles of intravenous solution to more than one patient
6	Do not use fluid infusion or administration sets (e.g. intravenous tubing) for more than one patient
7	Dedicate multi-dose vials to a single patient whenever possible. If multi-dose vials will be used for more than one patient, they should be restricted to a centralised medication area and should not enter the immediate patient treatment area (e.g. operating room, patient room/cubicle or patient hemodialysis station)
8	Dispose of used syringes and needles at the point-of-use in a sharps container that is closable, puncture-resistant and leak-proof
9	Adhere to 'national' requirements for the protection of healthcare workers from exposure to blood-borne pathogens

Source: Centers for Disease Control and Prevention (CDC). *Guide to Infection Prevention for Outpatient Settings: Minimum Expectations for Safe Care*. Available from: <http://www.cdc.gov/HAI/pdfs/guidelines/standards-of-ambulatory-care-7-2011.pdf>. 2011.

3.6.6 Preventing Transmission of Infection by Sharps**HOW**

1. Never recap needles or re-sheath lancets.
2. Ensure that contaminated sharps are disposed of in puncture-proof and liquid-proof containers such as safety boxes.
3. Eliminate unnecessary injections so as to reduce the use of sharps.
4. Always use a sterile needle and syringe.
5. Disposable needles and syringes should be used only once.

6. Syringes and needles should be disposed of together as a unit. Do not dispose of the needle and reuse the syringe.
7. A 'Sharps Injury Prevention Programme' should be established within the healthcare facility.



Figure 20: 'NEVER' Actions for Injection Safety

1. Never recap needles or re-sheath lancets
2. Ensure that contaminated sharps are disposed of in puncture-proof and liquid-proof containers such as safety boxes
3. Eliminate unnecessary injections so as to reduce the use of sharps
4. Always use a sterile needle and syringe
5. Use disposable needles and syringes only once
6. Dispose of syringes and needles as a unit; do not reuse a syringe and dispose of the needle.
7. A 'Sharps Injury Prevention Programme' should be established in your healthcare facility.



Unsafe injection practices include: unnecessary injections, reusing needles and syringes, using a single-dose medication vial for multiple patients, giving an injection in an environment that is not clean and hygienic, and risking injury due to incorrect sharps disposal.

Remember - ONE needle, ONE syringe, only ONE use!

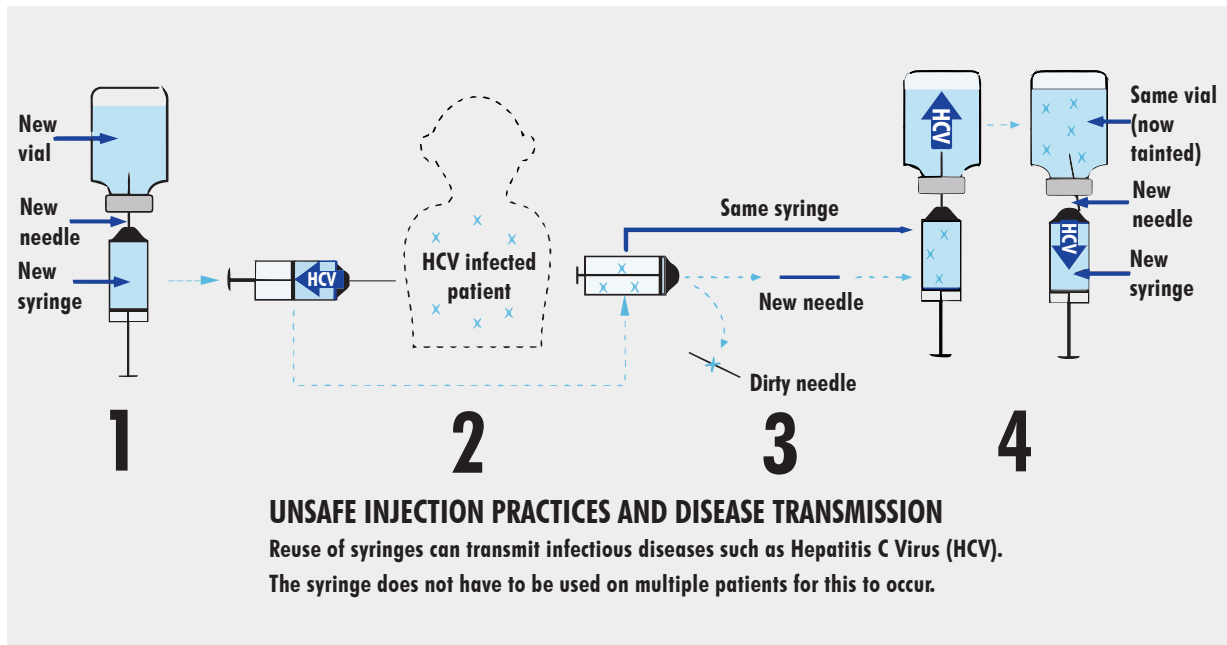


Figure 21: Infection Transmission from Unsafe Injection Practice

3.6.7 Preventing Sharps Injuries in the Operating Room

HOW

1. Use blunt suture needles where possible.
2. Give verbal announcements when passing sharps.
3. Uncapped or otherwise unprotected sharps must never be passed directly from one person to another - use a kidney dish, basin or neutral zone to pass sharps (i.e. pass sharp instruments in such a way that the surgeon and assistant are never touching the item at the same time). This method of passing sharps is known as the "hands-free" technique.
4. Use alternative cutting methods such as blunt electrocautery and laser devices when appropriate.
5. Use round-tipped scalpel blades instead of pointed or sharp-tipped blades.

In the Event of a Needlestick Injury

WHAT to do

1. Wash the wound with soap and water.
2. Immediately inform your Supervisor. Be sure to follow the written protocol for reporting needle-stick injuries in your healthcare facility.
3. If possible, identify the source patient and test for HIV, Hepatitis B, and Hepatitis C after providing counselling and obtaining informed consent.
4. Following informed consent, it is strongly recommended to test the HCW for HIV, Hepatitis B and Hepatitis C

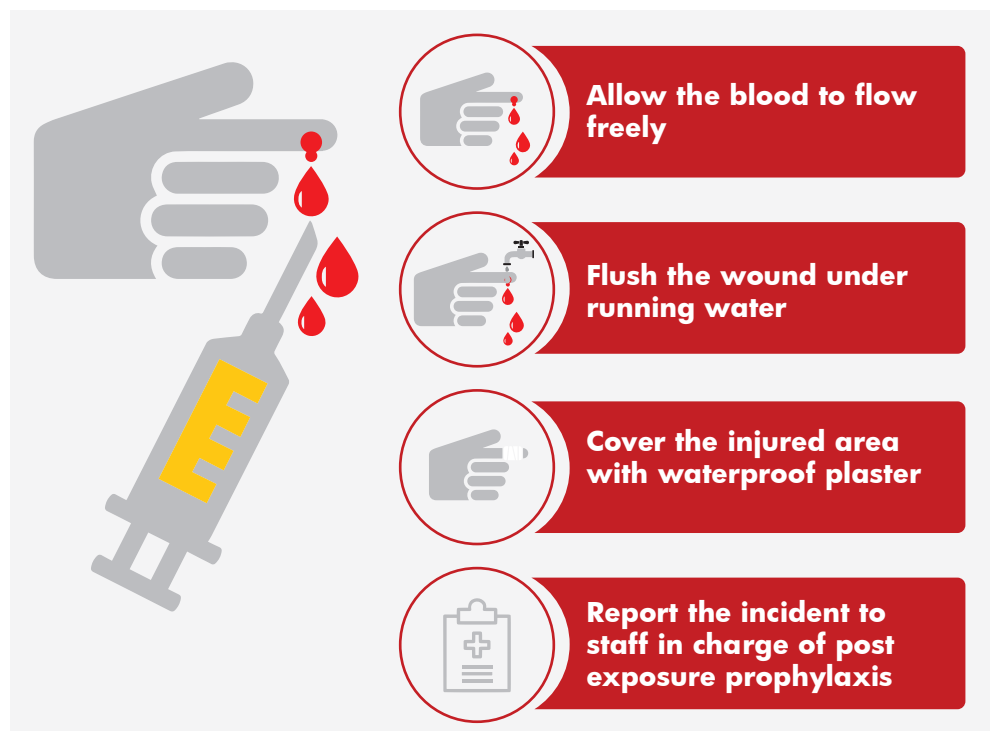


Figure 22: What to do in the Event of a Needle-stick Injury

3.6.8 Sharps Disposal

HOW

Safe sharps containers are essential for the effective disposal of sharp devices to ensure the safety of patients, HCWs and the community.

Sharps containers must:

1. Be available in sufficient numbers to ensure equitable distribution across all points-of-use in the healthcare facility.
2. Be appropriately located so that they are readily available **within arm's reach** in all situations where sharps are generated.
3. Be puncture-resistant, leak-proof and sealable when the appropriate fill-level is reached.
4. Be stable when placed on horizontal surfaces.
5. Have an aperture that is suitable for the safe deposition of sharps used in that area.
6. Possess a handle for carrying.
7. Be clearly visible, unobstructed and easily accessible in all areas.
8. Be filled without any protruding sharps.
9. Be positioned so that the opening of the container is visible and easy to ascertain that it is not more than 3/4 full and there are no sharps sticking out.
10. Not be placed behind doors or in cupboards, near light switches, overhead fans, or thermostat controls where people might accidentally place their hands on or inside them.
11. **Never** be shaken to settle its contents and make room for more sharps.
12. **Be sealed when it is three-quarters full.**
13. **Not** be reopened, emptied or reused after closing and sealing. A new container must be used..

A designated HCW should be responsible for sharps management. The containers should be regularly checked and replaced when they are three-quarters full. At least one spare sharps container should always be available in every patient care area.



Figure 23: An Improvised Puncture-proof Sharps Container

3.6.9 References

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2. Hepatitis C Virus Infection from Unsafe Injection Practices at an Endoscopy Clinic in Las Vega, Nevada, 2007-2008. *Clin Infect Dis.* 2010 Aug 1;51(3):267-73. doi: 10.1086/653937. Gutelius B, Perz JF, Parker MM, Hallack R, Stricof R, Clement EJ, Lin Y, Xia GL, Punsalang A, Eramo A, Layton M, Balter S.
3. Multiple Clusters of Hepatitis Virus Infection Associated with Anesthesia for Outpatient Endoscopy Procedures. *Gastroenterology.* 2010 Jul;139(1):163-70. doi: 10.1053/j.gastro.2010.03.053. Epub 2010 Mar 27. Moore ZS, Schaefer MK, Hoffmann KK, Thompson SC, Xia GL, Lin Y, Khudyakov Y, Maillard JM, Engel JP, Perz JF, Patel PR, Thompson ND.
4. Transmission of Hepatitis C Virus During Myocardial Perfusion Imaging in doi: 10.1016/j.amjcard.2011.03.010. (Epub 2011 Apr 29).

3.6.10 Checklist

1. There is a written protocol for Sharps Box use
2. There is a written protocol for reporting needlestick injuries
3. A 'Sharps Injury Prevention Programme' is implemented in your facility
4. A designated HCW is responsible for the effective implementation of the programme and facility-wide sharps management

5. HCW comply with injection safety recommendations
6. HCW comply with recommendations for Sharps Box use and disposal
7. Sharps Boxes are available in sufficient numbers to ensure equitable distribution across all points-of-use
8. The IPC Team or Focal Person is aware of and follows up on all reported needle-stick and sharps injuries and 'near misses'

3.7 Policy 7 – Safe Management of Hospital Linen

3.7.1 Intent

To describe the correct procedures for handling, processing and managing linen in order to reduce the transmission of infection.

3.7.2 Policy Statement

All staff handling healthcare linen must be competent and equipped with appropriate personal protective equipment to prevent infection transmission.

3.7.3 Background

Many microorganisms are physically removed from linen by detergents and water, and most are destroyed by washing at high temperatures. Any residual microorganisms are likely to be destroyed by tumble drying and Ironing.

Healthcare linen includes that used for patient care (inpatient gowns), outpatient examination gowns, bed linen (bedsheets, pillow cases, blankets, top sheets), surgical gowns, caps, drapes, x-ray gowns and linen used by HCW (clinical coats, laboratory coats etc).

The provision of clean linen is a fundamental requirement for patient care and safety as well as infection prevention and control. Incorrect procedures for handling or processing of linen present an infection risk to staff handling and laundering linen as well as the patients and HCW who subsequently use it.

3.7.4 Responsibility

All HCW who handle linen of any type anywhere linen is used, processed, transported and stored within the healthcare facility. The IPC Team or IPC Focal Person is responsible for developing applicable SOPS and protocols in collaboration with the various staff and stakeholders.

Definitions

Clean/Unused Linen: Linen that has not been used since it was last laundered and has not been in close proximity to a patient care area or stored in a contaminated environment.

Dirty/Used Linen: All used linen that may or may not be visibly soiled with blood or other body fluids.

Soiled/Infected Linen: Any linen used by a patient with a known infection (whether soiled or not).

Infested Linen: Any linen that is potentially infested with parasites (e.g. bed or body lice, scabies)

3.7.5 IPC Practices

Segregation

It is the responsibility of the person managing linen to ensure that it is segregated appropriately at the point of collection. All linen should be segregated into the following categories:

1. Clean Linen

Clean linen must be in a state of good repair, as tears or roughness can damage the skin of patients and HCWs. The condition of the linen in use should be monitored by the laundry staff. Linen should be free of stains, perforations and excessive creasing. The general appearance should be acceptable to patients and other HCW. A minimum standard should be set by having a set of each type of linen available as an example of or reference for what is acceptable. This will become the standard against which linen will be audited.

a. Handling

Every effort must be made to maintain the quality and cleanliness of the laundry. Clean laundry should be free of particulate matter, liquid or solid residue however stubborn stains may persist which will be removed by washing at the appropriate temperature and applicable detergent.

b. Delivery

Laundered linen should be labelled and delivered to the respective locations in clean covered containers. If feasible, linen could be individually wrapped in sealed packaging and opened at the point-of-use. The same containers should not be used to transport clean and soiled linen.

c. Storage

All clean linen **must** be:

- i. Labelled according to the location and purpose of use. The date of laundry must be indicated on the packaging or storage container.
- ii. Stored in a clean, closed cupboard (either a dedicated linen cupboard or dedicated, fully enclosed mobile linen trolley) to prevent airborne contamination. Storage containers must be placed off the floor in a clean, dust free environment.
- iii. Segregated from used or soiled linen

Clean linen **must not** be stored in unsuitable areas e.g. the sluice area, bathrooms, in bed spaces or damp environments.

d. Local Use

- i. Clean linen should not be transferred to open trolleys unless required for immediate use
- ii. Linen taken into an Isolation Room/Cohort area but not used must be treated as used linen and laundered before reuse

2. Dirty/Used Linen

- i. Linen which is used but dry. They should be placed directly into a clear plastic laundry bag immediately after removal from source.
- ii. All linen bags should be no more than two thirds full.

3. Soiled/Infected Linen

Any used linen that is soiled with blood or any other body fluid or any linen used by a patient with a known infection (whether soiled or not). This includes patients with or suspected to have any of the following infections:

- a. MRSA, gram-positive or gram-negative infections.
- b. Human Immunodeficiency Virus (HIV)
- c. Hepatitis A, B or C
- d. Draining Tuberculosis (TB) lesions and open pulmonary TB
- e. Enteric Fever
- f. Dysentery (*Shigella spp.*)
- g. Salmonella
- h. Viral Haemorrhagic fevers (Lassa Fever, Marburg, Yellow Fever etc.)
- i. Clostridium difficile
- j. Chickenpox, Monkeypox etc.
- k. Head or body lice, scabies
- l. Other notifiable diseases

Soiled/Infected linen should be placed directly into a clear bag and secured and afterwards placed into a red outer bag. Bags containing dirty or soiled linen should be stored in 'dirty linen' cages or designated covered containers and not on floors or in places that will obstruct thoroughfares or entrances.

4. Patients' Personal Linen

- a. Safe return of personal linen processed off-site cannot be guaranteed as the process is outside of the control of the healthcare facility

- b. Patients, relatives and carers should be encouraged to launder personal linen at home. Bags may be provided by the healthcare facility for this purpose or they may be advised regarding the appropriate bags to obtain.
- c. Patients' personal clothing and linen should be placed in a clear plastic bag and thereafter placed among their personal belongings for privacy and preservation of dignity.
- d. Dirty linen should be taken home and placed directly into a washing machine or washed manually.
- e. Clothes should be processed at the hottest wash temperature recommended by the manufacturer.
- f. Heavily contaminated personal clothing should not be taken home or handled by patients and relatives. They should be washed in the healthcare facility.

5. Infested Linen

- a. Should be placed in a red plastic bag.
- b. Infested linen does not need to be specifically or specially labelled.

Linen which remains hazardous following normal processing or for which additional precautions are required:

WHAT

Linen considered to be contaminated with any of the following microorganisms must be placed in the hazardous waste stream and incinerated. It should not be collected by laundry staff or sent to the laundry services department/unit.

- a. *Bacillus anthracis* (Anthrax)
- b. Viral Haemorrhagic Fevers (e.g. Marburg disease, Ebola fever)
- c. Rabies
- d. Lepromatous Leprosy
- e. Bioterrorism agents e.g. Anthrax and Smallpox

3.7.6 General Principles

These general principles should be adhered to during linen management. SOPs should be developed for laundry staff and appropriate training in linen management should be provided.

Handling Linen

WHAT

1. All dirty linen **must**
 - a. Be handled with care to minimise the transmission of microorganisms through dust and skin scales.
 - b. Be placed carefully and directly into the appropriate laundry container following removal from the bed or patient care areas
 - c. Be handled with appropriate PPE and should not be carried directly against the body to avoid contamination of uniforms and skin.
 - d. Never be transported around the patient care environment unless enclosed within an appropriate bag or a designated receptacle. Vigorous shaking of linen, enthusiastic bed stripping and changing of curtains are microbiologically hazardous activities as large numbers of organisms are dispersed as a result.
 - e. Care should be taken to minimise contamination of equipment and devices placed close to linen in the patient care environment.
2. All open wounds and drains should be temporarily covered during linen changes (including patient gowns and curtains).
3. Linen should not be shaken into the environment or changed during wound dressings in the same area
4. Care must be taken to ensure that no sharps or extraneous items are included with dirty linen before it is prepared for laundering. Such items are potentially infectious to laundry staff.
5. Patients' Personal Linen
 - a. Safe return of personal linen processed off-site cannot be guaranteed as the process is outside of the control of the healthcare facility.

- b. Patients, relatives and carers should be encouraged to launder personal linen at home. Bags may be provided by the healthcare facility for this purpose or they may be advised about the appropriate bags to obtain.
 - c. Patients' personal clothing and linen should be placed in a clear plastic bag and thereafter placed among their personal belongings for privacy and preservation of dignity.
 - d. Dirty linen should be taken home and placed directly into a washing machine or washed manually.
 - e. Clothes should be processed at the hottest wash temperature recommended by the manufacturer.
 - f. Heavily contaminated personal clothing should not be taken home or handled by patients and relatives. They should be washed in the healthcare facility.
6. Accidental Spillage from Used Linen
- a. Gloves and apron must be worn
 - b. Linen should be re-bagged and the area cleaned with appropriate disinfectant (e.g. 10% bleach solution) if necessary
7. Curtains
- Require washing when visibly dirty, or at least every six months.
- b. Should be routinely changed when discharging or transferring a patient with MRSA from the care area or during outbreaks.
 - c. Should not be changed while the patient is still in the room.
 - d. If venetian blinds are used, they should be wiped down once in four weeks at the very least. In isolation rooms, they should be wiped with 10% bleach solution or 3.1% hydrogen peroxide solution after every discharge.
 - e. Privacy screens in shared wards (collapsible, mobile, sliding or fixed) should be wiped down.

8. Pillows

- a. All pillows used in clinical areas must have sealed, intact and impermeable covers.
- c. Any pillow that is torn, split or stained must be discarded.
- d. They should be wiped down with 10% bleach solution and allowed to dry in natural air after every discharge.

3.7.7 Hand Hygiene

Hands should be decontaminated after handling used linen by washing with soap and running water or using ABHR

3.7.8 Personal Protective Equipment

1. Plastic aprons should be worn by all HCW during bed making – this includes discharged and occupied beds.
2. Gloves must be worn when handling linen which has been soiled with body fluids. and or used by patients with known infectious diseases whether contaminated **with blood and body fluids or not.**

3.7.9 Local Cleaning

1. Laundry of contaminated linen must never be carried out in the clinical areas to minimise the risk of contamination and splash injury.
2. All used linen should be removed from clinical areas as frequently as circumstances demand.
3. Soiled linen must be kept away from public areas
4. Linen storage areas must remain closed, dry and kept secure to prevent access by unauthorised persons

Checklist

1. Laundry staff are trained in the safe handling of linen at orientation and at least once a year.

2. Competence of HCW in linen management is assessed periodically and outcomes are documented and shared with the Dept. and relevant staff.
3. HCW are trained in the selection and use of appropriate PPE when handling linen.
4. Registers or Logs for linen Collection, Issue and Delivery are duly and timely completed.
5. Linen Collection, Issue and Delivery are audited at least quarterly.
6. A facility-wide audit of all linen is conducted at least twice a year.
7. Work Instructions or Job Aids for linen handling (sorting; manual or machine washing; line or machine drying; ironing and transporting) are displayed in linen processing areas (Laundry Service/Dept).
8. Incidents associated with laundry processing are documented and addressed by the Supervisor/IPC Team or Focal Person.
9. Appropriate containers (covered, lined and labelled) are available for linen collection, transport, storage and disposal.
10. Operating Instructions for the washing machine, driers and irons are displayed at the points-of-use.
11. At least one Nurse in every ward and the OR is responsible for ensuring that the delivered linen (patient, bed, curtains, drapes, theatre gowns and caps etc) meet the standard set by the facility prior to use.
12. Linen that do not meet the set standards are withdrawn and disposed of in accordance with the facility policy.
13. Schedules for collection, delivery and issue of new linen as well as protocols for withdrawal of unserviceable linen are accessible to all pertinent staff.
14. Checklists are used to ensure that the right quantities and types of linen are delivered to the right locations.

Reference

1. Centers for Disease Control and Prevention (CDC): Guidelines for Environmental Infection Control in Health-Care Facilities (2003)

3.8 Policy 8 – Decontamination, Disinfection and Sterilisation of Instruments, Devices and Equipment

3.8.1 Intent

All reusable devices, instruments and equipment shall be reprocessed in a manner that ensures that they are sterile at the point-of-use.

3.8.2 Policy Statement

There shall be written schedules for the routine decontamination, disinfection and sterilisation of all devices, equipment and instruments used in all patient care areas in the healthcare facility. The competency of relevant healthcare workers in reprocessing and their compliance with documented protocols shall be periodically evaluated.

3.8.3 Background

Decontamination comprises three levels - cleaning, disinfection and sterilisation. It involves physical removal, chemical deactivation and biological deactivation of microorganisms. Cleaning usually involves the use of soap and water, detergents and enzymatic agents and precedes disinfection.

Disinfection is the removal or destruction of microorganisms but not necessarily bacterial spores and/or some viruses. Disinfectants are not cleaning agents as they are generally inactivated by organic material, therefore all items must be cleaned thoroughly prior to disinfection.

Specific chemical disinfectants can be used to decontaminate heat-sensitive equipment and the environment. Chemical disinfectants are toxic substances, therefore compliance with manufacturers' recommendations is important. The misuse and/or overuse of chemical disinfectants may result in damage to the user, equipment and may lead to the development of antimicrobial resistance.

Sterilisation is an absolute term and involves the elimination of all forms of life by a chemical or physical means. All instruments that penetrate skin or mucous membranes or used in sterile body cavities must be sterilised prior to use.

All medical devices are classified into 3 categories according to the Spaulding classification - Critical, Semi-critical and Non-critical

3.8.4 Responsibility

Healthcare workers who handle, process and transfer used and sterilised instruments, equipment and devices.

3.8.5 Strategies for Routine Cleaning of Non-Critical Medical Equipment

Healthcare workers are required to comply with the manufacturers' instructions regarding equipment-specific cleaning protocols. These instructions usually include information about:

- a. The compatibility of the material(s) with chemical germicides.
- b. The suitability of equipment for immersion.
- c. Decontamination prior to or after servicing or repairs.

3.8.6 Disinfection Sterilization of Specialised Equipment

Decontamination should follow established guidelines. Adherence to manufacturers' instructions ensures compatibility between the processes and instruments, equipment and devices and optimises their useful life.

The respective manufacturers should be contacted for instructions as well as a list of compatible disinfectants if the manual is unavailable.

Effective cleaning is the most important prerequisite for effective disinfection and sterilisation. Mechanical action, time, temperature and chemical action are the four main factors that determine cleaning effectiveness. Decontamination is the first important step of the sterilisation process. All items to be sterilised must be thoroughly cleaned.

3.8.7 Single-use Items

WHAT

Single-use items may be divided into two groups:

- a. *Single-use disposable items* – items that should be used once only and discarded thereafter (**never used again**).
- b. *Single patient use* – items may be reused for the same patient/client after appropriate decontamination based on the manufacturer's instructions; but should **never** be used on another patient.

Table 15: DOs and DO NOTs for Single-use Items

DO	DO NOT
<ol style="list-style-type: none"> 1. Devices designated for single patient use should be used only for one patient. 2. If reusable, the device may be used for the duration or number of times specified by the manufacturer but only on the same patient. 3. Single patient use items must be decontaminated after each use according to manufacturer's instructions. 	<ol style="list-style-type: none"> 1. Devices designated for single-use must not be reused under any circumstances. The reuse of single-use devices can affect their safety, performance and effectiveness and expose patients and staff to unnecessary risk. 2. Reprocessing of single-use devices may affect their capability, effectiveness and/or the integrity of materials from which the device is made. 3. Single-use devices are not designed to allow thorough decontamination and re-sterilisation processes.

3.8.8 Reusable Devices, Instruments and Equipment

All reusable devices requiring in-house reprocessing will be reprocessed by the CSSD according to the Spaulding Classification system which categorises medical devices based on the risk of infection e.g. vaginal specula.

Table 16: Reprocessing of Reusable Medical Devices

LEVEL OF RISK	PROCESS	EXAMPLES	STORAGE
<p>CRITICAL</p> <p>Entry or penetration into sterile tissue, cavity or blood stream</p>	<p>Clean thoroughly as soon as possible after use.</p> <ul style="list-style-type: none"> • Sterilise after cleaning by steam under pressure. • If heat or moisture sensitive, an automated low-temperature chemical sterilant system, other liquid chemical sterilants or ethylene oxide must be used. <p>Items must be sterilised between each patient use</p>	<ul style="list-style-type: none"> • Invasive equipment (dental implants, tooth removal forceps, scaling and polishing instruments, endodontic reamers and files); • Instruments used for surgical and endoscopic procedures, implants and ultrasound probes used in sterile body cavities. 	<p>Sterility must be maintained. Packaged items must go through a drying cycle and checked before use or storage</p> <ul style="list-style-type: none"> • The integrity of the wrapping must be maintained. Wraps act as an effective biobarrier during storage. • Unpackaged sterile items must be used immediately (without contamination during transfer from the sterilizer to site of use) or resterilised before use. • All endoscopic instruments (except those in sterile packaging) should be stored in TGA-approved forced-air drying cabinets

Table 16: Reprocessing of Reusable Medical Devices

LEVEL OF RISK	PROCESS	EXAMPLES	STORAGE
<p>SEMI-CRITICAL Contact with intact mucous membranes or non-intact skin</p>	<p>Clean thoroughly as soon as possible after use</p> <ul style="list-style-type: none"> • Steam sterilisation is preferable. <p>If the equipment will not tolerate steam, a high level TGA-included chemical or thermal sterilant or medical device disinfectant should be used.</p>	<p>Respiratory therapy and anesthesia equipment, some endoscopes, vaginal speculae, laryngoscope blades, cystoscopes, anorectal manometry catheters, diaphragm fitting rings.</p> <ul style="list-style-type: none"> • Probes including transoesophageal, echocardiogram, transrectal ultrasound and transvaginal probes. 	<p>Store to prevent environmental contamination.</p> <ul style="list-style-type: none"> • All endoscopic instruments (except those in sterile packaging) should be stored in a TGA-approved forced-air drying cabinet or reprocessed within set timeframes prior to use.
<p>NON-CRITICAL Contact with intact skin</p>	<p>Clean as necessary with detergent solution. If decontamination is necessary, disinfect with a compatible low or intermediate level TGA- included sterilant or medical device disinfectant after cleaning.</p>	<p>Stethoscopes, sphygmomanometers, blood pressure cuffs, mercury thermometers, non-invasive ultrasound probes.</p> <ul style="list-style-type: none"> • Intravenous pumps and ventilators. • Noninvasive ultrasound probes (not used in contact with nonintact skin or mucous membranes). • Pulse oximeters, bedpans, blood pressure cuffs and crutches 	<p>Store in a clean, dry place to prevent environmental contamination.</p>

3.8.10 References

1. Ontario Agency for Health Protection and Promotion, Provincial Infectious Diseases Advisory Committee. Best Practices for Environmental Cleaning for Prevention and Control of Infectious in All Health Care Settings. 2nd Revision. Toronto, ON: Queen's Printer for Ontario; 2012.
2. HICPAC. Guidelines for Environmental Infection Control in Healthcare Facilities: Recommendations of CDC and the Health Care Infection Control Practices Advisory Committee (HICPAC). 2003. U.S. Department of Health and Human Services Centers for Disease Control and Prevention (CDC) Atlanta, GA 30333. Association for Professionals in Infection Control (APIC) and Epidemiology, Inc. (2014). Chapter 107: Environmental Services. In APIC Text of infection control and epidemiology, 4th ed.
3. Minnesota Hospital Association. Environmental Services Cleaning Guidebook: Controlling CDI Environmental Services. Adapted from Allina Hospitals and Clinics Environmental Services Cleaning Guidebook by the Minnesota Hospital Association (MHA), Minnesota Department of Health (MDH) and Stratis Health, with representatives from: Central Care Health – Melrose, Grand Itasca Clinic and Hospital, Minnesota Valley Health Center, Park Nicollet Methodist Hospital, United Hospital, University of Minnesota Medical Center, and Windom Area Hospital, as part of the 'Controlling CDI' project. (2013).
4. United States Department of Labor. Occupational Safety & Health Administration.(OSHA)Housekeeping. <https://www.osha.gov/SLTC/etools/hospital/housekeeping/housekeeping.html>

Checklist

1. The protocols for receiving, decontaminating and sterilising used instruments, equipment and devices are readily accessible in each pertinent area in the CSSD.

2. HCWs have been trained in all aspects of cleaning, decontaminating, sterilising, storage and issuing of instruments, equipment and devices.
3. A separate wash hand basin for handwashing is available in the cleaning and decontaminating room/area.
4. The competency of HCWs in the reprocessing of reusable medical devices and instruments has been assessed at least once in the preceding or current year.
5. The list of agents for cleaning and decontaminating instruments, equipment and devices and the dilution method(s) are strategically displayed at the point-of-use.
6. HCW are proficient in performing the appropriate dilutions for the various cleaning agents/solutions.
7. HCWs understand and know how to apply the Spaulding Classification when cleaning instruments.
8. The cleaning schedule for the different areas/zones in the CSSD (dirty, clean and storage) is available and compliance is documented.
9. Records of autoclave ability, sterility assurance and failed sterilisation are maintained for every cycle.
10. Records of ambient temperature and humidity are maintained in the CSSD and all other areas where sterile instrument and equipment packs are stored in the healthcare facility.
11. Preventive maintenance schedules are available for autoclaves, washer disinfectors and other cleaning and sterilising equipment.
12. Operating Instructions for the different decontaminating and sterilising equipment are laminated and strategically displayed at the points-of-use.
13. Logs of instruments, equipment and devices returned for reprocessing are maintained as well as the reasons for returning the respective items.

3.9 Policy 9 – Environmental Cleaning

3.9.1 Intent

Some healthcare-associated pathogens can survive on environmental surfaces for months and can be transferred from the environment to a susceptible host through contact with contaminated environmental surfaces and non-critical equipment, contaminated hands or gloves of HCW during the care delivery, care givers or visitors.

The purpose of cleaning the environment is to remove visible dirt and dust. Cleaning reduces the level of microorganisms carried on skin scales which form part of the dust, and minimises the dissemination of infectious agents in the healthcare facility. The aim is to provide a clean, healthy and safe environment for all patients, healthcare workers and visitors.

3.9.2 Policy Statement

Environmental contamination plays a significant role in the transmission of HAI in healthcare settings. Environmental cleaning breaks the HAI transmission chain and is therefore a fundamental IPC intervention.

3.9.3 Background

Environmental cleaning is part of the standard precautions which should be applied in all healthcare facilities. Physical cleaning is accomplished with water, detergents and mechanical action. It removes foreign material (dust, soil) and organic material (blood, secretions, excretions, microorganisms) but does not kill microorganisms.

For effective cleaning, housekeeping staff must understand policies and be able to effectively perform procedures regarding cleaning methods, agents, materials and equipment. Close supervision is required to ensure compliance with the frequency and duration of cleaning in the respective locations.

3.9.4 Responsibility

The Facility Management and Housekeeping departments in collaboration with the IPC Team and Focal person shall be responsible for ensuring compliance with established standards.

3.9.5 Requirements for HCW

1. Healthcare workers must be presentable, clean and maintain good personal hygiene at all times. Clean regulation uniforms must be worn and changed when they become unduly soiled or wet.
2. Hand hygiene must be carried out in compliance with the 5 Moments for hand hygiene and also:
 - a. At the beginning and end of each shift or other hand off.
 - b. After handling contaminated items.
 - c. Before and after meals.
 - d. After using the toilet.
 - e. After removing gloves.
 - f. If hands are potentially contaminated with blood or body fluids.

3.9.6 Personal Protective Equipment

Staff involved in cleaning healthcare facilities are at risk of exposure to microorganisms, sharps injuries and potentially harmful chemicals in cleaning products. Using appropriate PPE provides a barrier which protects the wearer from these risks.

Staff performing cleaning activities should always wear the recommended PPE while carrying out their duties. Housekeeping staff should do a risk assessment before selecting the PPE to use. The type of PPE to be worn will depend on the area to be cleaned (Isolation ward, airborne, droplet and contact precautions etc). Staff working in specialised areas, such as the Operating Theatres, must also adhere to the specified dress code.

PPE recommendations include the use of:

- a. Impermeable gloves (e.g. utility gloves for handling waste or cleaning highly contaminated surfaces and latex, vinyl, nitrile or rubber gloves for other cleaning procedures).
- b. Aprons (disposable or reusable) and gowns when there is a risk of contamination of clothes or skin.

- c. If disposable aprons are not available, reusable plastic aprons can be used.
- d. There should be at least 3 reusable plastic aprons per cleaner. Used aprons should be washed and disinfected after each use.
- e. Goggles and face shields when there is a risk of splash to the face.
- f. Protective footwear (e.g. rubber boots).
- g. Used PPE should be disposed of in designated containers for infectious waste.
- h. The reusable PPE items (e.g. plastic aprons, goggles and rubber boots) should be cleaned with disinfectant solution and then dried.

Figure 24: PPE for Environmental Cleaning



3.9.7 Education and Training

All staff involved in cleaning should receive appropriate education about IPC best practice and general principles of environmental cleaning to ensure that the:

- a. Risk of exposure to contaminated items/surfaces and chemicals is understood when performing environmental cleaning procedures.
- b. Recommended policies and guidelines including the use of appropriate PPE are followed.
- c. Competence in performing hand hygiene as well as putting on and removing PPE is ensured by periodic assessment of proficiency

All new cleaners must be trained on standards at orientation before they commence work

with an annual refresher conducted (proficiency levels for the various cleaning activities should be assessed at least once a year).

3.9.8 General Principles

1. Protocols, cleaning schedules and SOPs should be established by each healthcare facility based on the size, design, walkways, floor types, ceiling heights and wall types with the singular aim of maintaining a safe, healthy and clean environment with minimal opportunity and potential for infection transmission.
2. Standards should be set regarding mops, mop buckets, dusters, cleaning cloths, disinfectant type and strengths, cleaning products and the type and number of cloths used per room or location. Standards shall include size; type (design); locations where each type should be used; what each type should be used for; duration of use; maintenance; storage area(s) and when they should be changed.

3.9.9 Cleaning Resources

1. Personal Protective Equipment (PPE) – the range required for the different processes should always be accessible in close proximity to the points of use.

2. Hospital-approved disinfectant solutions and cleaning agents.
3. Appropriate cleaning equipment and materials.
4. Protocols, SOPs, Work Instructions and Job Aids – these may be supplemented with visuals (diagrams, photographs, algorithms, point-of-use checklists) to enhance understanding and compliance.
5. Checklists (daily, weekly and monthly routines), Observation Logs; Issue Registers and Incident Reporting.

3.9.10 Routine Practices

Hand hygiene

1. Hand hygiene is the most important and effective measure to prevent the spread of HAI and must be practiced:
 - a. Before initial patient environment contact (before going into the patients' room or wards).
 - b. After potential body fluid exposure (after cleaning toilets, handling soiled linen, contaminated equipment or waste).
 - c. After patient environment contact (after cleaning patients' rooms or wards, resident equipment such as stretchers, examination trolleys, wheelchairs and after changing mop heads).
 - d. After using the toilet.
 - e. After removing gloves. The use of gloves does not replace the need for hand hygiene
2. Housekeeping staff should use PPE that are appropriate for the task being performed.

3.9.11 Cleaning Protocols (Housekeeping)

Environmental Surfaces

HOW

1. Dusting should only be done when patients' rooms are vacant.
2. A wet cloth or mop that has been dipped in the facility-approved disinfectant should be used in order to avoid aerosolising spores while capturing dust.

3. Dusters should not be shaken
4. A 'high duster' should be used when dusting surfaces and fixtures above shoulder height such as tops of doors, wall-mounted televisions, overhead lights, pictures, high shelves and ledges.
5. When dusting, ceilings, ceiling tiles and walls should be observed for peeling, cracks, water leaks, rising damp and stains which could be potential sources of infection.
6. Walls, windows, doors and door frames should be spot cleaned as indicated.
7. Door handles, hand rails, bannisters, light switches and other frequently touched areas and appliances should be wiped daily.
8. Patient rooms should be thoroughly cleaned after every discharge. Beds, mattresses and pillows should be wiped using a damp clean cloth impregnated with hospital-approved disinfectant in the approved strength.
9. Horizontal surfaces should be wiped at least daily or in between patients (e.g. in procedure rooms) and when visibly soiled.
10. Mattresses and pillow covers must be made of moisture-resistant material that is easy to clean.
11. Fabric covers are not recommended and if used, they must be laundered between patients.

Curtains and Windows

WHAT

1. Curtains are high-touch items and the potential for infection transmission depends on the position, type of material, length and type of activity conducted in the room. When patients are not on Isolation Precautions, they should be cleaned or changed in accordance with the schedule and when visibly soiled.
2. They should be changed after a patient is discharged, transferred or taken out of isolation.
3. Windows should be cleaned in accordance with the documented schedule.
4. Venetian blinds and insect-proof netting should be cleaned at least weekly or according to the documented schedule.

Patients' Rooms and Bathrooms

Occupied Room

HOW

1. Before cleaning an occupied room:
 - a. Check for the isolation status
 - b. Always perform hand hygiene
 - c. Don appropriate PPE
 - d. Check sharps container and replace it if necessary
 - e. Empty the waste container. Handle bags from the top
 - f. Dirty gloves should never be worn outside the room
2. If there is a need to leave the room after starting to clean, remove gloves and perform hand hygiene. Upon return, put on a new pair of gloves and resume cleaning.
3. Clean and disinfect using disinfectant and designated cleaning cloths
4. Clean and disinfect patients' toilet and bathroom or shower stall
5. Change cleaning cloth as needed to ensure saturation. Double dipping of cloths should not be done
6. Change the cleaning cloth and start with a fresh one after cleaning the bed

Terminal Room Cleaning

WHAT

This involves thorough cleaning and disinfection after the discharge of a patient who has been identified as or is strongly suspected of being infected or colonised with certain infectious organisms. Terminal cleaning may be applied to a bed area in a ward, an entire ward or a side room and includes changing of curtains (if indicated). It also refers to the cleaning of a whole department at the end of an outbreak

Deep Cleaning

This is the periodic thorough cleaning of an environment, including fixed and portable equipment. It is recommended that proactive deep cleaning of all clinical areas is performed annually. Under certain circumstances, deep cleaning may be advised by the IPC Team reactively (e.g. following the identification of a number of patients with infection linked by a particular clinical area).

Steam Cleaning

Moist heat may be used for crockery, cutlery, linen and bedpans when dishwashers, washing machines, steam pressers and washer-disinfectors are available.

3.9.12 Cleaning Products for Healthcare Facilities

WHAT

The IPC Committee, Teams and Focal Persons should be involved in the decision-making process to ensure that the most appropriate products are selected. Before purchasing large quantities of chemicals or agents, the products should be tested for acceptability and safety of use. Once selected, scheduled and spot checks should be conducted to ensure that dilution factors are correct and the agents are used according to the manufacturer's specifications. Surfaces and equipment in healthcare facilities are considered as non-critical items (contact with intact skin but not mucous membranes) therefore general cleaning or low-level disinfection is recommended. Attention should be paid to the following:

- a. All surfaces should first be cleaned with soap and water
- b. Disinfectant cleaning solutions (combination of soap or detergent and disinfectant) remove the need for a two-step process of using soap and disinfectant separately (i.e. wiping a surface with a new cloth and soap followed by wiping with disinfectant solution).
- c. The manufacturers' instructions should always be followed when using any disinfectant.

The following factors should be considered when selecting disinfectants or cleaning products:

- a. **Intended use** (cleaning, disinfection or both)
- b. **Efficacy** (does it claim to kill organisms that are commonly found in the local environment?)
- c. Recommended **contact time**
- d. **Acceptability** (does it have an unpleasant smell, leave a residual film, damage or stain surfaces?)
- e. **Safety** (are there side effects for those in contact with the disinfectant?)
- f. **Cost and availability** (is the price within the budget, is it readily available in the required amounts?)

- g. **Volume needed and size of product available** based on facility requirements

HOW

- a. Cleaning equipment must be stored in a safe, clean and dry area/ environment.
- b. Cleaning cloths must be segregated according to the approved colour- coding system.
- c. Change cleaning cloths and mop heads daily.
- d. Used cloths and mop heads must be washed with warm water and a detergent before reuse. (If washed in a machine, the temperature should be at least 60°C).
- e. When solutions in pistol-grip spray containers have been completely used up, the reusable containers must be washed and dried before refilling – do not top up!
- f. Cleaning carts and buckets must be constructed of rustproof material that is easily cleaned and free of cracks, dents and crevices. All equipment, carts and accessories used by housekeeping staff must be cleaned at the end of each shift or day and when visibly soiled.
- g. At the end of the shift or day, the cleaned items must be stored dry in a designated storage area or closet.
- h. These closets must be well ventilated (preferably with slatted doors or vents), kept neat, clean and free of clutter.
- i. The condition of all cleaning equipment must be routinely checked, maintained according to the protocol and repaired or replaced when indicated. Such checks must be documented and endorsed.



Figure 25: Cleaning devices and equipment

3.9.13 Cleaning Devices and Equipment

WHAT

1. Patient care equipment and devices must be cleaned between each patient use.
2. Where possible, dedicated cleaning supplies should be provided for areas with higher risk of infection transmission e.g. isolation, delivery and operating rooms.
3. Cleaning supplies for isolation should be kept in and only used in the isolation area/room.
4. Frequently touched surfaces should be cleaned with detergent solution at least daily, when visibly soiled and after every known contamination.
5. General surfaces, fixtures and fittings must be cleaned when visibly soiled and immediately after spillage.
6. Cleaning sequence should always be from:
 - a. Cleanest area to dirtiest area.
 - b. High touch areas to low touch areas.
 - c. Outer margins or edges inwards.
7. Isolation areas should be cleaned last
8. Sweeping is not recommended. Damp dusting and wet mopping are recommended to minimise the dispersion of dust particles.
9. A 3-bucket system should be used for cleaning and disinfection
10. Routine cleaning should be done with clean water and a recommended detergent, liquid soap or equivalent
11. Disinfectants should not be used for routine cleaning
12. Spraying of disinfectants is not recommended

3.9.14 Environmental Cleaning of Isolation Rooms/ Areas

HOW

1. Scheduled frequency of cleaning should be increased in patient care areas
2. All waste from the isolation area is considered contaminated and should be disposed of in accordance with your facility procedure for contaminated waste
3. The following PPE should be worn by housekeeping staff when cleaning an Isolation Room or room occupied by a patient on transmission-based precautions:
 - a. *Airborne precautions*: N95 respirators for patients with MDR-TB or XDR-TB only otherwise a face mask is adequate. Gloves and aprons must be worn.
 - b. *Droplet precautions*: Face mask unless otherwise specified by nursing staff. Gloves must be worn.
 - c. *Contact precautions*: Gloves and plastic apron for housekeeping activities. The gloves and apron should be removed when leaving the room and hands should be washed with antimicrobial soap.
4. Cleaning supplies for isolation should be kept in and only used in the isolation area/room
5. Eating and drinking are prohibited except in designated areas. Smoking is not permitted anywhere on the healthcare facility premises.
6. Staff must:
 - a. Be presentable, clean and have good personal hygiene.
 - b. Wear clean regulation uniforms. The uniform must be changed if it becomes unduly soiled or wet.
 - c. Adhere to the specified dress code.
 - d. Attend work-based or other extramural IPC training
7. Hand hygiene must be carried out as appropriate

3.9.14 Routine Cleaning

All cleaning staff must wear appropriate PPE.

Cleaning sequence is from protective isolation, to clean rooms and finally to infectious patient areas.

Daily cleaning routine of all horizontal surfaces and toilet areas is necessary to ensure optimal cleanliness of the healthcare environment.

Floors, Walls, Surfaces and Ceilings

HOW

1. All floors must be mopped daily with water and detergent. Where applicable, they should be polished frequently as indicated in the cleaning schedule.
2. All toilets and washbasins in patient areas must be cleaned daily with an ammonia-based cleaner, washed with water and dried. The floors must be kept dry to avoid trips, slips and falls.
3. All waste baskets must be emptied at least three times daily or when three-quarters full and relined with new impervious plastic liners.
4. High dusting must be performed at least weekly using a clean duster.
5. Walls must be damp-wiped or spot-cleaned as needed.
6. Horizontal surfaces such as window sills, chairs, over-bed tables and bedside cabinets must be damp-wiped daily with a hospital-approved germicidal detergent.
7. Bathrooms must be cleaned daily with a hospital-approved detergent. Special attention must be given to the toilet, wash hand basin, fixtures and the floor. In addition to mopping, toilet and bathroom floors must be routinely scrubbed at least once a week. Towel and toilet paper dispensers must be refilled and soap cartridges or dispensers replaced or refilled as needed.
8. Paper with impervious-backing, plastic or fluid-resistant covers should be used as barrier protection for surfaces and equipment that are high-touch, easily contaminable or difficult to clean.

Blood and Body Fluid Spillages

WHAT

The following guidelines should be adopted when cleaning spillage of blood, body fluids, and other potentially infectious fluids:

- a. Wear utility or non-sterile gloves (and a face shield if splashing is likely).
- b. Remove visible organic matter with absorbent material (e.g. disposable paper towels discarded into leak-proof, properly labelled waste receptacles).
- c. Use 0.5% chlorine solutions (i.e. 1:10 final dilution of 5% household bleach solution) to deactivate blood-borne pathogens.
- d. For small spills, mop up the visible blood/body fluid with disposable, absorbent material (e.g. disposal cloths), if available.
- e. Discard the absorbent material in a covered container for infectious waste.
- f. Disinfect the area by wiping with a cloth soaked in 0.5% sodium hypochlorite solution (bleach).
- g. For large spills, flood the contaminated area with 0.5% sodium hypochlorite solution, if feasible.
- h. Allow the disinfectant to sit for 10 minutes before mopping. A 'caution sign for wet floors' should be placed at the edge of the spill closest to the entrance to prevent slips, trips or falls on the slippery surface.
- i. Clean any visible material using a cloth soaked in a 0.5% chlorine solution.
- j. Follow initial cleaning with a final disinfection using a 0.5% chlorine solution.

Handling of waste

Thick domestic rubber gloves and protective clothing should be worn by housekeeping staff when handling waste

Control of Pests and Vermin**WHAT**

- a. Pests such as cockroaches, fleas, ticks, mites, lice, ants and flies are controlled according to the respective documented procedures
- b. Treatment must be done only with approved insecticide or chemicals.
- c. Precautions should be taken during preparation and storage of poisons or hazardous chemicals and equipment used must be handled and cleaned safely
- d. Appropriate PPE must be worn.
- e. Dead rodents must be placed in infectious waste bags and disposed of immediately by incineration.
- f. Infestation of the healthcare facility by pests and vermin must be reported to and handled by the Environmental Health Officers or designated agency

3.10 Policy 10 – Terminal Cleaning**3.10.1 Intent**

To establish specific procedures for the special cleaning of Isolation Rooms after an infectious patient is transferred or discharged.

3.10.2 Policy Statement

Housekeeping staff will clean Isolation Rooms after each use to eliminate the possibility of contamination and to effectively reduce the pathogens.

3.10.3 Background

Terminal cleaning is specifically carried out immediately after a patient with an infectious disease has been discharged either from a ward or a single (isolation) room. The basic cleaning procedure is the same as routine cleaning however transmission-based PPE should be worn before entering the room.

3.10.4 Responsibility

1. Terminal cleaning should only to be performed on the advice of the IPC Team.
2. Housekeeping staff are responsible for cleaning Isolation Rooms.
3. The professional nurse in charge of housekeeping will ensure that:
 - a. Procedures for Terminal Cleaning are readily available.
 - b. All housekeeping staff are familiar with the IPC policies and are proficient in the respective cleaning procedures.
4. The IPC Team will serve as advisers to the housekeeping staff.
5. When Terminal Cleaning is required, checklists must be completed and signed by a member of the IPC Team or the IPC Focal Person before another patient can be admitted to the room.
6. Contingency arrangements must be in place in the event that Terminal Cleaning is required when IPC Team or Focal Person are unavailable.

3.10.5 Summary of Procedures

1. **Notification:** The IPC Team will advise the Unit Manager or equivalent designated staff who will notify housekeeping staff when an Isolation Room has been satisfactorily cleaned or needs to be cleaned
2. **Staff precautions:** All persons involved in or present during cleaning must wear appropriate PPE which should be discarded immediately after use.
3. **Cleaning equipment:** Only the equipment marked or designated for the cleaning of isolation rooms must be used i.e. double bucket system, mop and dust trolley.
4. **Waste:** Infectious waste should be handled and disposed of according to the respective documented procedures.
5. **Linen:** Linen should be handled according to the applicable hospital policy.
 - a. Carefully remove the bed linen and curtains and send it to the laundry using the appropriate bag.

- b. Wash plastic covers and mattresses with soap and water, then dry and wipe off with alcohol. Plastic covers with small-sized tears or punctures plastic covers should be sent for decontamination and pillows or mattresses with large tears or punctures should be replaced.
- c. The beds, over-bed tables, chairs, lamps and lockers must be wiped with soap and water, dried and wiped with alcohol.

6. Medical equipment

- a. Ventilators, monitors, leads, drip stands, oxygen regulators, stethoscopes, saturation and ECG probes and the emergency trolley equipment must be thoroughly cleaned with soap and water without soaking and wiped over with alcohol.
- b. Send the ambu bag to the HSSD and hand the ventilator to the technologist for further decontamination.

- 7. Other equipment** such as suction bottles, silicone tubes, circuits, inhalation masks, purification bottles, other containers, transducer domes and used procedure packets must be rinsed with water, packed in a transparent plastic bag that is marked 'infectious' and sent to the CSSD for cleaning.

Blood pressure cuffs and thermometers should be washed in warm water and detergent and dried

Environment

WHAT

1. Floors and walls must be wiped over with detergent and water. Bloodstains should be wiped over with 0.5% sodium hypochlorite solution after the contaminated surface has been cleaned.
2. Windows, storage cupboards, curtain rails, doors, door handles, hand wash basins must be wiped over with soap and water.
3. Insect-proof netting on windows and doors should be wiped with a damp cloth at least once a week to reduce dust in the ambient environment.

Lotions and Solutions

1. Discard all the left-over lotions and the solutions e.g. liquid soap and hand disinfectant.
2. Discard all empty containers or place them in recycle bins if available

Patient Care Articles

Bedpans, urinals, bowls and jugs should be heat-disinfected.

HOW

1. Housekeeping staff must be notified by nursing staff when an Isolation Room needs to be cleaned, alternatively an 'Isolation' sign should be placed on the door of the patient's room.
2. Cleaning staff must observe the Isolation Precautions when cleaning the Isolation Room of a patient discharged from transmission-based precautions. The cleaning procedure for rooms of patients requiring isolation is the same as for other patient rooms.
3. Terminal Cleaning should be performed carefully with minimum creation of dust (aerosols) or and without vigorous shaking.
4. Routine cleaning procedures (outlined above) must be performed meticulously.
5. Cleaning equipment must be changed after cleaning each Isolation Room. All surfaces of the bed frame, mattress and pillow must be damp-wiped with a hospital-approved detergent before the bed is made.
6. Remove all sheets, bed linen, curtains and any other washable item in the room and place in appropriately coloured bags or containers.
7. Linen and waste bags must be tightly sealed and tagged inside the Isolation Room before removal.
8. The inside of the bedside cabinet and storage closet must be damp-wiped with a hospital-approved detergent.

9. The room should ideally be left vacant and all surfaces allowed to air-dry. The ventilation system should be left on for at least 24 hours.
10. Isolation signs should not be removed until Terminal Cleaning is completed. The 'Transmission-based Precaution' signs should be removed by the IPC Team once the process has been satisfactorily completed.

Table 17: Disinfectant Dilutions and indications

INDICATION	DILUTIONS	ADDITIONAL ADVICE
Blood spills	1 part of bleach to 9 parts of water	<ul style="list-style-type: none"> • Wear utility gloves. Eye protection and a plastic apron should be worn where there is a risk of splashing. • Remove as much of the spill as possible with a paper towel. • Clean the area with warm water and detergent, using a disposable cleaning cloth or sponge. • Disinfect the area with a solution of household disinfectant. • Remove and dispose of gloves, paper towels and cleaning cloths in a sealed plastic bag after use and dispose in an infectious waste bin. • Wash hands thoroughly with soap and warm water.
General environmental disinfection	1 part of bleach to 49 parts of water	<ul style="list-style-type: none"> • For use in outbreak situations in addition to general cleaning.

Source: Rutala WA and Weber DJ 2015

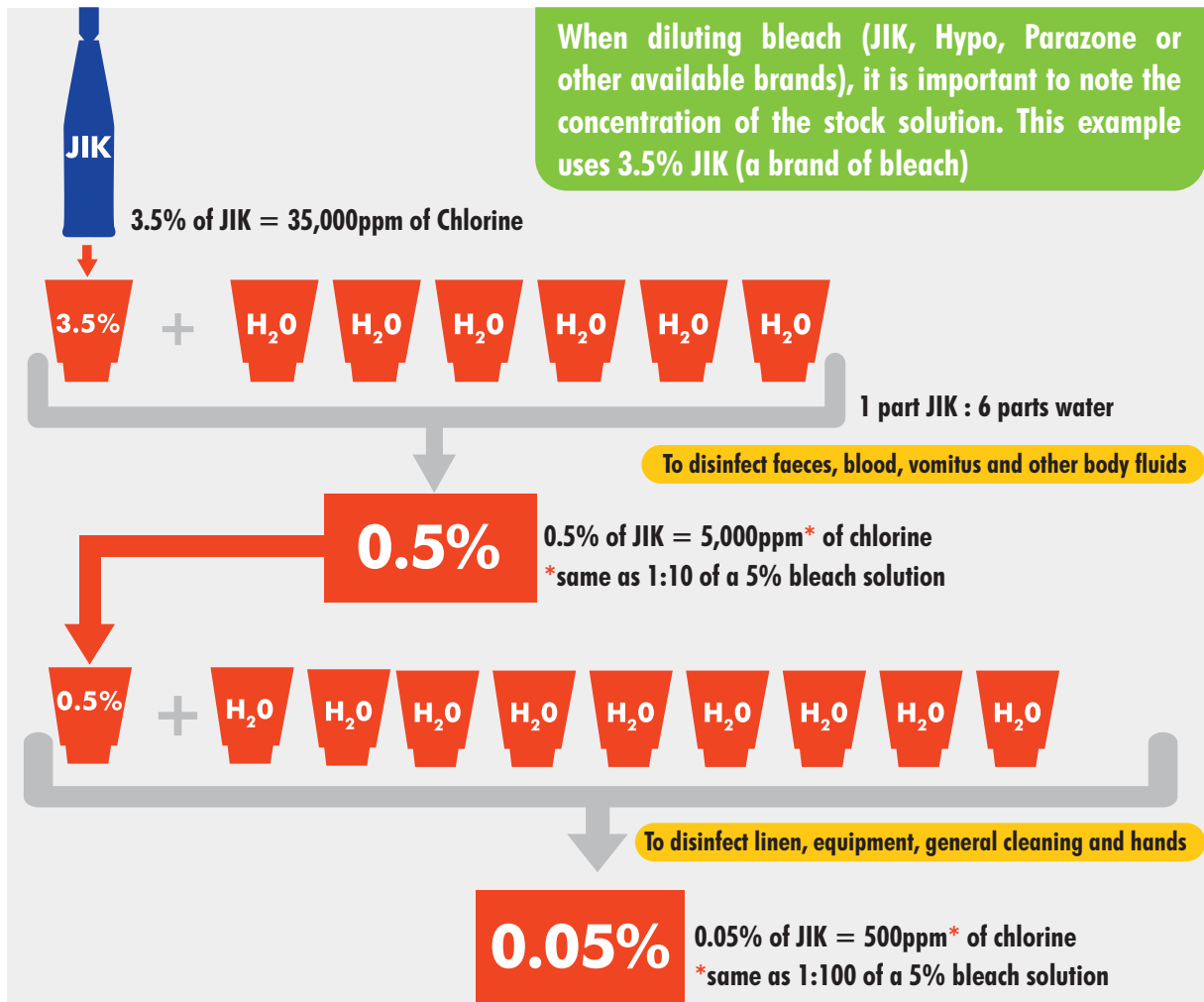


Figure 26: Dilution of Bleach (Sodium Hypochlorite) Solution

Table 18. Preparation of 3.5% Chlorine Solution (From Household Bleach)

TARGET SOLUTION	FORMULA	BLEACH	WATER
0.05%	$\frac{3.5\%}{0.05\%} - 1 = 70 - 1 = 69$	1	69
0.5%	$\frac{3.5\%}{0.5\%} - 1 = 7 - 1 = 6$	1	6
2%	$\frac{3.5\%}{2\%} - 1 = 1.75 - 1 = 0.75$	4	3

Source: http://ncdc.gov.ng/themes/common/docs/protocols/45_1507196550.pdf

Formula: Available Conc/Desired Conc –1 = Part of bleach required

Dilution = Mix X part(s) of bleach to X parts of water

Chlorine solutions should be prepared fresh daily, as they are light sensitive

Always label the solutions with a permanent marker

Table 19. How to Prepare Chlorine Solution from Calcium Hypochlorite Powder or Chlorine Granules (70% Active Chlorine)

TARGET SOLUTION	CALCIUM HYPOCHLORITE/CHLORINE GRANULES	VOLUME (LITRES)
0.05%	7 grams or 1/2 of a tablespoon	10
0.5%*	7 grams or 1/2 of a tablespoon	1
0.2%*	15 grams or 1 tablespoon	5
1% (stock solution)	15 grams or 1 tablespoon	1
2%*	28 grams or 2 tablespoons	1

***Use gloves when handling this solution**

Disinfection of the environment

Clean and dry surfaces will not support the growth of most bacteria. Frequent disinfection of high-touch surfaces and general patient-care environments especially during outbreak situations is mandatory. Schedules and daily routines should be determined by multidisciplinary and multisectoral collaboration.

3.10.6 References

1. CDC and ICAN. Best Practices for Environmental Cleaning in Healthcare Facilities in Resource-Limited Settings. Atlanta, GA: US Department of Health and Human Services, CDC; Cape Town, South Africa: Infection Control Africa Network; 2019. Available at: <https://www.cdc.gov/hai/prevent/resource-limited/environmental-cleaning.html> and <http://www.icanetwork.co.za/icanguideline2019/>.
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Randomized Trial. *The Lancet Infectious Diseases*. Available from: [https://doi.org/10.1016/S1473-3099\(18\)30714-X](https://doi.org/10.1016/S1473-3099(18)30714-X)

3. WHO/UNICEF Joint Monitoring Programme for Water Supply, Sanitation and Hygiene (JMP), 2019. *WASH in Health Care Facilities: Global Baseline Report 2019*. WHO: Geneva. Available from: https://www.who.int/water_sanitation_health/publications/wash-in-health-care-facilities-global-report/en/

3.10.7 Checklist

1. There is a master schedule for cleaning different areas within (clinical and general) and the external premises of the healthcare facility.
2. Local (department or unit-specific) cleaning schedules are available and there is a master schedule for cleaning different surfaces.
3. Service Level Agreements are available when the cleaning service is contracted to second or third parties.
4. Standards are set for mop heads, mop sticks, brooms, buckets, dusters, cleaning cloths, disinfectant (type, brand and strength, number and type of cloths used in different areas).
5. There is a designated storage area(s) for cleaning agents, devices and materials.
6. HCWs are trained in the selection and use of cleaning agents, devices and materials at induction and at least once a year.
7. The proficiency of staff in different types of cleaning is assessed at least once a year.
8. The dress code and personal hygiene standards for HCWs are readily accessible.
9. HCW are trained in IPC best practice for general cleaning.
10. Compliance audits are conducted for appropriate PPE selection and use for different types of cleaning at least quarterly.
11. Work Instructions and/or Job Aids for dusting, cleaning and scrubbing different areas, surfaces, fittings and fixtures are accessible to HCWs.
12. The protocol for Terminal Cleaning of wards and Isolation Rooms are accessible to pertinent HCW.

13. Protocols for different types (Deep, Steam, Routine and Terminal) of cleaning are accessible to pertinent HCW.
14. HCW have been trained and are proficient in the different types of cleaning (Deep, Steam, Routine and Terminal).
15. Pertinent staff are trained in the factors to be considered when selecting disinfectants.
16. HCW have been trained in the dilution of household bleach for disinfection purposes.
17. Checklists are used as aide-memoires for cleaning different areas and surfaces.
18. Staff are not scheduled to clean patient-care and general areas on the same day or in the same week.

3.11 Policy 11 – Healthcare Waste Management

3.11.1 Intent

To educate all HCWs about the handling of waste from the point of generation to disposal at the terminal depository in the healthcare facility for destruction or for removal by the responsible disposal agency.

3.11.2 Policy Statement

All healthcare waste must be handled and managed in a manner that minimises the risk of transmitting infections to patients and HCWs and is not hazardous to the environment.

3.11.3 Background

Healthcare waste refers to all the types of waste (including sharps) generated as a result of healthcare delivery and service provision. It is categorised as hazardous or non-hazardous (general) waste.

Adequate, timely and effective waste management will reduce the risk of exposure and injury to HCW handling waste as well as the costs associated with inappropriate disposal. In addition, the environment will be protected from any waste considered as infectious. For safety and economic reasons, healthcare waste must be segregated at the point of generation to facilitate appropriate disposal.

1. Appropriate PPE (gloves, aprons and goggles) must be worn when handling waste.
2. Bags and containers used for waste disposal must be suitable and appropriately labelled.
3. Waste should be segregated at the point of generation according to the category.

3.11.4 Responsibility

The Facility Management Dept.; workers who generate, transport and handle waste; Environmental Health Officers in collaboration with the IPC Team and Focal person shall be responsible for ensuring compliance with established standards.

3.11.5 Types of Waste

WHAT

Hazardous waste is any waste which contains or is contaminated with a dangerous substance in concentrations sufficient to generate a hazardous property. They include human or animal tissue, blood or other body fluids, body secretions and excretions, pathological specimens, pharmaceutical products, material used in dental fillings, solutions used in radiographic processing and sharp instruments that can be potentially hazardous if not rendered safe. It also includes waste resulting from medical, nursing, dental, veterinary, pharmaceutical laboratory sample processing or similar practices.

Non-hazardous waste is any waste that has not been in contact with infectious agents, hazardous chemicals or radioactive substances and does not pose a sharps hazard. It also comprises of municipal or domestic waste generated in health facilities.

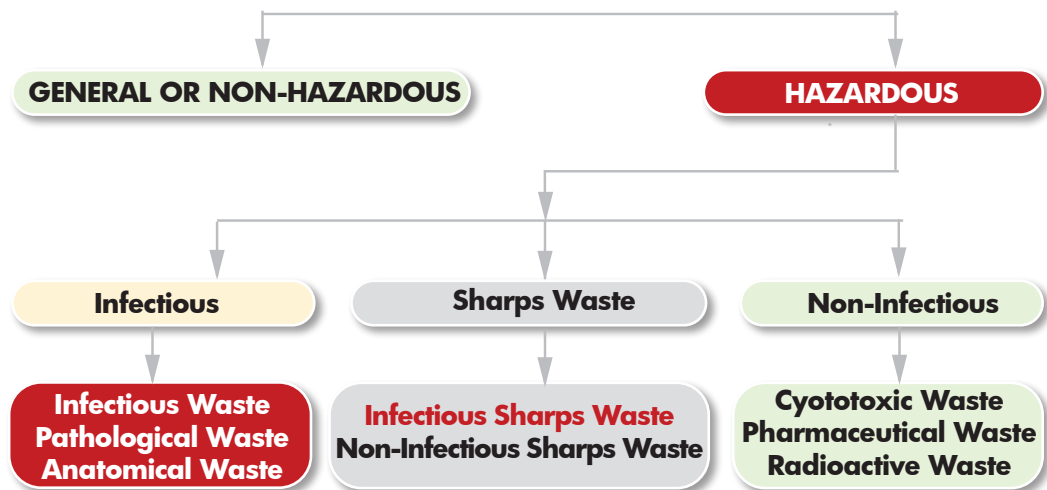


Figure 27: Schematic Categorisation of Healthcare Waste Source

Source: WHO

3.11.6 Principles of Waste Management

WHAT

The following practices for healthcare waste management are recommended:

1. Healthcare workers should be informed about the hazards related to healthcare waste and trained in appropriate waste management practices. (WHO)
2. Waste should be segregated at source into the different types. Healthcare facilities must establish a system to differentiate between general waste and some specific health waste (sharps, highly infectious and cytotoxic)
3. General healthcare waste should not be comingled with disposed domestic refuse.
4. Sharps should be disposed of at the point-of-use in puncture-proof containers (usually high-density plastic) with securely fitted covers or certified safety boxes made of rigid plastic-lined puncture-proof cardboard. To discourage abuse of contents, containers should be tamper-proof (difficult to open or break).
5. Bags and other containers used to collect and transport infectious waste must be marked with the respective international infectious substance symbols.
6. Infectious waste should be stored in a secure area with restricted

access and should be safe from rodents, insects as well as scavenging animals and humans.



7. Waste from the Microbiology laboratory should be sterilised by autoclaving prior to disposal.
8. Large quantities of obsolete or expired pharmaceuticals must be returned to the pharmacy for appropriate disposal in accordance with the facility policy for the disposal of expired drugs and medicaments.
9. Cytotoxic waste produced in large healthcare e.g. Oncology units or research facilities (must be collected in strong, leak-proof containers that are clearly labelled 'Cytotoxic waste'.
10. All waste should be transferred to a designated secure terminal on-site depository either for eventual incineration or removal by a third-party waste disposal agency.

Table 20: Segregation of Healthcare Waste

CATEGORY	WASTE TYPE	EXAMPLES	STORAGE/ DISPOSAL
HAZARDOUS WASTE	Anatomical / Pathological waste (highly infectious)	Placentas, human tissue, organs and body parts, human tissues, microbiology culture plates or fluids, body parts	Incineration Autoclaving of microbiological waste before disposal
	Infectious waste	Materials contaminated with body fluids e.g. used cotton swab, used gloves/PPE etc	Alternative treatment or incineration
	Sharps waste	Used and unused needles, blades, lancets, scissors, infusion sets, yellow sharps container, white safety box or improvised container	Clinical waste incineration only
NON-HAZARDOUS WASTE			
NON-CLINICAL WASTE	General (municipal) General waste	Domestic waste such as food, flowers, papers, diapers	Landfill or municipal Dispose with waste system incineration

Source: Department of Health 2013; Health 2016; Fuller 2016; Team 2016

Table 21: Segregation of solid biomedical waste.

<p>INFECTIOUS</p>		<ul style="list-style-type: none"> • Plaster of Paris • Body fluid contaminated materials • Used dressing materials and masks, IV giving set, catheters, gloves 	<p>Clinical waste incineration</p>
<p>HIGHLY INFECTIOUS</p>		<ul style="list-style-type: none"> • Post-operative body parts/Pathological waste • Microbiology cultures • Placenta, blood giving set, blood bags 	<p>Autoclave before incineration e.g. Microbiology waste Body parts – deep burial</p>
<p>NON INFECTIOUS</p>		<ul style="list-style-type: none"> • Paper • Cartons • Empty tins • Pieces of wood • Left-over food • Packaging materials 	<p>Recycling Domestic disposal</p>
<p>SHARPS</p>		<ul style="list-style-type: none"> • Used Needles, Syringes Blades, Scalpels • Broken pieces of glassware e.g. slides, cover slips, ampoules 	<p>Incineration Recycling may be possible after processing for safety</p>

Source: George, Divya; Jose 2015; Chatterjee A: n.d.



Figure 29: Waste Categories, Segregation and Treatment

3.11.6 Checklist

1. SOPs for handling different types of waste are accessible to HCWs.
2. Compliance of HCWs with documented protocols is assessed at least twice a year
3. PPE and containers for handling different types of waste are available at the points of generation
4. HCWs are trained in managing (handling, transport, storage and transient disposal) of waste generated at the various points-of-use.
5. The proficiency of HCWs in handling and managing healthcare waste at their respective points of generation is assessed at least once a year.
6. Appropriately lined and covered waste containers are available at the various points of generation.
7. Images (representing standards, best practice and benchmarks) of appropriate waste containers and waste disposal are displayed at various point-of-use.
8. Waste containers are cleaned according to documented Work Instructions/Work Guides and maintained in good condition
9. Compliance with waste management storage and disposal is monitored and evaluated at least quarterly by the IPC Team or Focal Person.
10. A monthly or quarterly schedule for waste management (collection times, storage duration, cleaning and replacement of containers, transport, terminal disposal on site and/or removal from premises) is accessible to the relevant staff as well as the IPC Team or Focal Person.

Transmission-based Precautions

4.1 Policy– Transmission-based Precautions

4.1.1 Intent

To describe the Isolation Precautions needed to further reduce or prevent the risk of spread of epidemiologically significant or highly transmissible pathogens from an infected person to others when the application of Standard Precautions alone is inadequate. Isolation is recommended for infections that can be transmitted by direct contact or indirect contact with respiratory secretions and via inhaled droplet nuclei.

4.1.2 Policy Statement

All secondary and tertiary healthcare settings should have facilities for the isolation of patients with communicable diseases and antimicrobial resistant organisms. Primary healthcare facilities should at least have a holding area. All healthcare facilities must have and effectively implement processes to prevent the transmission of communicable diseases such as Measles, Cholera, Chicken pox and the spread of AMR organisms within their premises.

4.1.3 Background

Transmission-based Precautions are additional measures intended to supplement Standard Precautions in patients with known or suspected colonization or infection by highly transmissible or epidemiologically important pathogens. They are also called Expanded Precautions, Additional Precautions or Isolation Precautions and depend on the mode of transmission of the infectious disease.

Transmission-based Precautions are applied to patients suspected or confirmed to be infected with agents transmitted by contact, droplet or airborne routes.

4.1.4 Responsibility

Infection Control Nurse after consultation with the Infection Control Doctor.

4.4.5 Transmission-based Precautions

Transmission-based or Isolation Precautions are categorised as

1. Contact Precautions
2. Droplet Precautions
3. Airborne Precautions

One or more Transmission-based Precautions can be combined for an infection that has more than one mode of transmission

Implementing Transmission-based or Isolation Precautions

WHAT

1. Patient placement in Single Rooms or cohort patients if Single Rooms are unavailable
2. Appropriate air handling requirements (e.g. wide open windows, negative pressure)
3. Patient-dedicated equipment and devices
4. Appropriate use of PPE (gloves, apron or gowns, surgical masks or P2 respirators and protective eyewear)
5. Enhanced cleaning and disinfection of the patient environment
6. Restricted transfer of patients within and between facilities

7. Continued implementation of Standard Precautions

HOW

1. Initiate isolation precautions as specified and/or based on clinical assessment of the patient in consultation with the attending physician and/or Infection Preventionist (IP).
2. Arrange for the required isolation supplies for the room.
3. Place the appropriate isolation precautions sign outside the door of the room
4. Give the necessary instructions to patients and visitors.

Key Points

1. Transmission-based precautions are always applied in addition to Standard Precautions
2. Some pathogens have more than one route of transmission (e.g. both airborne and contact precautions need to be applied to minimise the spread of Varicella - the microorganism that causes Chicken pox)

4.2 Policy 13 – Contact Precautions**4.2.1 Intent**

To describe the contact precautions needed to prevent and control infections that spread via direct contact with the patient or indirectly from the patient's immediate care environment and care equipment.

4.2.2 Policy Statement

Contact isolation precautions must always be used with Standard Precautions. They also apply when the presence of excessive body substances (e.g. faecal incontinence, draining wounds and other discharges) suggest an increased risk of infection transmission through environmental contamination. In the absence of a Single Room, patients diagnosed with the same disease can be cohorted assuming that there are no other infections.

4.2.3 Background

Contact with colonised or infected skin and contaminated surfaces are the most common routes of transmission in healthcare facilities. The transmission can be by:

Direct contact – pathogens are transferred from person to person (skin to skin contact) without a contaminated intermediate

Indirect contact – pathogens are transferred from person to person through contact with a contaminated intermediate clinical (e.g. contaminated patient-care devices, instruments) or non-clinical equipment (toys, horizontal surfaces e.g. bed railings, door handles).

4.2.4 Indications for Contact Precautions

Suggestive clinical syndromes

- a. Acute diarrhoea in an incontinent or diapered patient
- b. Diarrhoea in an adult with a history of recent antibiotic use
- c. Bronchitis and croup in infants and young children
- d. History of infection with multi drug-resistant organisms (except TB)
- e. Vesicular rash
- f. Abscess or draining wound that cannot be covered

4.2.4.1 Pathogen-related (Conditions requiring Contact Precautions)

1. **HAI with antimicrobial resistant organisms such as**
 - a. Methicillin-resistant *Staphylococcus aureus* (MRSA) and *S. epidermidis* (MRSE)
 - b. ESBL producing Gram-negative Bacilli e.g. *E. coli*, *Klebsiella pneumoniae*
 - c. *Vancomycin-resistant enterococci* (VRE)
 - d. *Acinetobacter spp*, *Pseudomonas spp* and other gram-negative bacilli
 - e. *Clostridioides difficile*
2. **Community acquired pathogens that end up in hospital**
 - a. Enteric fevers (Typhoid and Paratyphoid)
 - b. Diarrheal diseases (e.g. Cholera, Non-typhoidal *Salmonella* associated diarrhea, *Shigella dysenteriae*, Viral diarrhea e.g. Rotavirus, Norovirus, Viral hepatitis A and E)
 - c. Blood-borne viruses: Secondary to contaminated devices and inoculation
 - i. HIV
 - ii. Hepatitis B and C

- iii. Viral haemorrhagic fevers (also by droplet) e.g. Ebola, Lassa
- iv. Herpes zoster
- d. Impetigo, conjunctivitis
- e. Scabies, lice

4.2.4.2 Procedure-related

1. Procedures requiring contact precautions

- a. Wound care, Burns
- b. Procedures that will lead to contact with mucosal surfaces e.g. dental, vaginal or rectal examinations
- c. Bathing patients with skin lesions or broken skin
- d. Handling patient care items contaminated with body fluids e.g. urinals, emesis bowls, bed pans etc.

2. Patient Placement

In-patient settings

- a. The nurse in consultation with the Doctor or Infection Preventionist initiates and maintains contact precautions when there is a suspected or confirmed diagnosis of an infectious disease that is transmitted by direct or indirect contact.
- b. The patient should be put in a Single Room
- c. The door(s) should be closed at all times
- d. There are no additional ventilation requirements
- e. Place a contact isolation sign on the door

Outpatient settings

Place patients requiring Contact Precautions in an Examination Room or cubicle as soon as possible.

The Contact Isolation sign must be colour-coded **ORANGE** and must be available in both English and the local language

3. Personal Protective Clothing

- a. All healthcare workers must wear the appropriate PPE (gown and gloves) when anticipating contact with patient or the patient's environment.
- b. Don the PPE before entering the room and properly discard it before leaving the patient's room
- c. Change the gown and gloves between patients even if both patients share a room and both are under Contact Precautions.

4. Patient care equipment

- a. Use disposable or dedicated patient-care equipment (e.g. thermometer, blood pressure cuffs). If communal use of equipment for multiple patients is unavoidable, clean and disinfect such equipment before using on another patient. B. b. Cling film or similar disposable wrapping could be used to cover the arms prior to taking blood pressure or to line the scales when weighing infants.

5. Patient Transport

- a. Limit transport and movement of patients outside of the room to medically-necessary purposes.
- b. When transport or movement is necessary, cover or contain the infected or colonised areas of the patients' body.
- c. Inform the destination Unit, Department or healthcare facility about the applicable precautions to be instituted
- d. Remove and dispose of contaminated PPE and perform hand hygiene prior to transporting patients on Contact Precautions.

6. Environmental Cleaning

- a. Prioritise cleaning and disinfection of the rooms of patients on contact precautions
- b. Ensure rooms are frequently cleaned and disinfected (e.g. at least daily and prior to use by another patient in outpatient settings)

- c. Focus on frequently-touched surfaces and equipment in the immediate vicinity of the patient. (Patient zone)
- d. Waste should be segregated and handled according to the Waste Management policy.
- e. Housekeepers should wear gowns and gloves before entering the room and discard the gloves and gown before leaving

7. Discontinuing Isolation Precautions

WHEN

- a. Discontinue Isolation Precautions in consultation with the IPC Team, IPC Focal Person or IPC Practitioner.
- b. At discharge or when symptoms have ceased.
- c. The date, time and authorizing HCW should be documented in the Discharge Summary.

4.3 Policy 14 - Droplet Precautions

4.3.1 Intent

To describe isolation precautions needed to prevent and control infections that spread via large particle respiratory droplets generated by a patient who is sneezing, coughing or talking and may come into contact with the mucous membranes or eyes of a susceptible person. These infectious droplets settle quickly at about 1 metre from the source of dispersion

4.3.2 Policy Statement

Droplet Isolation Precautions must be used together with Standard Precautions. Droplet Precautions are intended to reduce the risk of droplet transmission of infectious agents from close contact (exposure to eyes, nose and mouth) with large-particle respiratory droplets generated by coughing, sneezing and talking. Patients diagnosed with the same disease can be placed in the same room in consultation with the Infection Preventionist (IP) assuming that no other infection is present.

4.3.3 Background

Mucous membranes and the eyes do not present a good barrier to some pathogens including blood borne viruses and so a splash of blood into the eye or mouth presents a potential risk of infection transmission. Droplet Precautions are therefore used for patients known or suspected to be infected with pathogens transmitted by respiratory droplets that are generated by a patient who is coughing, sneezing or talking.

4.3.4 Clinical Syndromes suggesting a requirement for Droplet Precautions

- a. Clinical syndromes suggesting a requirement for droplet precautions
- b. Severe, persistent cough when pertussis or flu is present in the area
- c. Fever, headache, with neck stiffness
- d. Hemorrhagic rash with fever
- e. Generalized rash of unknown cause

4.3.5 Conditions requiring Droplet Precautions

- a. Meningococcal Meningitis
- b. Mumps
- c. Influenza (all types, seasonal, avian, swine etc)
- d. Diphtheria
- e. Rubella (German Measles)
- f. *Haemophilus Influenzae* epiglottitis
- g. Severe Acute Respiratory Distress syndrome
- h. Pneumonic plague
- i. Viral Haemorrhagic fevers – droplet in addition to contact when patient is bleeding into respiratory tract

4.3.6 Clinical Procedures Requiring Droplet Precautions

- a. Endotracheal Intubation
- b. Nasogastric intubation
- c. Insertion and removal of chest tubes
- d. Physiotherapy (especially chest related)
- e. Post mortem examinations

4.3.7 Patient Placement

HOW

- a. Nurse in consultation with the Infection Control Doctor initiates and maintains droplet precautions when there is a suspected or confirmed diagnosis of an infectious disease that is transmitted by the droplet route.
- b. The patient should be put in a single room
- c. Doors should be shut
- d. A negative pressure room is not indicated
- e. Put a droplet isolation sign on the door
- f. If there is no single room
 - i. Move patient away from areas of frequent movement (e.g. to the rear of the ward, a part of the ward where people don't usually go)
 - ii. Put a droplet isolation sign on the patient's curtain or other partitioning.
- g. If there is no Single Room and there is more than one patient with the same diagnosis, the patients may be cohorted in consultation with the Infection Preventionist (IP).

Make sure that there is a minimum distance of 1 metre between patient beds. Put a droplet precaution sign outside the room

Droplet isolation signage must be colour-coded **GREEN** and must be available in both English and the dominant local language

- h. Outpatient settings
 - i. Place patients requiring droplet precautions in a well-ventilated exam room or they should be prioritized and attended to so they can leave quickly.
 - ii. Instruct patients to follow the recommendations for Respiratory Hygiene/Cough Etiquette.

4.3.8 Personal Protective Equipment

- a. All healthcare workers must wear the appropriate PPE (surgical mask to protect mucous membranes of nose and mouth, gloves to prevent contamination of the hands from contaminated surfaces; apron or gown (optional as indicated unless there is an anticipation of a splash contamination)
- b. Always wear a surgical mask when within 1 metre distance of a patient
- c. Don PPE before entering the room and properly discard it before leaving the patient's room
- d. Change the gown and gloves between patients even if both patients share a room and both are under Droplet Precautions

4.3.9 Patient Care Equipment

Use disposable or dedicated patient-care equipment (e.g. thermometer and blood pressure cuffs). If common use of equipment for multiple patients is unavoidable, clean and disinfect such equipment before using on another patient.

4.3.10 Patient Transport

- a. Limit transport and movement of patients outside of the room to medically-necessary purposes.
- b. When transport or movement is necessary, place a surgical mask on the patient and Inform the destination Unit, Department or healthcare facility about the applicable droplet precautions.

- c. Emphasise the importance of patients covering their noses and mouths with disposable tissues (or clean cloth) when they cough or sneeze to prevent microorganisms from being dispersed into the air.

4.3.11 Environmental Cleaning

- a. Prioritise cleaning and disinfection of the rooms of patients on contact precautions
- b. Ensure rooms are frequently cleaned and disinfected (e.g. at least daily and prior to use by another patient if it is an outpatient setting)
- c. Focus on frequently-touched surfaces and equipment in the immediate vicinity of the patient (Patient zone).
- d. Waste should be segregated and handled according to Waste Management policy.
- e. Housekeeping staff should wear gowns and gloves before entering the room and discard the gloves and gown before exiting

4.3.12 Discontinuation of Isolation Procedures

This should be done in consultation with the IPC practitioners and according to the hospital policy for the particular infection

4.4 Policy 15 – Airborne Precautions

4.4.1 Intent

To describe isolation precautions needed to prevent and control infections that spread by inhaled droplet nuclei (smaller than 5µm in diameter) that are generated by a patient who is sneezing, coughing or talking. These infectious droplets remain suspended for extended periods and can be inhaled at long distances from the source

4.4.2 Policy Statement

Airborne isolation precautions must be used together with standard precautions. Airborne precautions are intended to reduce the risk of transmission of infectious agents through the inhalation of droplet nuclei generated by coughing, sneezing or talking. Patients diagnosed with

the same disease can be cohorted in consultation with the Infection Preventionist, assuming that no other infection is present

4.4.3 Background

Droplet nuclei smaller than 5 microns released into the air when coughing, sneezing, talking and while performing some aerosol-generating procedures remain suspended in the air for extended periods and can be inhaled directly into the lungs. Airborne Precautions are therefore used for patients known or suspected to be infected with pathogens transmitted by respiratory droplet nuclei that are generated by a patient who is coughing, sneezing or talking. Healthcare workers are expected to be immune to vaccine-preventable diseases such as measles and varicella that are transmitted by the airborne route. Non-immune HCWs shall be required to use appropriate PPE for self-protection and be immunized as soon as possible.

4.4.4 Clinical Indications for Airborne Precautions

- a. Measles
- b. Varicella (Chicken Pox)
- c. Pulmonary tuberculosis
- d. Disseminated Herpes zoster
- e. Avian influenza
- f. Severe acute respiratory syndrome (SARS)

4.4.5 Procedures requiring Airborne Precautions

- a. Endotracheal Intubation
- b. Open suctioning of endotracheal sites
- c. Nasogastric intubation
- d. Insertion and removal of chest tubes
- e. Bronchoscopy
- f. Physiotherapy (especially chest related)
- g. Post mortem examinations

4.4.6 Patient Placement for Airborne Precautions

WHAT

Patients should be nursed in an airborne precaution room. An airborne precaution room is a room with more than 12 air changes per hour (ACH) and a controlled direction of airflow to prevent the risk of infectious particles escaping, potential exposure or transmission of disease. This could be a room with a negative air pressure system also referred to as airborne infectious isolation rooms (AIIRs). Natural ventilation has also been found useful but is more affected by variations in the weather. Patients with airborne infections should not be nursed in the same ward with other patients.

4.4.6.1 Inpatient Settings

HOW

- a. The Nurse in consultation with the Doctor or Infection Preventionist initiates and maintains airborne precautions when there is a suspected or confirmed diagnosis of an infectious disease that is transmitted by the droplet route.
- b. The patient should be put in a Single Room with the door closed at all times, located in a place away from traffic.
- c. A negative pressure room is indicated.
- d. In settings where there are no negative pressure rooms, providing the patient with a surgical mask and placing the patient in a private room with the door closed will reduce the likelihood of airborne transmission until the patient is either transferred to a facility with an airborne infection isolation room (AIIR) or discharged.
- e. Staff should use an N95 respirator before entering the room and discard it after leaving the room.
- f. Put an airborne isolation sign on the door.
- g. Healthcare personnel administering care to patients on airborne precaution should preferably be vaccinated against pathogens. Unvaccinated staff should be restricted from

entering the room of patients known or suspected to have measles, chickenpox, disseminated zoster or smallpox if other immune healthcare personnel are available.

Cohorting

- a. If there is no Single Room and there is more than one patient with the same diagnosis, the patients may be cohorted in consultation with the Infection Preventionist (IP).
- b. Place the Airborne Isolation sign outside the door.

4.4.6.2 Outpatient settings

- a. Place patients requiring airborne precautions in a well-ventilated area as soon as possible.
- b. Give the patient a surgical mask to wear.
- c. Instruct patients to follow the recommended procedure for Respiratory Hygiene.

Airborne Isolation Signage

Airborne isolation signage must be colour-coded **BLUE** and must be available in both English and the dominant local language

4.4.7 Personal Protective Equipment

- a. All HCW must wear the appropriate PPE (fit-tested and seal-checked N95 mask) to protect mucous membranes of nose and mouth; gloves to prevent contamination of the hands from contaminated surfaces; apron or gown (optional as indicated unless there is an anticipation of a splash contamination).
- b. Always wear a N95 when dealing with a patient with a disease transmitted by the airborne route.
- c. A user seal-check should always be performed by the wearer each time the respirator is put on to ensure that the respirator is properly sealed to the face.

- d. A fit-test is recommended to determine the brand and size of respirator required to create the best seal with the Healthcare worker's face. It takes about 20 minutes to complete. Once completed, the HCW must use the specified brand, appropriate size and style of respirator provided in the healthcare facility.
- e. Don PPE before entering the room and properly discard it before leaving, however, the N95 should not be taken off.
- f. Change the gown and gloves between patients even if both patients share a room and both are under Airborne Precautions

4.4.9 Patient Care Equipment

- a. Use disposable or dedicated patient-care equipment (e.g. thermometer, blood pressure cuffs).
- b. If the common use of equipment for multiple patients is unavoidable, clean and disinfect such equipment before using on another patient.
- c. No special precautions are required for patient feeding utensils

4.4.10 Patient Transport

- a. Limit transport and movement of patients outside of the room to medically-necessary purposes.
- b. When transport or movement is necessary, place a surgical mask on the patient and inform the destination Unit, Department or healthcare facility regarding Airborne Precautions.
- c. Instruct the patients to observe Respiratory Hygiene.
- d. Healthcare personnel transporting patients who are on Airborne Precautions should wear a mask or respirator during transport if the patient is wearing a mask and infectious skin lesions are covered.

4.4.11 Environmental Cleaning

- a. Prioritise cleaning and disinfection of the rooms of patients on Airborne Precautions.
- b. Ensure rooms are frequently cleaned and disinfected (e.g. at least daily and prior to use by another patient if in an outpatient setting).

- c. Focus on frequently-touched surfaces and equipment in the immediate vicinity of the patient (Patient zone).
- d. Waste should be treated as clinical infectious waste
- e. Cleaners should wear N95 respirators before entering the room and discard after exiting the room

4.4.12 Discontinuation of Isolation Procedures

This should be done in consultation with the Infection Control practitioner and according to the Hospital Policy for the particular infection

References

1. Centers for Disease Control and Prevention (CDC). 2007)
2. Escombe AR, Oeser CC, Gilman RH, Navincopa M, Ticona E, et al. (2007) Natural Ventilation for the Prevention of Airborne Contagion. PLoS Med 4(2): e68. doi:10.1371/journal.pmed.0040068
3. Natural Ventilation for Infection Control in Healthcare Settings. WHO Guidelines 2009

4.5 Policy 16 – Protective Isolation

4.5.1 Intent

To describe isolation precautions which provide the safe environment needed to prevent and control infections from spreading directly or indirectly to an immunosuppressed patient. Immunosuppression could be as a result of a compromised immune system or extensive loss of skin from burns or other injuries.

4.5.2 Policy Statement

Protective isolation precautions should be used for immunocompromised patients who are at increased risk of acquiring infections from healthcare workers, other patients and their environment including patient care equipment. The patients should be nursed in a Single Room that is preferably sterile but must be clean.

4.5.3 Background

Immunocompromised patients are generally more at risk from their own normal flora however, they must also be protected from the risk of exogenous infections. The risk of acquiring a HAI is increased if IPC policies are not effectively implemented. Transmission of infections occurs mainly through the hands, patient care equipment and procedures, and from the air (fungal spores in dust or from construction or demolition sites in and around the hospital). Many hospitals will not have the resources or infrastructure to adequately provide protective isolation. It is recommended that these patients should be cared for only in specialised centres with the capacity to provide this kind of isolation.

4.5.4 Indications

Neutrophil counts below or expected to fall below $0.5 \times 10^9/L$ can which can occur in patients with:

1. Neutrophilia

- a. Acute haematological conditions e.g. myeloid leukaemia and aplastic anaemia

2. Severe Burns

b. Burns and severe burns

3. Severe immunosuppressed states e.g. Cancers

- c. Severe immunosuppressed as a result of chemotherapy e.g.
 - i. with cancer
 - ii. being prepared for transplantation
 - iii. congenital immunosuppression

4.5.5 Patient Placement

HOW

- a. On the basis of a risk assessment, the Nurse in consultation with the Doctor or on the advice of the Infection Preventionist initiates and maintains protective isolation precautions when there is a susceptible patient

- b. Immunocompromised patients should never be placed in the same room or adjacent to people with a known infection.
- c. The patient should be put in a Single Room with en suite toilet and bathroom facilities preferably with separate ventilation.
- d. Doors should remain closed at all times.
- e. Explain the rationale for isolation to the patient and where possible, the duration of isolation.
- f. Put a Protective Isolation sign on the door.
- g. Limit the number of persons entering the room.
- h. Flowers should be avoided in the room even though they have not been directly linked to infection in immunocompromised patients.
- i. Practice Standard Precautions at all times.

Protective Isolation Signage

Protective isolation signage must be colour coded **YELLOW** and must be available in both English and the dominant local language

4.5.6 Patient Care

- a. Patients are immunocompromised often as a result of endogenous infections. Sites associated with heavy colonization such as the perineum are most commonly affected. These infections may be exacerbated in immunocompromised patients.
- b. Maintain good personal hygiene (e.g. oral hygiene, supportive care to maintain skin integrity).
- c. Toilet and bathroom facilities should be en suite. If this is not possible a commode or toilet should be allocated for their exclusive use.
- d. Patients can shower or have a bath in shared facilities as long as these areas are thoroughly cleaned immediately after use. The use of warm water alone is recommended.
- e. The hygiene requirements of the patients must be assessed to ensure adequate levels of cleanliness.
- f. Heavily colonised areas such as the perineum and the mouth should be monitored closely.

4.5.7 Healthcare Workers

- a. Staff with upper respiratory tract infections or oral herpes simplex should not work with patients on isolation precaution.
- b. If possible, there should be a dedicated nurse for the patient.
- c. Only HCW who are directly involved in patient care should enter the room.
- d. HCW should be bare below the elbows.
- e. All HCW must perform hand hygiene on entering and before leaving the room.

4.5.8 IPC Procedures

4.5.8.1 Hand Hygiene

Strict attention must be paid to hand decontamination in accordance with the WHO '5 Moments' for Hand Hygiene.

4.5.8.2 Protective Clothing

- a. These should be used as indicated. Single-use plastic aprons should be worn for all clinical procedures to provide a protective barrier that will minimise the risk of infection transmission.
- b. Protective clothing should be kept in the ante room. Where there is no ante room, PPE should be kept inside the room.
- c. Required PPE include face masks, plastic aprons, sterile and non-sterile gloves.
- d. Non-sterile gloves must be worn for contact with body fluids in keeping with Standard Precautions.

4.5.8.3 Patient-care Environment

WHAT

- a. The room must always be kept clean with a focus on frequently-touched surfaces and equipment in the immediate vicinity of the patient. (Patient zone).
- b. The room must be cleaned before admission of the patient and at least daily.
- c. Rooms used for protective isolation must be cleaned before other areas to avoid cross contamination.

- d. Mop heads must be freshly laundered or new for each use.
- e. Cleaning cloths must be disposable.
- f. Any damage to walls, floor and ceilings (e.g. cracks, dents or damaged sealants) must be repaired in the shortest time possible. Damaged areas that cannot be effectively cleaned must be documented and reported to the Head of the ward who should ensure that the needed repairs are carried out.
- g. Housekeeping staff should wear gowns and gloves before entering the room and discard the gloves and gown appropriately before leaving.
- h. Waste should be segregated and handled according to the Waste Management policy.

4.5.8.4 Patient Equipment

- a. Wherever possible there should be dedicated equipment for the patient during admission e.g. thermometers, stethoscopes, patella hammers and blood pressure cuffs.
- b. Disposable equipment should be used whenever possible.
- c. Non-disposable equipment must be cleaned before and after each use.
- d. The observation trolley should be placed inside the room.
- e. All patient care equipment should be kept clean and dry.

4.5.8.5 Food

- a. Patients should not be fed with food from home. Foods not prepared in the hospital are considered to be high risk (e.g. food must be ordered from the hospital kitchen).

4.5.8.6 Visitors

- a. Should be preferably close family members.
- b. With any form of transmissible infection must not be allowed.
- c. Should not be more than two at a time.
- d. Must inform the Nurse in charge before entering the room.
- e. Must be reminded of the importance of hand hygiene before being allowed to enter the room.

4.5.8.7 When to Discontinue Isolation Precautions

This should be done in consultation with the IPC practitioners in accordance with the Hospital Policy for the particular infection.

Reference

1. Centers for Disease Control and Prevention (CDC) 2007: Guidelines for Isolation Precautions: Preventing Transmission of Infectious Agents in Healthcare Settings (2007).
2. UNICEF WASH and Infection Prevention and Control Practices in Health-care Facilities.

Checklist

1. HCWs have been trained in protective isolation.
2. HCWs have been trained in aseptic technique and competency is assessed at least once a year.
3. A list of all Isolation Rooms/Areas (location and bed capacity) is accessible to pertinent HCW.
4. The protocols for contact, droplet and airborne precautions are accessible to relevant HCW.
5. The protocol for visitors (duration, conduct and requirements) is available.
6. HCW are trained in the various Isolation Precautions and their respective indications.
7. HCW are trained in patient placement for the respective precautions.
8. The procedure for transporting patients requiring Isolation precautions is accessible to all relevant HCW.
9. Signage for the various Isolation Precautions are available.
10. Appropriate signage is placed outside the door when Isolation Precautions are required.
11. The checklist for Environmental Cleaning of the respective Isolation Rooms is readily accessible to Housekeeping staff.

12. A list of conditions requiring isolation precautions is accessible to the IPC Team, IPC Focal Person and relevant HCW.
13. The IPC Team and Focal person as well as all relevant HCW are aware of discharges, transfers and discontinuation of Isolation Precautions.
14. All tertiary and large secondary healthcare facilities should have at least two and one AIR respectively.
15. Compliance with ANTT and Aseptic techniques is monitored monthly.

Specific Risk Reduction Strategies

5.1 Policy 17 – Aseptic Procedures

5.1.1 Intent

To describe the procedures that will prevent and control the transmission of microorganisms from the hands of HCW, the equipment used and the environment in which healthcare is delivered when the integrity of the skin is breached or broken. It sets out to ensure that HCW have a clear understanding of the principles and applications of aseptic, aseptic non-touch technique and clean procedures. Aseptic techniques often include the use of sterile equipment, sterile gowns and gloves. The principal goal is to keep the patient safe from contamination by pathogens during healthcare activities.

5.1.2 Policy Statement

The Aseptic Technique is a key strategy for preventing the ingress of microorganisms into normally sterile spaces during healthcare delivery. It must be practiced by every HCW whenever there is a breach in the skin and when performing procedures that involve penetration of sterile spaces. Healthcare facilities must ensure that appropriate resources, sterile equipment and trained HCW are available to provide effective asepsis.

5.1.3 Background

Any procedure which breaches the body's natural defenses increases the risk of pathogens accessing sterile sites in the body thereby causing serious infections. Aseptic technique is a set of specific practices and procedures designed to avoid the introduction of organisms into a vulnerable body site or invasive device. It refers to procedures used to make objects and areas free from microorganisms when carrying out medical and nursing activities such as the insertion of devices into sterile areas of the body or cavities (e.g. surgery, insertion of chest tubes, central venous lines or indwelling urinary catheters, care of burns patients to prevent urinary

tract, surgical site, bloodstream and respiratory tract infections that may be device or procedure-related). They are most commonly performed in operating rooms, labour and delivery rooms, diagnostic areas, during special procedures and at the bedside.

5.1.4 Responsibility

The hospital management is responsible for ensuring that adequate resources and processes are in place to ensure effective implementation of IPC best practice wherever and whenever invasive procedures are performed. Every HCW involved in patient care must ensure that the principles of asepsis are understood and integrated into the practice of IPC. Heads of Units and Departments must promote and maintain the standards of asepsis, ensure compliance and regularly review staff competence. The IPC team must review the policy, give advice, monitor effectiveness and evaluate staff competence.

5.1.5 Definitions

Surgical Asepsis refers to a sterile environment and is applied to patients undergoing invasive procedures to prevent potential contamination of the operative or procedural field.

Aseptic non-touch technique (ANTT)

The Aseptic non-touch technique (ANTT) is a standard for safe and effective aseptic practice and refers to practices that prevent contamination by avoiding the touching of key equipment or supplies.

It should be applied to all aseptic procedures such as intravenous therapy; wound care and urinary catheterization (e.g. sterile equipment and supplies that will be introduced into sterile spaces such as needle tips and sterile products used for preparing solutions for injection); the surface of a sterile dressing that will be in direct contact with the wound; skin after it has been disinfected; open wounds and invasive device sites; and seals of IV connectors that have been disinfected prior to medication administration.

Principles of the Aseptic Non-touch Technique

- a. **A**lways perform hand hygiene according to the policy
- b. **N**ever contaminate key parts
- c. **T**ouch non key-parts with confidence
- d. **T**ake appropriate IPC precautions

Clean Technique

This is a modified aseptic technique. A clean technique can be used during the application of dressings to traumatic or chronic wounds e.g. pressure ulcers, leg ulcers, burns and tracheostomy sites (wound healing by secondary intention). These wounds tend to be heavily colonised by bacteria, may or may not be infected and pose a risk of infection.

Where such wounds require cleaning or when a patient requires limbs to be immersed in water as part of their skin care regime or for cleansing traumatic wounds and leg ulcers:

- a. Use sterile saline though good quality potable (drinking) is acceptable.
- b. Perform hand hygiene as appropriate.
- c. Clean or sterile gloves can be used.
- d. Always wear a disposable plastic apron.

For chronic wounds an occlusive dressing material should be used to promote healing and to prevent contamination of the patient's immediate environment. Sterile dressing packs and dressings must be used and the basic principles of an aseptic technique must be applied.

5.1.6 Healthcare Workers' Responsibility

WHAT

- a. Hand hygiene must be performed before undertaking any aseptic procedure.
- b. Inform the patient about the procedure to be performed and ensure the patient:
 - i. understands how to prevent contamination of equipment
 - ii. knows that he/she should refrain from sudden movements, touching, laughing, sneezing and talking over the sterile field.

- c. Choose appropriate PPE to decrease the transmission of microorganisms between the HCW and the patient.
- d. Review hospital procedures and requirements for sterile technique before initiating any invasive procedure.
- e. Healthcare workers who are ill should avoid invasive procedures. If this cannot be avoided, transmission-based precautions must be applied.

5.1.7 Aseptic Technique

HOW

1. The environment of care must be prepared in advance including the decontamination of the trolley, surface or tray according to the policy.
2. Fans should be switched off and windows closed in the environment of care where the procedure will be carried out.
3. Ensure privacy and dignity. Draw the curtain(s) and close the door(s).
4. There should be access to hand hygiene facilities in the environment of care.
5. Restrict access and movement around the patient bed/area.
6. Wait for about 30 minutes after any domestic cleaning or bed-making before performing any other aseptic procedure e.g. wound exposure or dressing.
7. Explain the procedure to the patient.
8. Perform hand hygiene according to the policy. The type of hand hygiene will depend on the procedure. The use of ABHR is usually adequate for many procedures (e.g. setting up IV fluids, wound dressing, peripheral cannula insertion) provided the hands are visibly clean. Surgical hand hygiene is required for surgical procedures.
9. Put on non-sterile gloves and remove the old dressing(s), remove gloves, decontaminate hands and wear the appropriate gloves.
10. Prepare the site.
11. The use of drapes and protective clothing will be determined by the procedure.
 - a. Large drapes and maximal barrier precautions are always required for surgical procedures and central venous catheter insertion.

- b. Sterile gloves, a plastic apron and a small drape are adequate for for wound dressing procedures.
 - c. Clean non-sterile gloves and a plastic apron are adequate for phlebotomy and IV drug administration, provided a non-touch aseptic technique is used.
12. Perform the procedure using non-touch technique ensuring all key parts are protected.
 13. All packaged sterile items required should be assembled before starting the procedure. Staff should ensure that the packaging is intact and the expiry date has not lapsed.
 14. All packaged sterile items such as needles and syringes, should be opened carefully by peeling back the packaging and not pushing it through the backing paper.
 15. Wounds should only be exposed for a minimum time to avoid contamination.
 16. Staff must ensure they are bare below the elbows.
 17. All procedures should be performed in such a way as to avoid contamination of the sterile site and equipment.
 18. Gloves should be changed and hands decontaminated at any stage when contamination has occurred.
 19. Staff must never apply hand hygiene products to gloved hands.
 20. Soiled dressings should be removed carefully (to prevent the shedding of microorganisms into the air during removal) using the inverted waste bag to protect hands or clean non-sterile gloves.

Table 22: Use of Aseptic Non-touch Technique (ANTT) for Specific Procedures

PROCEDURE	TYPE OF ASEPTIC TECHNIQUE
I/V therapy	Standard ANTT
Simple wound dressing	Standard ANTT
Complex or large wound dressing	Surgical ANTT
Urinary catheterization	Standard/surgical ANTT
Cannulation	Standard/surgical ANTT

Table 23. Safety Considerations in the maintenance of Asepsis

SN	CONCEPT	ACTIVITY/RATIONALE
1	All objects used in a sterile field must be sterile.	<p>Check packages for sterility by assessing intactness, dryness, and expiry date prior to use.</p> <ul style="list-style-type: none"> Any torn, previously opened, damaged, or wet packaging, or packaging that has been dropped on the floor is considered non-sterile and must not be used in the sterile field.
2	A sterile object becomes non-sterile when touched by a non-sterile object.	<ul style="list-style-type: none"> Sterile objects must only be touched by sterile equipment or sterile gloves. Keep the tips of forceps facing downwards during a sterile procedure to prevent fluid travelling over entire forceps and potentially contaminating the sterile field.
3	Sterile items that are below the waist level, or items held below waist level, are considered non-sterile.	<ul style="list-style-type: none"> Keep all sterile equipment and sterile gloves above waist level. Table drapes are only sterile at waist level.
4	Sterile fields must always be kept in sight to be considered sterile.	<ul style="list-style-type: none"> Sterile fields must always be kept in sight throughout entire sterile procedure. Never turn your back on the sterile field as sterility cannot be guaranteed.
5	When opening sterile equipment and adding supplies to a sterile field, take care to avoid contamination.	<ul style="list-style-type: none"> Set up sterile trays as close to the time of use as possible. Stay organized and complete procedures as soon as possible. Place large items on the sterile field using sterile gloves or sterile transfer forceps. Sterile objects can become non-sterile by prolonged exposure to airborne microorganisms.
6	Once a sterile field is set up, the border of one inch at the edge of the sterile drape is considered non-sterile.	<ul style="list-style-type: none"> Place all objects inside the sterile field and away from the one-inch border.

SN	CONCEPT	ACTIVITY/RATIONALE
7	If there is any doubt about the sterility of an object, it is considered non-sterile.	<ul style="list-style-type: none"> • Known sterility must be maintained throughout any procedure. • Any puncture, moisture, or tear that passes through a sterile barrier must be considered contaminated. Keep sterile surface dry and replace if wet or torn
8	Sterile persons or sterile objects may only contact sterile areas; non-sterile persons or items contact only non-sterile areas.	<ul style="list-style-type: none"> • The front of the sterile gown is sterile between the shoulders and the waist, and from the sleeves to two inches below the elbow. • Non-sterile items should not cross over the sterile field. • Do not place non-sterile items in the sterile field.
9	Movement around and in the sterile field must not compromise or contaminate the sterile field.	<ul style="list-style-type: none"> • Do not sneeze, cough, laugh, or talk over the sterile field. Keep hair tied back and covered. • Maintain a safe space or margin of safety between sterile and non-sterile objects and areas. • Refrain from reaching over the sterile field. • Keep operating room (OR) traffic to a minimum and keep doors closed. • When pouring sterile solutions, only the lip and inner cap of the pouring container are considered sterile. The pouring container must not touch any part of the sterile field. Avoid splashes.

5.1.7 Reference

1. Adapted from Kennedy, 2013; Infection Control Today, 2000; ORNAC, 2011; Perry et al., 2014; Rothrock, 2014

5.2 Policy 18 - IV Catheter Insertion

5.2.1 Intent

To prevent the contamination of catheters and catheter sites, promote aseptic insertions; and maintain catheter sites so as to prevent and mitigate infection risks associated with these devices.

5.2.2 Policy Statement

Many patients requiring an intravascular catheter are often more susceptible to infection because they have a serious underlying disease. Healthcare workers shall take precautions to prevent the transmission of microorganisms during the insertion of intravascular catheters. The IV catheter should be inserted by a designated and trained HCW with documented competence. The proficiency of insertion as well as the ability to carry out procedures to prevent and reduce the risk of associated infections should be verified periodically.

5.2.3 Background

Intravascular devices (IVD) provide direct access to the patient's vascular system for the administration of pharmaceutical agents or fluids that cannot be administered effectively by other means. It is estimated that up to 20% of inpatients are on an IVD at any one time. All lines provide a potential portal of entry for microorganisms into the vascular system and can cause local or systemic infectious complications. Catheter-related infections are associated with increased morbidity, mortality, medical costs and prolonged hospitalization. Compliance with guidelines will reduce the occurrence of catheter-related infections.

5.2.4 Risk Factors

1. Contaminated infusion fluid or additives.
2. Inadequate hand hygiene during the insertion and maintenance of the device.
3. Access into the infusion sets (cracks, insertion of needles into plastic containers etc).

- a. Non-sterile preparation of the skin before inserting the device.
- b. Immunosuppression.
- c. Non-sterile preparation of intravenous infusion fluid.
- d. Leaking intravenous sets with multiple connections.
- e. Multiple changes of intravenous fluid containers while using the same IV administration set.
- f. Multiple injections and irrigations of the system.
- g. Central venous pressure measurement apparatus.

5.2.5 Principles

WHAT

5.2.5.1 Principles Education, Training and Staffing

1. Educate HCWs about the indications for intravascular catheter use; proper procedures for the insertion and maintenance of intravascular catheters; and clean or surgical technique to prevent intravascular catheter-related infections.
2. Ensure appropriate nursing staff levels in the ICU

5.2.5.2 Healthcare Worker Safety (Standard Precautions)

1. Wear gloves to protect hands against blood and body fluid exposure.
2. Wear a surgical mask with a face shield or goggles to protect against any potential splashes of blood or body fluids onto the mucous membranes of the face.
3. Do not manipulate or recap used needles and promptly dispose of them into hospital-approved sharps containers kept near the point-of-use.

5.2.5.3 Hand Hygiene and Aseptic Technique

1. Perform hand hygiene prior to device insertion and subsequent handling of the device or its administration, such as before and after palpating, inserting, replacing, or dressing the device.

2. Do not palpate insertion sites after application of antiseptic. Maintain aseptic technique for the insertion and care of IV catheters.
3. Wear clean gloves, rather than sterile gloves for the insertion of peripheral IV catheters, if the access site is not touched after the application of skin antiseptics.
4. Wear sterile gloves for the insertion of arterial, central, and midline catheters.
5. Use new sterile gloves before handling the new catheter when guidewire exchanges are performed.
6. Wear either clean or sterile gloves when changing the dressing on IV catheters.

5.2.5.4 Maximal Sterile Barrier Precautions

1. Use maximal sterile barrier precautions, including a cap, mask, sterile gown, sterile gloves, and sterile full body drape for the insertion of CVCs, PICCs or guidewire exchanges.
2. Use a sterile sleeve to protect pulmonary artery catheters during insertion.

5.2.6 Selection of Catheters and Sites (Peripheral and Midline Catheters) Recommendations

WHAT

1. In adults, use an upper extremity site for catheter insertion. Replace a catheter inserted in a lower extremity site with an upper extremity site as soon as possible.
2. In paediatric patients, use the upper or lower extremities or the scalp (in neonates or young infants) as the catheter insertion site.
3. Select catheters on the basis of intended purpose and duration of use; known infectious and non-infectious complications (i.e. phlebitis and infiltration); and experience of the specific HCW inserting the catheter.
4. Steel needles should be avoided in the administration of fluids and medications because they can cause tissue necrosis.
5. Use a midline catheter or peripherally inserted central catheter (PICC),

instead of a short peripheral catheter, when the duration of IV therapy is anticipated to exceed 6 days.

6. Evaluate the catheter insertion site daily by palpation through the dressing to discern tenderness and by inspection, if a transparent dressing is used.
7. Remove peripheral venous catheters if the patient develops signs of phlebitis (e.g. warmth, tenderness, erythema or palpable venous cord); infection; or if the catheter malfunctions.
8. Replace the catheter within 48 hours when adherence to aseptic technique cannot be ensured

5.2.7 Skin Preparation

1. Prepare the skin with an approved antiseptic e.g. 2% chlorhexidine gluconate (CHG).
2. Preparation with alcohol can be used before central line insertion and during change of dressing.
3. If there is a contraindication to CHG, an alternative antiseptic with 70% alcohol, tincture of iodine or an iodophor can be used on patients.
4. Follow these procedures when preparing the site:
 - a. Perform hand hygiene.
 - b. Don gloves.
5. If the intended insertion site is visibly soiled, clean with soap and water before applying the antiseptic using a back-and-forth motion for at least 30 seconds to remove flora that would otherwise be introduced into the vascular system.
6. Do not palpate the insertion site after the skin has been prepared with antiseptic unless the practitioner is employing maximum barrier precautions in a sterile field to maintain asepsis.
7. Antiseptics should be allowed to dry according to the manufacturer's recommendation prior to placing the catheter.

5.2.8 Catheter Site Dressing Management

HOW

1. Use either sterile gauze or sterile transparent, semi-permeable dressing to cover the catheter site.
2. If the patient is diaphoretic or if the site is bleeding or oozing, apply gauze until it is resolved.
3. Replace catheter site dressing if it becomes damp, loose or visibly soiled.
4. Do not use topical antibiotic ointment or cream on insertion sites, except for dialysis catheters, because of their potential to promote fungal infections and antimicrobial resistance.
5. Do not submerge the catheter or catheter site in water. Showering should be permitted if precautions can be taken to reduce the likelihood of introducing organisms into the catheter (i.e. if the catheter and connecting device are protected with an impermeable cover during the shower)
6. Gauze dressings used on short-term central venous catheter (CVC) sites should be replaced every 2 days.
7. Transparent dressings used on short-term CVC sites should be replaced at least every 7 days except for paediatric patients in whom the risk of dislodging the catheter may outweigh the benefit of changing the dressing.
8. Replace transparent dressings used on tunnelled or implanted CVC sites no more than once a week (unless the dressing is soiled or loose), until the insertion site has healed.
9. Ensure that the catheter site care is compatible with the catheter material.
10. Use a sterile sleeve for all pulmonary artery catheters.
11. Use a chlorhexidine-impregnated sponge for temporary short-term catheters in patients over 2 months of age if the CLABSI rate is not decreasing despite adherence to basic prevention measures, including education and training in the appropriate use of CHG for skin antisepsis.

12. Monitor the catheter sites visually when changing the dressing or by palpation through an intact dressing on a regular basis, depending on the clinical situation of the individual patient. If patients have tenderness at the insertion site, fever without an obvious source or other manifestations suggesting a local or bloodstream infection, the dressings should be removed to allow thorough examination.
13. Encourage patients to report any changes in their catheter site or any new discomfort to the attending HCW.

5.2.9 Replacement of CVCs, PICCs and Haemodialysis Catheters

WHAT

1. Do not

- a. Routinely replace CVCs, PICCs, haemodialysis, or pulmonary artery catheters to prevent catheter-related infections.
- b. Remove CVCs or PICCs on the basis of fever alone. Use clinical judgment to determine the need for catheter removal if there is evidence of infection elsewhere or if a fever is suspected to be unrelated to an infection.
- c. Use guidewire exchanges routinely for non-tunneled catheters.
- d. Use guidewire exchanges to replace a non-tunneled catheter suspected of infection.

2. Use

- a. A guidewire exchange to replace a malfunctioning non-tunneled catheter if there is no evidence of infection.
- b. New sterile gloves before handling the new catheter when guidewire exchanges are performed.

5.2.10 Replacement of Peripheral IV Catheters

HOW

1. Peripheral catheters should not be replaced more frequently than every 72 – 96 hours in adults so as to reduce the risk of infection and phlebitis.
2. Replace peripheral catheters in children only when clinically indicated.

3. Carry out hand hygiene before and after replacing catheters.
4. Put on sterile gloves.
5. Check the patient for evidence of phlebitis or infection (warmth, pain, presence of pus).
6. Remove the needle or catheter carefully while covering the insertion site with a sterile gauze.
7. Apply pressure to the insertion site and apply dressing.
8. Dispose of soiled dressing and other waste appropriately.
9. Document clinical observations.

5.2.11 Umbilical Catheters

HOW

1. Remove and do not replace umbilical artery catheters if signs of catheter-related bloodstream infections (CRBSI); vascular insufficiency in the lower extremities; or thrombosis are present.
2. Clean the umbilical insertion site with an antiseptic before catheter insertion. Avoid using tincture of iodine because of the potential effect on the neonatal thyroid. Other iodine-containing products such as povidone-iodine can be used.
3. Do not use topical antibiotic ointment or cream on umbilical catheter insertion sites because of the potential to promote fungal infections and antimicrobial resistance.
4. Add low-dose heparin (0.25 -1.0 U/ml) to the fluid infused through umbilical arterial catheters.
5. Remove umbilical catheters as soon as possible when no longer needed or when any vascular insufficiency to the lower extremities is observed. Optimally, umbilical artery catheters should not be left in place for more than 5 days.
6. Umbilical venous catheters should be removed as soon as possible when no longer needed but can be used up for to 14 days if managed aseptically.

5.2.12 Peripheral Arterial Catheters and Pressure Monitoring Devices for Adult and Paediatric Patients

HOW

1. In adults, use the radial, brachial, or dorsalis pedis sites in preference to the femoral or axillary sites of insertion so as to reduce the risk of infection.
2. In children, use the radial, dorsalis pedis, and posterior tibial sites in preference to the femoral or axillary sites. Do not use the brachial site.
3. During peripheral arterial catheter insertion use a cap, mask, sterile gloves and small sterile drape as minimum PPE requirements.
4. Use maximal barrier precautions during axillary or femoral artery catheter insertion.
5. Replace arterial catheters only when there is a clinical indication.
6. Remove arterial catheters as soon as they are no longer needed.
7. Use disposable instead of reusable transducer assemblies whenever possible.
8. Do not routinely replace arterial catheters in order to prevent catheter-related infections.
9. Replace disposable or reusable transducers at 96-hour intervals.
10. Replace other components of the system (including the tubing, continuous flush device and flush solution) at the same time the transducer is replaced.
11. Keep components of the pressure monitoring system (including calibration devices and flush solution) sterile.
12. Minimise the number of manipulations and entries into the pressure monitoring system.
13. Use a closed flush system (i.e. continuous flush), rather than an open system (i.e. one that requires a syringe and stopcock) to maintain the patency of the pressure monitoring catheters.
14. When the pressure monitoring system is accessed through a diaphragm rather than a stopcock, scrub the diaphragm with an appropriate

antiseptic before accessing the system.

15. Do not administer dextrose-containing solutions or parenteral nutritional fluids through the pressure monitoring circuit.
16. Sterilise reusable transducers according to the manufacturers' instructions if the use of disposable transducer is not feasible.

5.2.13 Replacement of Administration Sets

HOW

1. In patients not receiving blood, blood products or fat emulsions, replace administration sets that are continuously used, including secondary sets and add-on devices no more frequently than 96-hour intervals.
2. Tubing sets used for the administration of blood products should be replaced every 4 hours.
3. Tubing sets used for the administration of lipid emulsions should be replaced every 24 hours.
4. Change infusion bottles or plastic bags with lipid emulsions given alone within 12 hours.
5. Tubing sets used to administer total parenteral nutrition (TPN) should be replaced within 24 hours of initiating the infusion.
6. Needle components will be changed as frequently as administration sets.
7. If the tubing becomes disconnected, wipe the hub of the cannula with 60% – 90% alcohol and connect a new infusion set.
8. Change infusion sets whenever they are damaged or contaminated and after 96 hours routinely.

5.2.13.1 Intravenous Injection Ports HOW

Disinfect the injection ports, catheter hubs and needleconnectors with an alcoholic CHG solution or 70% alcohol before accessing the system in order to reduce contamination.

5.2.14 Preparation and Quality Control of Intravenous Admixtures

HOW

1. Mix all parenteral fluids in the Pharmacy only.
2. Check all containers of parenteral fluid for visible turbidity, leaks, cracks, particulate matter and the manufacturers' expiration dates.
3. Use single-dose vials for parenteral additives or medications whenever possible.
4. If multi-dose vials are used:
 - a. Note the date and time as soon as they are opened.
 - b. Refrigerate after opening if recommended by the manufacturer.
 - c. Cleanse the rubber diaphragm with alcohol before inserting the device into the vial.
5. Use a sterile device each time a multi-dose vial is accessed and avoid touch contamination of the device prior to penetrating the rubber diaphragm.
6. Discard multi-dose vials when:
 - a. suspected or visible contamination occurs.
 - b. the manufacturers' expiration date has lapsed.
 - c. the nursing policy expiration date is reached.

5.2.15 Documentation

WHAT

Document the following information for all procedures related to IV therapy in the patient's record:

- a. Date and time of insertion.
- b. Type of device used and site of insertion.
- c. Type of fluid administered.
- d. Name(s) of person(s) who inserted the device.
- e. Date and time of device termination or guidewire exchange.

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5.3 Policy 19 - Urinary Tract Catheters

5.3.1 Intent

To set guidelines for the safe insertion, maintenance and removal of urinary tract catheters so as to minimise the risk of infection of patients by the completion of and compliance with specified aseptic procedures.

5.3.2 Policy Statement

All pertinent healthcare workers must be trained to identify the risks associated with urinary catheterization and be able to adopt appropriate measures to remove or control such risks for patients requiring urinary catheter devices.

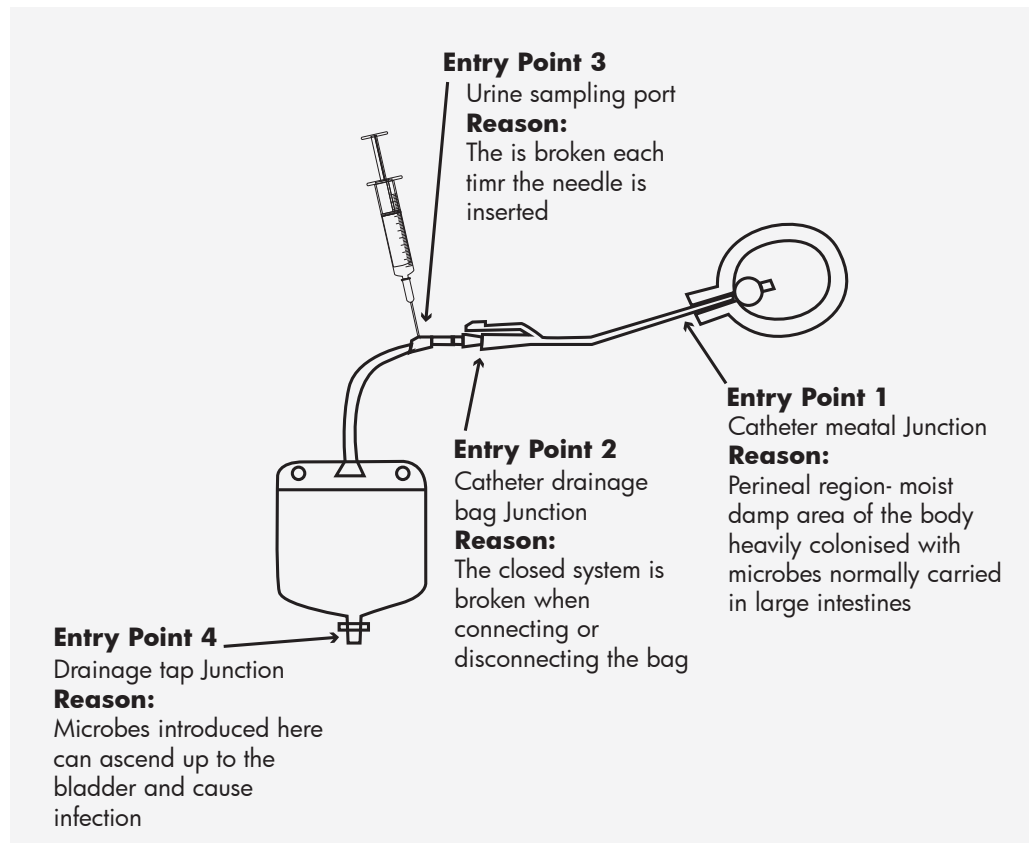
5.3.3 Background

When performing urinary catheterization, a silicone tube (urinary catheter) is inserted into the bladder through the urethra to allow urine to drain freely for collection. Urinary tract infections (UTI) are commonly acquired in the process due to the introduction of the patient's intestinal or skin microflora. This exposure causes Catheter-Associated Urinary Tract Infections (CAUTI) e.g. bacteriuria and nosocomial bacteremia. The CAUTI are the most common HAI with 80% of infections associated with the use of an indwelling catheter.

There is a strong association between the duration of a catheter in-situ and infection rates with a daily increase of 5% for each day of catheterisation.

The main points of entry for microorganisms in urinary drainage systems are the urethral meatus-catheter junction, catheter-drainage tubing junction, drainage tubing-bag junction and the outlet that drains urine from the bag. However, in 33% - 50% of patients the bacteriuria will clear on its own once the catheter is removed. Most of these infections are avoided when preventive practices are effectively implemented to ensure sterile equipment and aseptic transfers.

Figure 30: Identification of Microorganism Entry Points



5.3.4 Responsibility

Nurses and Doctors involved in inpatient care in the relevant wards and units. The doctor inserts the urinary catheter using aseptic techniques. Nursing staff assist the doctor especially for the central venous site

5.3.5 Preventing Catheter Associated Urinary Tract Infection (CAUTI)

HOW

5.3.5.1 Insertion of Catheters

1. Obtain consent from the patient.
2. Assess the need for catheterisation – this may require input from the managing doctor. The following must be documented:
 - a. Clinical indication: The need or reason for catheterisation.

- b. Date and time of insertion.
 - c. Expected duration.
 - d. Type of catheter, size and drainage system.
 - e. Planned date of removal.
3. Clean the urethral meatus with sterile normal saline.
4. Use an approved sterile lubricant from a single-use sterile container. Apply and wait for 5mins before insertion to minimise trauma.
5. Inflate balloon with sterile water.
6. Secure the catheter comfortably to the thigh.
7. Assess and record the continued need for catheterisation every day.
8. Remove catheter when it is no longer clinically indicated.
9. The reason for discontinuation, date and time.

5.3.5.2 Safety Considerations

WHAT

1. Selection of Catheters
 - a. Use smaller gauge catheters with a 10ml balloon because they minimise mucosal irritation, urethral trauma and the presence of residual urine in the bladder all of which increase the risk of CAUTI.
 - b. Never use a female length (short) catheter in a male patient because it causes urethral trauma and predisposes to infection.
2. Use sterile equipment and apply appropriate aseptic techniques during urinary catheter insertion and drainage bag/device manipulation.
3. Catheterisation must only be undertaken by a HCW who is competent in the procedure and whose proficiency has been evaluated.
4. Ensure hand hygiene is performed before and after insertion or device handling.
5. Surgical gloves must be worn for the insertion and manipulation of drainage devices.

Table 24: Choosing the Appropriate Catheter

CATHETER TYPE	SIZE (FR/CH)	LENGTH (CM)	BALLOON SIZE
Adult Male	12/14/16	Standard (40–44)	10ml
Adult Female	12/14	Short (23–26)	10ml
Paediatric	6/8/10/12	30	5ml

5.3.6 Appropriate Maintenance of Urinary Catheters

5.3.6.1 Closed Drainage System

HOW

A closed drainage system must be maintained as this is central to the prevention of CAUTI. The risk of infection is reduced from 97% with an open system to 8–15% when a sterile closed system is used. Unnecessary emptying, changing of the urinary drainage bag or taking a urine sample breach the closed system and increase the risk of CAUTI.

1. Unobstructed urine flow must be maintained by positioning the urinary drainage bag below the level of the bladder to prevent back-flow.
2. Drainage bags should not have contact with the floor. They should be hung on a catheter stand or tied to the side of the bed.
3. Connect the catheter to a sterile closed urinary drainage bag system with a sampling port.
4. Only change catheters and drainage bags based on clinical indications e.g. infection, obstruction or when a closed system is compromised.
5. Always use the sampling port and the aseptic technique to obtain a catheter specimen of urine.
6. Empty the urinary drainage bag when it is three-quarters full.
7. Use a separate, clean disposable container for each patient and avoid contact between the urinary drainage tap and the container when emptying the drainage bag.
8. Do not add antiseptic or antimicrobial solutions to urinary drainage bags or use bladder maintenance solutions to prevent CAUTIs.
9. Daily routine personal genital hygiene is adequate for meatal cleansing.

10. Decontaminate hands and wear clean non-sterile gloves before manipulating the catheter or closed system, including drainage taps.
11. Decontaminate hands immediately following the removal of gloves.

Note: Systemic antibiotic prophylaxis, bladder irrigation with normal saline and addition of antiseptics to drainage bags are not known to be effective in preventing CAUTIs.

5.3.6.2 Removal of Catheters

HOW

1. Indwelling urinary catheters should be removed as soon as possible to reduce the risk of UTI.
2. Organise the supplies at the point-of-care (a pair of clean examination gloves and a syringe).
3. Carry out hand hygiene.
4. Put on the gloves.
5. Empty the catheter balloon using a syringe and ensure the volume removed is the same as the volume previously inserted.
6. Swab the urethral meatus twice with sterile gauze soaked in an antiseptic solution using sponge forceps.
7. Gently remove the catheter.
8. Dispose of all waste appropriately.
9. Remove gloves and carry out hand hygiene.

5.3.6.3 Important considerations

WHAT

1. Patients should be catheterized only for appropriate indications. Where necessary, the duration of drainage should be limited especially in those at higher risk for CAUTI or mortality from catheterisation such as women, the elderly, and patients with impaired immunity.

2. Avoid catheterisation for the management of incontinence. Urinary catheters should not be routinely used for surgical patients. Where there is an indication, remove the catheter within 24 hours unless there is an appropriate indication for continued use. Consider alternatives to indwelling catheters such as external catheters, intermittent catheterization and urethral stents in selected patients where appropriate.
3. Catheterised patients should have a daily fluid intake of at least 2 litres if clinically appropriate.
4. The IPC team should be informed about all patients with an indwelling urinary catheter in situ for surveillance, monitoring and audit purposes, and to enable the team to proffer advice about individual patient management in order to reduce the risks of CAUTI.
5. There should be audit of and feedback about compliance with catheter insertion and maintenance documentation.
6. Staff should receive continuing professional education regarding the indication for and the insertion, maintenance and removal of the different types of catheters.

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5.4 Policy 20 – Central Venous Pressure Line Insertion

5.4.1 Intent

To describe the procedure for setting central IV lines and establish guidelines for such procedures.

5.4.2 Policy Statement

The indications and procedure for inserting central venous catheters shall be documented and readily accessible at every point-of-use. The supplies needed shall be available at the time required and the competency of HCW involved in this procedure shall be assessed periodically by the designated Doctor(s) or Nurse(s).

5.4.3 Background

Central venous catheters (CVC) may be used to access the great veins for infusion of irritant solutions or to facilitate hemodynamic monitoring. Central venous lines are also used to provide prolonged venous access.

5.4.4 Responsibility

Doctors and Nurses in the relevant Departments and Units

5.4.5 Procedure

5.4.5.1 Site Selection

- a Weigh the risks and benefits of placing a device at a recommended site to reduce infectious complications against the risk of mechanical complications (e.g. pneumothorax, subclavian artery puncture, thrombosis and hemothorax)
- b. Avoid using the femoral vein for central venous access in adult patients.
- c. Use a subclavian site rather than a jugular or a femoral site in adult patients to minimise infection risk for non-tunneled CVC placement.
- d. Avoid the subclavian site in hemodialysis patients and patients with advanced kidney disease to avoid subclavian vein stenosis.

- e. Use a fistula or graft in patients with chronic renal failure instead of a CVC for permanent access for dialysis.
- f. Use ultrasound guidance to place CVC (if this technology is available) in order to reduce the number of cannulation attempts and mechanical complications. Ultrasound guidance should only be performed by HCW who are trained and competent in this technique.

5.4.5.2 Insertion

- a. Insert CVCs only when indicated, remove any intravascular line when no longer needed.
- b. Use an all-inclusive catheter kit or cart.
- c. Use single-lumen CVC unless multiple ports are essential for patient care.
- d. Always use a CVC insertion checklist such as the central line bundle to ensure adherence to IPC best practice at the time of insertion.
- e. CVC insertion should be performed or observed by an appropriately trained Nurse or Physician to ensure that Aseptic Technique is maintained.
- f. HCWs should be empowered to discontinue the procedure if breaches in Aseptic Technique are observed and until corrective actions are taken.
- g. At insertion, clean hands by using an ABHR or antiseptic soap and water.

5.4.5.3 Post-insertion Dressing of the Site

- a. Use a CHG-containing dressing for CVCs in patients over 2 months of age and change it every 7 days or as soon as it becomes soiled, loose or damp.
- b. Use gauze dressing if blood is oozing from the insertion site and if the patient is diaphoretic. Change it every 2 days or earlier if the dressing becomes soiled, loose or damp.

5.4.5.4 Accessing the Site

- a. Perform appropriate hand hygiene.

- b. Always disinfect catheter hubs before every access to the port, needleless connectors, and injection ports before accessing the catheter. Disinfection involves applying mechanical friction for at least 15 seconds using the hospital-approved antiseptics.
- c. Whenever available, use an antiseptic-containing hub/ connector cap or port protector to cover connectors and use according to manufacturer's instructions.

5.4.5.5 Special Approaches for Preventing CLABSI

- a. Bathe ICU patients over 2 months of age with a CHG preparation every day. Use with caution in premature infants or infants under 2 months of age as this product may cause irritation or chemical burns.
- b. Use antiseptic or antimicrobial-impregnated CVC for adult patients.
- c. Use CHG-containing sponge dressings for CVC in patients over 2 months of age.
- d. Use antimicrobial locks for CVC

5.4.5.6 Replacement of CVC

1. Do not

- a. Routinely replace CVCs, PICCs, hemodialysis catheters, or pulmonary artery catheters to prevent catheter-related infections.
- b. Remove CVCs or PICCs on the basis of fever alone. Use clinical judgment regarding the appropriateness of removal if there is evidence of elsewhere or if a non-infectious cause of fever is suspected.
- c. Use guidewire exchanges routinely for non-tunneled catheters.
- d. Use guidewire exchanges to replace a non-tunneled catheter suspected of infection.

2. Use:

- a. A guidewire exchange to replace a malfunctioning non-tunneled catheter if there is no evidence of infection.

- b. New sterile gloves before handling the new catheter when guidewire exchanges are performed.

5.4.5.7 Replacement of Peripheral and Midline Catheters

- a. There is no need to replace peripheral catheters in adults more frequently than every 72–96 hours so as to reduce risk of infection and phlebitis.
- b. Replace peripheral catheters in children only when clinically indicated.
- c. Replace midline catheters only when there is a specific indication. The indication must be documented.

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5.5 Policy 21 – Wound Management

5.5.1 Intent

To establish guidelines for the proper management of wounds in order to reduce the risk of infection that will delay the healing process.

5.5.2 Policy Statement

All wound dressings must be carried out using the appropriate aseptic technique that will prevent the infection of the wound and contamination of the environment.

5.5.3 Responsibility

All clinical staff involved in wound care. The IPC Nurse must ensure compliance with this policy.

5.5.4 Background

The intact skin is the first defence of the body which when breached results in the activation of an inflammatory immune response that helps to heal the wound site. The repair mechanism is hindered by several factors such as the presence of debris or foreign bodies, bacteria, poor immune responses, malnutrition and old age.

5.5.5 Stages of Wound Healing

- Primary intention (no tissue loss). These wounds are caused by breaks in the skin as a result of trauma or surgical procedures. The edges are held together by sutures, glue or clips. They usually heal quickly with minimal scar formation.
- Secondary intention (tissue loss). Wounds extend into the dermis or deeper layers e.g. chronic wounds such as pressure sores and leg ulcers (which may or may not be infected). Healing is by the formation of granulation tissue.
- Tertiary intention: This happens when a surgical wound breaks down. Surgical intervention is often required to remove the cause of the infection, a haematoma or a large collection of pus that can cause the wound to dehisce.

5.5.6 Assessing Wounds

HOW

All wounds will be assessed and documented before dressing and at every dressing change for:

- a. **Type:** acute or chronic; infected or uninfected
- b. **Location** (site or sites)
- c. **Size:** length, width and depth (in mm)
- d. **Wound bed:** necrotic, sloughing or infected or healthy granulation and evidence of epithelialisation
- e. **Surrounding skin:** Integrity
- f. **Exudate:** amount and colour
- g. **Odour:** presence and pungency
- h. **Pain:** level based on a nominal scale e.g. Wong Baker or equivalent
- i. **Pressure Sore:** Identify the stage using an approved nominal scale (i.e. Grades 1 – 4). A pressure sore identified as Grade 2, 3 or 4 **must be reported** to the IPC Nurse

5.5.6.1 Signs and Symptoms of an Infected Wound

- a. Increased exudate, redness and swelling
- b. An offensive smell
- c. Increased heat and pain in the surrounding area
- d. Associated symptoms: fever and/or general malaise
- e. Redness and warmth (normal and not a sign of infection if this is within 1cm of the wound edges).

5.5.7 Wound Dressing: Standard Procedure

- a. All wounds should be dressed using an Aseptic Technique, to minimise the risk of cross contamination.
- b. Ensure all equipment and consumable supplies (swabs, gauze, plaster, bandage) have been collected prior to commencing the Aseptic Technique. This will include a sterile dressing pack, sterile dressings, sterile/single-use scissors.

- c. Carry out the procedure as quickly and efficiently as possible to prevent the wound from prolonged cooling (healing is slowed when the wound cools) and to reduce the risk of cross contamination.
- d. To remove gross contamination, wounds can be irrigated gently with normal saline (0.9%) applied at room temperature. Care should be taken to avoid trauma to tissues or splash back. Patients with leg ulcers and pressure sores can have a shower or bath prior to the Aseptic Technique procedure.
- e. Only wash the wound if exudate, necrotic or sloughed tissue needs to be removed, if the wound is infected or part of the dressing has adhered to the wound bed. Unnecessary wound cleaning may cause trauma and remove healthy skin tissue.
- f. The general use of antiseptics, disinfectants and dyes is not recommended as these are cytotoxic to fibroblasts.

5.5.8 Infection Control Practices

WHAT

The following IPC measures should be followed when performing wound care. Standard precautions are a routine practice that should be followed at all times to prevent infection transmission.

1. Hand Hygiene

- a. Hands shall be washed with soap and water when visibly soiled with blood, body fluids, secretions, excretions and exudates from wounds.
- b. When hands are not visibly soiled use an ABHR or wash with soap and water.

2. Personal Protective Equipment

- a. Gloves should be worn for contact with the wound or wound drainage. Caregivers should wear appropriate PPE (gowns/aprons, masks, eye protection/face protection) when splash or spray from wound drainage/irrigation is anticipated.
- b. N95 respirators must be worn when irrigating wounds infected with TB.

3. Waste Disposal

- a. All used dressings and disposable supplies should be placed directly in a leak proof bag which should be tightly sealed and placed in the clinical waste container.
- b. Irrigation solution and wound drainage should be disposed of by carefully pouring into the sluice drain (to prevent splashing) or similarly designated outlet.
- c. All used disposable sharp instruments (e.g. needles, lancets, scalpel blades, broken or easily broken glass items) should be discarded at the point of use, in a puncture-resistant and leak-proof container.

4. Aseptic Technique

- a. This involves practices designed to render and maintain equipment, devices, surfaces, objects and areas maximally free from microorganisms.
- b. The 'sterile to sterile' principle must be adhered to at all times.
- c. Involves the use of barriers such as gloves, gowns, masks and drapes to prevent the transfer of microorganisms from HCW or the environment to the patient, resident or client during the procedure.
- d. Specific practices for wound care management include meticulous hand hygiene, preparation of patient skin with antiseptic agent, single-use devices and equipment or appropriately cleaned and reprocessed devices and equipment and maintaining a sterile field by the HCW.

5. Clean Technique

- a. This involves practices which reduce the numbers of microorganisms and minimise the risk of transmission from the HCW and the environment to the patient.
- b. The 'sterile to sterile' principle is not applicable.
- c. Specific wound care management practices include meticulous hand hygiene, single-use or appropriately cleaned and reprocessed devices and equipment, barriers, no-touch technique, sterile materials and supplies and maintaining a clean field by the HCW.

6. Wound Cleansing Agents/Equipment

- a. All wound-cleansing agents should be inspected for any evidence of damage to the container or packaging, leaks, presence of foreign material, dust, dirt or mould (fungus) before use.

- b. The wound-cleansing agent should be handled in a manner that will avoid contamination of the fluid between the outer neck of the bottle and the inside of the top of the cap.
- c. Irrigating solution must be labelled with the date and unused or left-over portions discarded daily.
- d. Discard the needle and syringe used for irrigating immediately after every use.
- e. Tape must not be used to seal or secure the container.
- f. Unused contents of single-use non re-sealable containers of normal saline should be discarded immediately after use.
- g. Solutions used for wound cleansing should never be 'decanted' or 'topped up' from bulk containers into smaller ones.
- h. Wound cleansing agents dispensed from a spray applicator must be used according to the manufacturers' directions and be dedicated to single patient use.
- i. When cleansing a wound with a spray applicator product, the container must be held 16 - 21cm (6 - 8 inches) away from the wound bed to prevent contamination of the bottle and its contents.

7. Dressing, Pastes and Gels

- a. Opened dressings should be stored in a clean and separate area and be introduced only when required.
- b. Pastes and gels should be single-use only.
- c. Outer packaging and containers of pastes must be handled with clean hands/clean gloves. Care must be taken not to contaminate the contents of the packages or containers.
- d. Manufacturers' written recommendations for shelf life and storage conditions must be followed.

8. Multiple Drug Resistant Organisms (MDRO)

- a. The names of patients who are colonised or infected with an MDRO, e.g. Methicillin resistant *Staphylococcus aureus* (MRSA) or Vancomycin-resistant *Enterococcus* (VRE) should be provided to the IPC Team for follow-up according to the MDRO Policy.
- b. Contact Precautions must be followed for all patients with wounds that are positive for an MDRO.

References

1. APIC Text of Infection Control and Epidemiology. Copyright 2005. (pp. 20–2, 20–3). Aseptic Technique.
2. Association for Professionals in Infection Control (APIC) and Wound Ostomy Continence Nurses Society (2001). Position Statement, Clean Vs. Sterile: Management of Chronic Wounds. APIC, 20 (1), 19–21.

5.6 Policy 22 – Phlebotomy

5.6.1 Intent

To establish guidelines to reduce exposures and transmission of blood-borne viruses and encourage safe phlebotomy practices.

5.6.2 Policy Statement

Needlestick injuries are one of the most common healthcare-associated infections that occur in healthcare workers. Unsafe injection practices therefore expose HCW to the risk of blood-borne infections and also cause harm to patients. All HCW must be trained in the appropriate procedures to prevent transmission of blood-borne pathogens and compliance must be monitored accordingly.

5.6.3 Background

Phlebotomy is the procedure by which blood is drawn from the circulatory system. It exposes the HCW to the risk of blood-borne pathogens (e.g. HBV, HBC, HIV and VHF). Improper blood sample collection also leads to inaccurate investigation results. In most healthcare facilities, the laboratory HCW is responsible for most phlebotomy procedures and the handling of all body fluids particularly in the outpatient setting. Blood must be collected using Standard Precautions at all times.

5.6.4 Responsibility

All HCW who insert intravascular catheters, draw blood and are involved in surveillance and control of infections in hospital, outpatient and home healthcare settings.

The management and policy makers are responsible for providing adequate and appropriate equipment and devices (i.e. syringes, needles, PPE, consumable supplies, disposal containers) as well environments that facilitate safe injection practice and phlebotomy procedures. Appropriate training and education should be provided for HCW, proficiency must be assessed and compliance must be monitored periodically. The IPC Team is responsible for ensuring effective implementation of the practices and procedure across all relevant departments and units.

5.6.5 Safety Considerations

WHAT

1. Hand hygiene

- a. The five moments of Hand hygiene must be followed strictly especially Moment 2 (before aseptic procedures) and Moment 3 (after body fluid exposure risk).
- b. Hand hygiene must be performed if your hands become soiled between injections, whenever they become soiled or when they come in contact with an unclean surface.
- c. Do not carry out phlebotomy if you have a skin infection or trauma.

2. Gloves and other single-use PPE

- a. HCW should wear non-sterile well-fitting latex or latex-free gloves.
- b. Do not use the same pair of gloves for more than one patient.
- c. Masks, goggles, face shields and other PPE are not required for phlebotomy.

3. Skin preparation and disinfectant

- a. If injection is visibly dirty, wash with soap and water.
- b. Use 70% alcohol for routine collection for laboratory tests.
- c. Use 2% chlorhexidine in 70% alcohol for collection of blood for culture and donation.
- d. Do not use chlorhexidine in 70% alcohol in children under 2yrs of age.
- e. Apply disinfectant on a single-use swab or cotton wool ball.
- f. Wipe from the centre outwards in concentric circles.
- g. Allow the skin to dry for at least 30 seconds.

- h. Do not touch the site once it has been disinfected.
- i. Do not use methanol.
- j. Do not keep cotton wool soaked in a container with disinfectant as this becomes highly contaminated.

5.6.6 Withdrawing Blood from a Vein

HOW

1. Location/Environment/Point-of-Procedure

- Provide a comfortable and appropriate location for the phlebotomy. This should preferably be a dedicated phlebotomy cubicle with a clean surface, two chairs (one for the Phlebotomist and the other for the Patient) or a reclining couch with an arm rest or at the patient's bedside.
- Ensure close proximity to handwashing facilities or have ABHR within arm's reach.
- Ensure that the indications for blood sampling are clearly defined, either in a written protocol or as documented instructions (e.g. on a Laboratory Request Form)

2. Select Site and Apply the Tourniquet

- Select the anatomical site preferably the antecubital area (bend of the elbow).
 - a. Do not touch the site once alcohol or the antiseptic has been applied.
 - b. Apply a tourniquet about 4-5cm (finger widths) above the selected venepuncture site.
 - c. Put on gloves.

3. Disinfect Site and Anchor Vein

- a. After palpating the path of the vein, clean the venepuncture site with alcohol using a circular motion. Allow the area to dry for 30 seconds.
- b. Anchor the vein by holding the patient's arm and placing a thumb below the venepuncture site.
- c. Have the patient or client form a fist so that the veins become more prominent.
- d. Put on well-fitting non-sterile gloves.

4. Enter Vein and Release Tourniquet Before Withdrawing Needle

- a. Enter the vein swiftly at an angle of 30 degrees.
- b. Once sufficient blood has been collected, release the tourniquet before withdrawing the needle.

5. Withdraw Needle and Discard

- a. Withdraw the needle gently and then give the patient a clean gauze to apply to the site using gentle pressure.
- b. Discard the used needle and syringe or blood-sampling device into a sharps container (Safety Box).

6. Check Label and Discard Waste

- a. Check the label and Laboratory Request Forms for accuracy and completeness of documentation.
- b. Discard sharps and broken glass into the sharps container. Place items that can drip blood into the infectious waste bin.

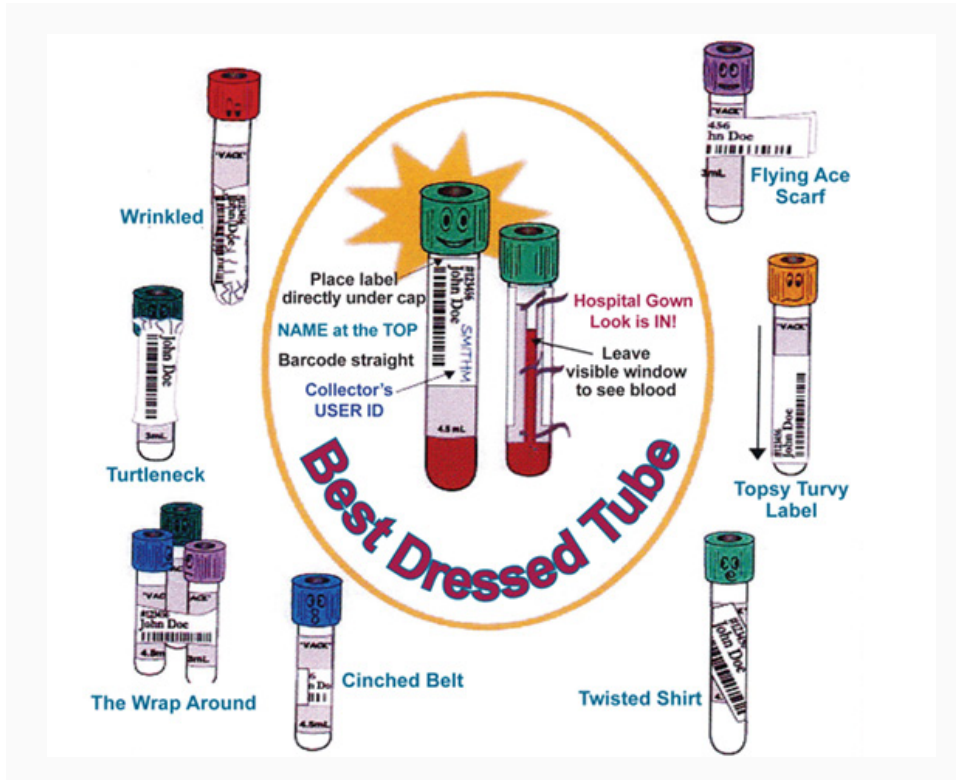
7. Hand Hygiene (again!)

- a. Remove gloves and place them in the infectious waste container. Perform hand hygiene.
- b. If using soap and water, dry hands with single-use towels.

8. Properly labelled tube

- a. The identity of the patient must be validated before starting the procedure.
- b. The specimen bottle of vacutainer may come with or without a pre-affixed label.
 - i. If the label is pre-affixed, the transcribed information must be cross-checked for accuracy and completeness. If there is an error, this must be recorded separately and the designated person notified BEFORE affixing the correct label over the existing one. The correct label must be endorsed by the Supervisor or designated staff. Alternatively, designated labels specific for this purpose could be used.
 - ii. If the label is to be affixed after transcription, accuracy and completeness must be verified before affixing the label to the specimen bottle. label should be checked for all-round and intact adhesiveness especially around the edges.

Figure 31: Properly Labelled Tube Source: laboratoryalliance.com



Checklist

General

1. The IPC Team or Focal person developed a facility-wide programme to reduce the risk of HAI among HCWs and patients in collaboration with relevant stakeholders.
2. The programme in (1) is approved by the IPC Committee and monitored by the IPC Team or Focal Person.
3. The Head of the facility is aware of the outcomes and effectiveness of the risk-reduction programme through monthly reports.

Aseptic Procedures

1. All relevant HCW are trained in the principles of ANTT and Asepsis.
2. SOPs for ANTT, Aseptic Technique and Clean Technique are accessible to relevant HCWs at the respective points of care.
3. HCWs are trained in the procedures outlined in (2) and proficiency is assessed at least once a year.
4. HCWs know the indications for the different types of ANTT.
5. Scheduled and spot checks for compliance are conducted by the IPC Team or Focal Person.

Catheters

1. SOPs for catheter selection, insertion, maintenance, removal and replacement are accessible to designated HCWs at the respective points of use.
2. HCWs designated/permitted to select, insert, remove and replace catheters are known by other staff in the respective Departments/Units.
3. Designated HCWs are trained in the indications as well as the procedures for selection, insertion, removal and replacement of the various types of catheters in different patients.
4. Proficiency of designated HCW in performing the respective procedures is assessed at least once a year.
5. Compliance with the SOP is monitored at least quarterly.
6. Compliance with the use of PPE and 5 Moments of Hand Hygiene are monitored during catheter selection, insertion, removal and replacement.
7. CABSIs, CLABSIs and CAUTIs are audited and monitored at least monthly.

8. The protocol for disposal of catheters is accessible to relevant HCW and compliance is monitored at least quarterly.

2. Wound Management

1. SOPs for managing different types of wounds are accessible to pertinent HCW at the respective points of care.
2. Adequate PPE and consumable supplies as well as sharps container(s) are available at the respective points of use.
3. Relevant HCW are trained in the management of different types of wounds.
4. Documented Wound Assessments are audited by the IPC Team or Focal Person.
5. Lists of patients with or recovered from MRDO-related colonisations or infections are maintained and monitored by the IPC Team or Focal Person.
6. The MDRO Policy is effectively implemented by all pertinent HCW.
7. The SOP for disposal of removed wound dressings is effectively implemented and compliance is monitored at least monthly.

3. Phlebotomy

1. The Policy and SOP for Phlebotomy are effectively implemented by all relevant HCW.
2. The protocols for needlestick injuries and post-exposure prophylaxis (PEP) are accessible to and effectively implemented by relevant HCW.
3. All relevant HCWs are trained in the Safety Considerations regarding phlebotomy.
4. All needlestick injuries and PEP are monitored by the IPC Team or IPC Focal Person.
5. Protocols for sample collection, result validation, Internal Quality Control.
6. Compliance with the schedule for External Quality Assessments (where indicated) by relevant stakeholders is monitored by the IPC Team or IPC Focal Person.
7. There is a Standard for labelling collected blood samples and compliance is monitored at least monthly.
8. Compliance with SOPs, protocols and Standards is monitored by the IPC Team or IPC Focal Person.
9. Adequate PPE and consumable supplies are available at the points of use.

IPC Considerations for Diseases and Pathogens of Interest

6.1 Policy 23 – Diseases and Pathogens of Interest

6.1.1 Intent

To develop guidelines and policies for the management of infection resulting from certain pathogens of special interest to infection control practitioners.

6.1.2 Policy Statement

All healthcare workers must follow the policies for the management of these identified infections of interest, using evidence-based treatment guidelines which promote breaks in the infection chain within the healthcare facility.

6.1.3 Background

Certain pathogens are of particular significance in IPC because of their ability to cause major outbreaks within the healthcare facility or community. All efforts are required to control the spread of infection by:

- a. Identifying the source of infection
- b. Preventing cross infection
- c. Ensuring that all Standard and Transmission-based Precautions are adhered to during all phases of patient care

The effective implementation of established guidelines is essential for the protection and safety of patients, staff and visitors to the environment of care. The documentation and reporting (notification) of such infections especially when they occur in large numbers to the appropriate public health authorities is mandatory.

6.1.4 Responsibility

IPC Committee, IPC Team and/or IPC Focal Person

6.2 Policy 25 – Infection Control for Multi-Drug Resistance Organisms (MDRO)

6.2.1 Intent

To limit the spread and prevent cross infection from Multi-Drug-Resistant-Organisms within the healthcare facility and support the rational and judicious use of antimicrobial agents.

6.2.2 Policy Statement

All infections that are known to be multidrug resistant as well as patients with infections that are resistant to broad spectrum and restricted antimicrobial agents should be documented. The NCDC should be formally notified and the appropriate actions taken to manage the affected patients in accordance with the policy. The IPCC, Team and/or Focal Person should monitor the incidence, prevalence and outcomes in collaboration with relevant healthcare workers. The Head of every healthcare facility should be aware of the effectiveness or otherwise of interventions implemented to control and address antimicrobial resistance (AMR).

6.2.3 Background

Antimicrobial resistance is a threat to all aspects of health practice including IPC resulting in poorer health outcomes (morbidity and mortality) and a significant increase in the cost of healthcare. Multiple drug resistant organisms (MDRO) are microorganisms predominantly bacteria, that are resistant to one or more classes of antimicrobial agents. Although the names of certain MDROs describe resistance to only one agent (e.g. MRSA, VRE), these pathogens are frequently resistant to most available antimicrobial agents and can spread easily through a healthcare facility resulting in large outbreaks that are difficult to treat and control. They also include extended spectrum beta-lactamase and carbapenamase-resistant gram-negative organisms.

6.2.4 Responsibility

All HCWs are expected to follow Standard Precautions with all patients, contact precautions for patients with MDROs and airborne precautions for patients with MDR TB. The IPC Team and/ or Focal Person should investigate and provide oversight regarding the effective implementation of measures to contain any recognised MDRO.

6.2.5 Generic Measures for Controlling MDRO

WHAT

The broad goals are to:

1. Identify affected patients.
 2. Isolate them to prevent spread to other patients, HCW and reduce environmental contamination measures.
 3. Determine if transmission and dissemination continue to occur by carrying out microbiological investigations
 4. Carry out further measures to contain the outbreak such as environmental cleaning, treatment of affected patients and disinfection.
 5. Notify the necessary officials in the facility, at state and national levels
- There are also pathogen-specific procedures for each MDRO.

6.2.6 Some MDROs that are Resistant to Antimicrobial Agents

6.2.6.1 Methicillin-Resistant *Staphylococcus aureus* (MRSA)

WHAT

MRSA refers to strains of *Staphylococcus aureus* that are resistant to:

1. Synthetic penicillin (oxacillin, nifloxacin and methicillin)
2. Cephalosporins
3. Beta lactam antibiotics; and
4. Other antibiotics (erythromycin, clindamycin, aminoglycoside, and quinolones).

MRSA usually affects immuno-compromised, vulnerable or debilitated patients, such as patients in Intensive Care Unit undergoing surgical interventions or with deep soft tissue infections.

HOW

1. Contact Precautions should be used in addition to Standard Precautions
2. Screening can be initiated when MRSA is suspected or during outbreak management.

Patients with Suspected MRSA Infection

HOW

1. Initiate contact isolation precautions
2. Screen patients suspected to be infected with MRSA
3. The body sites and persons to screen include:
 - a. Anterior nares and groin
 - b. Non-intact skin areas (e.g. open wounds and sores, tracheostomy, skin lesions;

MRSA contaminates hands, equipment and the environment and spreads by hand-to-hand contact, contact with devices such as intravenous catheters or during invasive procedures. To reduce cross-contamination, HCWs must perform hand hygiene before and after visiting a patient, clean equipment after every patient use and ensure that the environment is kept clean and dry.

Patient Admission

HOW

- a. Place patient in single room for contact isolation. If a single room is not available, then two or more patients receiving MRSA screening may be cohorted after consultation with the IPC Team or IPC Focal Person.
- b. Place a contact isolation sign on the outside of the Isolation Room door or if the patient is sharing a room.
- c. Ensure that all staff comply with the Isolation Precautions and Hand Hygiene policies.

- d. Change all PPE and perform hand hygiene between patients in the same room.
- e. Cohort non-critical items such as stethoscopes and pressure cuffs along with each patient.
- f. Store the minimum essential quantity of supplies required in the patient's room.
- g. Limit the patient's activities outside of the ward.

When a patient is MRSA-positive, the following notifications should be made:

- a. Receiving departments/wards (e.g. Radiology, Endoscopy, Clinics, OR) about the isolation status of the patient before being transported or transferred for treatment or tests.
- b. The IPC Unit/Team leader – about all new positive MRSA cultures.
- c. The designated authorities and/or agencies at the Local Government, State and Federal Levels.

Sample collection is vital to ensure that the appropriate antibiotic is prescribed based on the sensitivity of the organism.

Discontinuation of Contact Isolation

1. This must occur in consultation with the IPC physician.
2. Criteria for discontinuing isolation:
 - a. Antibiotic therapy is completed at least three days prior to rescreening.
 - b. Three consecutive negative cultures from all previously positive sites. If the first set of samples were taken 3 days after antibiotics are negative, repeat cultures 48 hours later.
 - c. The patient should not be on antibiotic therapy at any time during the rescreening process.

Cleaning of the Patient's Room after discharge

- a. Terminal cleaning upon patient discharge.
- b. The room can be used as soon as all cleaned surfaces are dry.
- c. Keep a covered linen hamper in the isolation area.

6.2.6.2 Vancomycin-resistant Enterococci (VRE)

WHAT

- a. Vancomycin-resistant enteric (VRE) Infections when found in the ICU and transplant Units are difficult to treat.
- b. These organisms easily colonise the GIT, perineum and vaginal areas in patients
- c. They can survive in the environment. Infection transmission can occur through the hands as well as contaminated surfaces and equipment.
- d. Healthcare workers should apply Contact and Isolation Precautions in addition to Standard Precautions when in contact with infected patients. Appropriate PPE are gloves and plastic aprons.

IPC Practice

WHAT

- a. Isolate colonised or infected patients in a separate room or cohort patients if more than one patient is affected.
- b. Equipment used on each patient must be dedicated to that patient only.
- c. All surfaces must be cleaned with chlorine or alcohol solution before and after patient contact.
- d. Floors and environmental cleaning should be done at regular intervals using hot water and detergent.
- e. Choice of antibiotic therapy should be carefully considered to prevent the emergence of resistant enterococci.

Patient Transport

Transfer of patients to other units should be restricted, but when necessary, disposable gloves and aprons should be worn by HCW. Alcohol-based hand rub should be used regularly for hand hygiene.

6.2.6.3 MDR Gram-negative Organisms

1. ESBL Producing Gram-Negative Organisms

- a. Extended Spectrum Beta-Lactamase (ESBL) Gram negative bacteria (e.g. strains of *E. coli* and *Klebsiella pneumoniae*) are a group of Enterobacteriaceae which break down penicillins and cephalosporins thereby rendering them ineffective when used for treating infections.
- b. They are present in the GIT and can therefore be spread through the faecal-oral route.
- c. Most ESBL infections are spread by direct contact with the body fluids (e.g. blood, urine, faeces, wound exudate or phlegm) of an infected person.
- d. It can also be transmitted by contact with contaminated equipment and surfaces.
- e. Apply contact precautions in addition to standard precautions when in contact with infected patient. Gloves are the required PPE.
- f. Effect of ESBL bacteria on Infection Prevention and Control e.g.

UTIs caused by ESBL bacteria, which may require:

- i. More complex treatment and are very difficult to treat
- ii. Hospitalization of patient i.e. increased treatment costs and increase in length of hospital stay

2. Carbapenem-Resistant Enterobacteria (CRE)

CRE are normally resident in the GIT and can cause infections in the blood, wound, bladder and lungs. CRE infections have limited treatment options and high mortality rates. Infection transmission is by contact with infected wounds or faecal matter of a colonised patient through the hands of HCW and/ or contaminated medical devices.

Contact Precautions and Standard Precautions must be applied when in contact with infected patients. Hand hygiene practice is the most effective IPC measure.

Persons at Risk of Transmission

- a. Immunosuppressed patients within the hospital
- b. Patients with other underlying illnesses
- c. Patients with prolonged use of indwelling medical devices

3. Carbapenem-Resistant *Pseudomonas aeruginosa* (CRPA)

CRPA infections occur when some strains of *Pseudomonas* develop resistance to carbapenems, making antibiotic treatment choices limited.

The risk of infection occurs in patients with

- a. Immunosuppression
- b. Other underlying illnesses or co-morbidities
- c. Medical device requirements e.g. ventilators, urinary catheters, IV catheters
- d. Prolonged therapy of certain antibiotics.

CRPA can exist in patients and cause GIT infections, pneumonia and wound infections. It may also be invasive and cause infections in the blood and body organs. Asymptomatic CRPA occurs in colonised patients. CRPA can be transmitted by direct contact with infected persons, contaminated items or environmental surfaces. PPE, gloves and gowns must be used.

Frequent hand hygiene by HCW will also prevent the spread of CRPA in healthcare settings.

Alcohol-based hand sanitisers can be used when hands are not visibly soiled, if soap and water are not available.

Patients' visitors should follow all the recommended precautions.

WHO Guidelines for the Prevention and Control of CRE-CRAB-CRPA**WHAT**

1. Evidence-Based Recommendations
 - a. Multimodal strategies to prevent and control CRE-CRAB-CRPA infection or colonisation consisting of:
 - a. Hand hygiene
 - b. Surveillance

- c. Contact precautions
 - d. Patient isolation
 - e. Environmental cleaning
2. Hand hygiene best practices
 3. Surveillance of infection and surveillance cultures for asymptomatic colonisation
 4. Contact precautions recommendation when providing care for colonised or infected patients
 5. Physical separation of colonised or infected from non-colonised or non-infected patients using Single Room or cohorting.
 6. Compliance with environmental cleaning protocols of immediate surrounding area.
 7. Surveillance cultures of the environment when indicated by epidemiological data
 8. Monitoring, auditing of implementation of multimodal strategies and feedback of results to HCWs.

4 Clostridioides difficile Infection

WHAT

A *Clostridioides difficile* infection is a bacterial infection that causes diarrhoea in hospitalised patients. It can also present with symptoms

of fever and abdominal pain, and in some cases can lead to pseudomembranous colitis and toxic megacolon.

Risk factors include:

- a. Current or recent use of antimicrobial agents (even short prophylactic courses)
- b. Age (persons aged above 65 years)
- c. Long hospital stay
- d. Serious underlying disease
- e. Surgery (particularly bowel procedures)
- f. Immunosuppression

Patient Isolation - Contact Precautions

1. *C. difficile* infection is transmitted through the faecal-oral route, fomites as well as by direct contact with infected persons and contaminated surfaces. Contact Precautions should therefore be applied. The risk of infection is present until 48 hours after the patient is symptom-free.

Note: Only soap and water may be used for hand hygiene as *C. difficile* spores are not killed by alcohol-based hand rub.

2. The recommended PPE for staff/persons entering infected patient's room are gloves and a plastic apron.
3. The use of surgical mask is not necessary. PPE must be discarded before leaving the patients room and hand hygiene must be performed with soap and water.

Recommendations for Infected Patients

WHAT

1. Patient placement

- a. Place in a single room and institute contact precautions.
- b. Do not transfer patients until they have been symptom-free for 48 hours.
- c. A trolley with PPE (gloves and aprons) must be kept outside the room. The patient notes must be kept in a covered folder and placed outside the room.

2. Equipment Use and Decontamination

- a. Patient will need a dedicated bedpan which must be cleaned immediately or placed in a functioning washer-disinfector after use and then stored clean and dry in the patient room or designated space. Alternatively, disposable bed pans and urinals may be used and disposed of immediately in accordance with the healthcare waste management policy.
- b. If the patient requires bed bathing, a clean bucket preferably disinfected should be used and disinfected again after use. The used water must be discarded in the sluice.
- c. **Do not** share any equipment e.g. oxygen saturation probes.

3. Contact Precautions – Cleaning

1. Waste

All items from the room are categorised as infectious waste and should be

managed as such.

2. Environment

Perform cleaning with sodium hypochlorite solution (1000ppm).

Recommendations for Visitors

WHAT

- a. Restrict to 2 visitors at a time, and strongly discourage elderly or immunosuppressed people from visiting.
- b. Staff should explain and reinforce handwashing with soap and water only. Give PPE instructions to visitors daily.
- c. Ensure sufficient PPE are available for visitors (i.e. soap, water, paper towels, gloves and aprons).

Recommendations for HCW Caring for a Patient With *C. difficile*

1. General

- a. Assign the same staff per shift to the affected patient
- b. Wash hands with soap and water. Dry properly with paper towels.
- c. Do not use alcohol-based hand rub for hand hygiene.
- d. Ensure there is a trolley with PPE (gloves, aprons) outside the Room.
- e. Always apply PPE before entering the room (or bed space).
- f. Discard PPE before leaving the room in the red clinical waste box and wash hands immediately with soap and water.
- g. Staff with *C. difficile* symptoms should not come to work until symptom-free for 48 hours.

2. Terminal Cleaning

- a. Perform Terminal Cleaning for *C. difficile* with hypochlorite solution (1000ppm).

After cleaning**WHAT**

- a. Dispose of wash cloths in line with the policy on healthcare waste management.
- b. Wash mops in clean water with and allow to dry in the inverted position. Store inverted in the designated space or area (which should be adequately ventilated). **Do not soak mops.**
- c. Clean buckets thoroughly with detergent and water and store in an inverted position to drain and dry.
- d. When the cleaning process has been completed, the room is ready for use only after the IPC team have signed the Clearance Form.

5. Multi-Drug Resistant Tuberculosis (MDR-TB)**WHAT**

Airborne precautions to be maintained, in addition to standard precautions, Guidelines are issued in response to:

- a. Presence of a patient with open TB.
- b. The possibility of an outbreak related to an increase in the prevalence of TB disease in HIV co-infection within the health facility.
- c. Observed lapses in IPC practices.
- d. Delays in diagnosis and treatment of infected persons.
- e. The appearance and transmission of MDR-TB strains.

Routes of Transmission

Airborne: The most common route of spread for MDR-TB is through respiratory secretions which are small, aerosolised particles. They are spread by coughing, sneezing or by aerosol-generating procedures such as sputum induction, bronchoscopy, ventilation, endotracheal suctioning and physiotherapy of the lungs.

These aerosols which are <5microns may contain viable organisms, are carried on air currents and may remain suspended in air for prolonged periods.

Medical devices: Inadequate cleaning and decontamination of bronchoscopes, laryngoscopes and other equipment exposed to infected respiratory sections pose a high risk to both patients and HCW.

A. The environment of care

Enclosed or poorly-ventilated areas and areas in which aerosol-generating procedures are performed.

B. The procedure to be performed

An increase in exposure to respiratory secretions such as:

1. Sputum induction
2. Collecting sputum on the wards from bed-ridden patients
3. Bronchoscopy
4. Endotracheal intubation of a conscious or semi-conscious patient
5. Open endotracheal suctioning
6. Physiotherapy involving the chest
7. Processing sputum specimens on an open bench without a Safety Cabinet
8. Laryngoscopy – TB of the larynx is the most infectious type

C. Immune status of the health worker

(HIV infection is a predominant factor for the development of TB disease in Africa).

1. Transplant patients on chronic immunosuppressant therapy.
2. Chronic cortisone (including inhalation steroids), monoclonal antibody, methotrexate, cyclophosphamide and azathioprine therapy for a wide variety of medical conditions.
3. Poorly controlled diabetes mellitus.
4. Chronic respiratory diseases (e.g. COPD, bronchiectasis and lung fibrosis).
5. Any cancer especially if taking chemotherapy or receiving radiotherapy to the upper or lower respiratory tract.

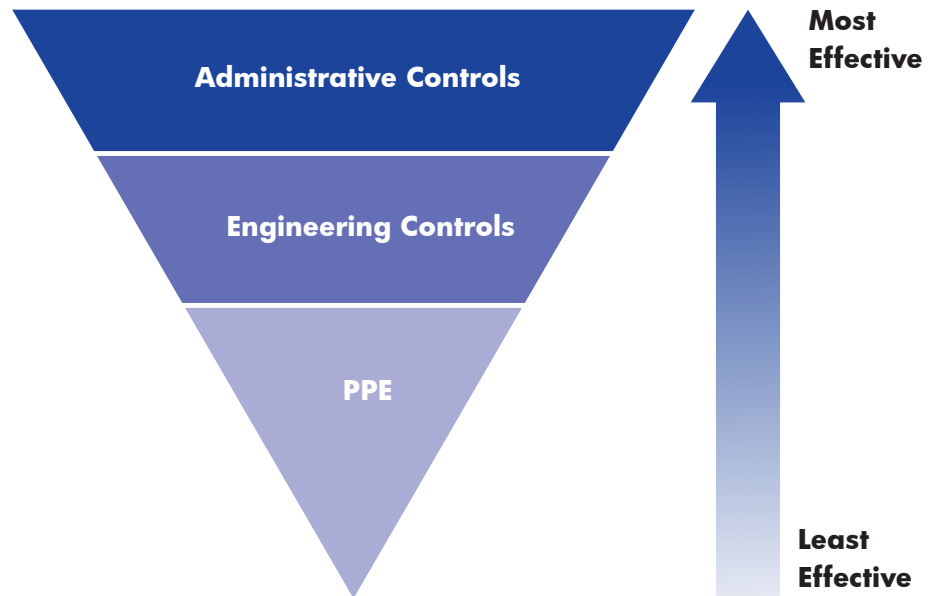


Figure 32. Hierarchy of Controls for the Prevention of Tuberculosis

Transmission can be reduced with the introduction of appropriate administrative, environmental and personal protective measures

- a. Administrative Controls: to reduce the risk of TB exposure through policy and practice.
- b. Engineering Controls: to reduce the concentration of TB in the air and prevent spread.
- c. Personal Respiratory Controls: additional risk-reduction to protect personnel who work in high TB exposure settings.

Outpatients

WHAT

1. Transmission of TB is through the airborne route. Persons with untreated smear-positive TB are a major source of infection.
2. Patients who are coughing in the Outpatient Clinic Area or the Emergency Room should wait preferably outside or in a separate well-ventilated area. They should be examined in a well-ventilated area.

3. Patients suspected to have TB should be reminded about respiratory/cough etiquette and encouraged to use disposable tissues when coughing. The used towels should be disposed of in covered waste bins.

Inpatients

1. If a patient with suspected TB is admitted to the ward, he/she should be placed either in a separate well-lit and well-ventilated room; or
2. Placed with similar patients in a separate section of the ward which is well-lit and well-ventilated.
3. Windows must be kept open even at night.
4. Do not admit unless clinically indicated.
5. Single Room with door closed at all times, preferably with en-suite bathroom and toilet facilities. Cohort isolation if no Single Rooms are available. Patient to wear a surgical mask when staff are in the room.
6. Place Airborne Precautions signage on closed door which should be kept closed at all times. Healthcare workers to perform hand hygiene with alcohol hand rub or handwashing with soap and water, and observe the 5 moments of Hand Hygiene.
7. Staff to wear respirators, non-sterile gloves and apron for the high-risk procedures listed.
8. Only well-fitted masks (N95 or equivalent) offer some degree of protection. These are usually expensive and should only be worn for procedures which generate aerosols, such as performing or assisting with:
 - a. Bronchoscopy
 - b. Endotracheal intubation
 - c. Suctioning
 - d. Open abscess irrigation
 - e. Autopsy

Patient Transport

1. Cough hygiene should be maintained when patients are moved from one part of the hospital to another or transferred from one hospital to another. Face masks can be worn by patients for effective prevention of droplet transmission when being conveyed from one place to another.
2. Staff in the area/ward to which the patient is being taken or transferred must be informed before arrival of the patient so that effective infection prevention and control measures can be implemented.

TB Patients requiring Surgery

Patients undergoing TB treatment who require surgical procedures:

1. Surgical or invasive procedures should be delayed until the patient is no longer infectious (two to four weeks after initiating treatment).
2. Where surgery cannot be delayed, a negative pressure theatre should be used where available. The patient should be placed last on the Operating List.

Engineering Control

WHAT

1. All health care environments should be assessed to identify areas where TB transmission can occur.
2. When air-flow by cross-ventilation is inadequate, extractor fans should be installed.
3. Natural light should be increased where necessary.
4. Curtains should not be used.
5. Isolation is not necessary once a patient has commenced treatment because infectivity diminishes rapidly after commencement of treatment.

Cleaning and Disinfection

For general cleaning of the surfaces, walls and floors, the use of cleaning agents is adequate. Disinfectants should be used according to the healthcare facility's cleaning and disinfection policy.

Guidelines

1. Environmental cleaning should be done with soap and water.
2. Spillage of blood and sputum should be treated with sodium hypochlorite as follows:
 - a. Gloves, face masks and additional PPE should be worn if large volumes are spilled to prevent splashes. Face shields and aprons should also be worn.
 - b. Small spills: Contamination should be soaked with absorbent paper towels soaked in 1% hypochlorite (10,000 ppm available chlorine). Final cleaning with a designated mop and 1% hypochlorite solution in a bucket.
 - c. Large volume spills: Liquid spills should be covered with sodium hypochlorite and left for at least two minutes before cleaning with paper towels. A final mopping is done with 1% hypochlorite solution.

Notification of MDR-TB

1. It is a public health requirement that the Ministry of Health must be notified about every person diagnosed with TB. The relevant TB Notification Form should be completed and sent to the appropriate Department of the Ministry.
2. Actions to be taken after notification:
 - a. Contact tracing for screening
 - b. Monitor and prevent the spread of disease
 - c. Use the appropriate forms for TB contact tracing

Reference

1. Guidelines for the Prevention and Control of Carbapenem-Resistant Enterobacteriaceae, *Acinetobacter baumannii* and *Pseudomonas aeruginosa* in Healthcare Facilities. Geneva: World Health Organization: 2017.

6.3 Policy 26 – Meningitis

6.3.1 Intent

To prevent the transmission of microorganisms that cause meningitis in the healthcare facility.

6.3.2 Policy Statement

The policy must be applied in the treatment of patients with suspected or confirmed meningitis/meningococcal disease.

6.3.3 Background

It includes clinical management, control of infection spread (including pre-admission treatment), further investigation and treatment, prophylaxis and vaccination of cases and contacts, and statutory notification.

6.3.4 Guidelines on Management of Bacterial Meningitis and Meningococcal Disease

WHAT

Healthcare workers should use Transmission-based Precautions in addition to Standard Precautions when caring for patients with meningitis.

- a. Meningococcal infections– use droplet precautions for 24 hours after effective treatment.
- b. Haemophilus influenza – droplet precautions for 24 hours after effective Treatment.
- c. Enterovirus – Contact Precautions should be applied to children who wear diapers or are incontinent for the duration of illness

Prevention is critical. HCW who are most at risk for bacterial meningitis should be encouraged to be vaccinated.

6.3.5 Case Definitions

1. Confirmed Case

A clinical diagnosis of meningitis, septicaemia or other invasive disease (such as orbital cellulitis, septic arthritis) **AND** at least one of the following:

- a. *Neisseria meningitidis* isolated from a normally sterile site.

- b. Gram negative diplococci in a normally sterile site.
- c. Meningococcal DNA in a normally sterile site.
- d. Meningococcal antigen in blood, CSF or urine.

Although meningococcal infection of the conjunctiva does not meet the definition of a confirmed case, it is considered an indication for Public Health action because of the high immediate risk of invasive disease.

2. Probable Case

Clinical diagnosis of meningitis, septicaemia or other invasive disease where the physician, in consultation with the microbiologist, considers that meningococcal infection is the most likely diagnosis.

3. Possible case

A clinical diagnosis of meningitis or septicaemia where the Physician in consultation with the Microbiologist, considers that diagnoses other than meningococcal disease are at least as likely. This category includes cases who may be treated with antibiotics but whose probable diagnosis is a viral illness.

Note: A change in clinical condition or microbiological test results (e.g. rising antibody levels/PCR) may change the case category from 'Possible' to 'Probable' or 'Confirmed'. In such instances cases the IPC Team of the healthcare facility should inform the appropriate Health Authority(ies).

6.3.6 Statutory Notification

Acute meningitis and meningococcal septicaemia are notifiable infectious diseases (NOIDs). The IPC team should send a completed Statutory Notification Form to the appropriate Health Authority.

6.4 Policy 27 – Infection Control for Viral Haemorrhagic Fevers

6.4.1 Intent

To provide guidelines that support the effective prevention and management of VHFs using IPC Transmission-based Precautions.

6.4.2 Background

The NCDC VHF-preparedness Plan applies to all viral haemorrhagic fevers with particular emphasis on Ebola, Lassa, Dengue and Yellow Fever which have been prioritized because of various epidemiological considerations.

The plan aims to build on the existing capacities created in response to the recent VHF outbreak responses in Nigeria, while taking into consideration lessons learnt from previous outbreaks. This plan is to be used for pre-outbreak and post-outbreak phases to prevent, mitigate and contain any emerging or re-emerging VHF disease.

The main routes of transmission of VHF infection:

Direct contact (through broken skin or mucous membrane) with blood or body fluids, and

Indirect contact with environments contaminated with splashes or droplets of blood or body fluids.

6.4.3 Responsibility

IPC Team leader and IPC Practitioner

6.4.4 Procedure

Infection control procedures including isolation and appropriate personal protective equipment (PPE).

6.4.5 Infection Control

The HCW who receives the patient at the healthcare facility should collect as much information about the patient as possible, including:

- a. Referring source and contact details

- b. Patient identification
- c. Patient contact details including a mobile phone number if possible
- d. Details of any communication concerns e.g. patient's dominant language
- e. Dates of travel and countries visited (in recent weeks)
- f. Symptoms including fever.

HOW

6.4.5.1 Triage Based on Risk Assessment

- a. A patient categorised as low possibility of VHF should be isolated in a Side Room with dedicated en-suite facilities immediately.
- b. These patients have minimal risk and the Standard Precautions outlined in Table 25 should be applied.

Table 25: Infection Control Measures of Low Possibility of VHF

HEALTHCARE WORKER PROTECTION	CONTROL MEASURES
Standard Precautions	Hand hygiene Gloves Plastic apron
Additional protection for splash inducing procedure	Fluid repellent surgical face mask Eye protection
Additional protection for potential aerosol generating procedures based on risk assessment for other infections known to be transmitted by aerosol	FFP3 Respirator or EN-certified equivalent Eye protection

Potential aerosol or splash-inducing procedures include:

- a. Airway suctioning
- b. Bronchoscopy
- c. Central line insertion
- d. Diagnostic sputum induction
- e. Endotracheal intubation
- f. High frequency oscillatory ventilation
- g. Positive pressure ventilation via face mask

HEALTHCARE WORKER PROTECTION	CONTROL MEASURES
Full VHE precautions	<ul style="list-style-type: none"> • Hand hygiene • Double gloves • Fluid repellent disposable gown or suit • Plastic apron (over disposable gown/suit) • Overshoes and theatre shoes • Eye protection / visor • FFP3 respirator or EN-certified equivalent

Source: The Royal Devon and Exeter NHS Foundation Trust

6.5.5.2 Patients with confirmed VHF

When a positive VHF screening result is obtained the following actions should be undertaken if they are not already in place:

- a. Restrict the number of HCW in contact with the patient, compile a list of all HCW with exposure and liaise with the Occupational Health Unit.
- b. Inform those in contact with the patient who was positive for the test and emphasise the IPC procedures required to minimise risk of infection.
- c. Infection control measures and PPE use should be supervised to ensure correct use of equipment.

- d. All involved in contact with the patient should use all the PPE outlined below.

6.5.5.3 Personal Protective Equipment

1. PPE for VHF consists of theatre overshoes, boots, FFP3 mask, hood, gown, apron, visor and double gloves.
2. The sequence of donning and doffing of PPE is critical to effectiveness in preventing the transmission of infection and should be done under the supervision of a trained HCW using the relevant checklists.
3. In situations where multiple-drug resistant isolates are found in two or more cases, the IPC Physician/Team should inform the physician or surgeon as well as the Nurse in charge of the wards.

References

1. Africa CDC Framework for Antimicrobial Resistance. 2018 – 2023
2. CDC. Guidelines. <https://www.cdc.gov/tb/topic/infectioncontrol>
3. CDC. Guidelines. <https://www.cdc.gov/tb/topic/infectioncontrol>
4. Nigeria Centre for Disease Control (NCDC) 2020. National Guidelines on Infection Prevention and Control for Viral Haemorrhagic Fevers.
5. Gateshead Health NHS Foundation Trust. Management of Bacterial Meningitis and Meningococcal Disease. 2019
6. Interim Guidance for a Public Health Response to Contain Novel or Targeted Multidrug-resistant Organisms (MDROs) <https://www.cdc.gov/hai/containment/guidelines.html>
7. Viral Haemorrhagic Fever - Policy for Risk Assessment and Management of Patients Ratified by: Infection Control and Decontamination Assurance Group: 29th January 2018 Review date: July 2022.

Checklist

1. Occupational Exposure

1. Protocols for managing occupational exposures to HIV, Hep B, Hep C and other inoculation risks are accessible to all HCW.
2. There is a designated HCW and a special area/room for PEP Counselling.
3. The CDC recommendations for assessing transmission of MDROs are known and accessible to all pertinent HCWs.
4. The IPC Team and/or Focal Person are aware of and maintain a vReport of HCW and patients with sharps injury or exposed to HIV/Hep B.
5. Designated HCW are trained and proficient in Counselling following HIV testing.

2. Documentation (Accessible to Pertinent HCWs)

1. Clinical Guidelines for the management of Antimicrobial Resistance
2. Antimicrobial Stewardship Programme
3. List of recognised MDROs
4. CDC Recommendations for assessing transmission of MDROs
5. WHO Guidelines for the Prevention and Control of CRE- CRAB-CRPA
6. NCDC VHF-Preparedness Plan (Dengue, Ebola, Lassa and Yellow fevers)
7. Compliance Monitoring and Clinical Audit Reports
8. Notification Registers (persons who are MRSA positive; HCWs and patients with exposures or sharps injuries)
9. IPCC Reports - trends, outcomes, effectiveness of measures, recommendations to Head of facility
10. Facility-wide WASH Policy

3. Compliance Monitoring

1. The IPC Team/Focal Person ensures the effective implementation of measures/system to contain any recognised MDROs
2. Pertinent and/or Designated HCWs effectively implement the following SOPs/Protocols:

- a. Screening, Admission and Decolonisation of HCWs and patients with MRSA
 - b. Hierarchy of controls for preventing TB in outpatients and inpatients
 - c. Risk assessment for TB based on the procedure(s) performed
 - d. Conducting Point Prevalence Surveys; Laboratory Surveillance of clinical cultures and Laboratory retracing
 - e. Statutory and facility-based Notifications
3. Hand Hygiene is audited for compliance with the 5 Moments using the HHSAF Tool

4. Cleaning

1. The following protocols are accessible to relevant HCWs:
 - a. Cleaning spillages of blood and body fluids
 - b. Maintenance and storage of cleaning agents and supplies
 - c. Dilution of facility-recommended disinfectant solutions
 - d. Selection and use of PPE for different procedures
 - e. Pest control and extermination
2. HCWs are trained in the SOPs, Protocols, Work Instructions and Job Aids and proficiency is assessed at induction and at least once a year
3. Compliance with cleaning schedules for different areas is monitored by the IPC Team or Focal Person
4. Cleaning equipment is inspected frequently and changed when indicated (a standard for functional status and/or useful life is available)

5. Health Risk Waste Management

1. Health-risk waste policy is audited for compliance and effectiveness at least once a year
2. Appropriate covered and lined waste containers are available at the respective points-of-use
3. HCWs are trained in appropriate aspects of waste management (handling, collecting, segregating, securing, transport, storage and transfer)
4. Cleaning of waste containers and depository is monitored by designated HCWs

5. Waste transfer, collection and incineration (if performed on site) is documented
6. A compliance audit of the waste management schedule (including incineration) is undertaken at least twice a year by the IPC Team or Focal Person in collaboration with relevant Depts/Units

IPC Considerations in Some Specialised Healthcare Settings

7.1 Policy 28 – Intensive Care and High Dependency Units (ICU, NICU, PICU, SBCU, HDU)

7.1.1 Intent

To outline the essential IPC requirements that will ensure good health outcomes for high risk and immune-compromised patients in the Intensive Care Units (ICU), Neonatal Intensive Care Units (NICU), Paediatric Intensive Care Units (PICU), Special Baby Care Units (SBCU) and High Dependency Units (HDU).

7.1.2 Policy Statement

Policies shall be developed specifically for areas designated for the care of high-risk, vulnerable and immune-compromised patients in every healthcare setting. Such settings may be stand-alone or included within a healthcare facility that provides other services.

The IPC considerations that are peculiar and applicable to these patients, the patient care areas as well as the equipment and devices used for their care shall be considered.

7.1.3 Background

Although only 5-10% of all hospitalized patients are treated in ICUs and HDUs, they account for approximately 25% of all HAI. The incidence of HAI in ICU and HDU is 5-10 times higher than that observed in general hospital wards. Healthcare-associated Infections are the primary focus of most IPC programmes because they are the most common cause of high mortality rates in the ICU and HDU. They can be prevented by implementing Standard Precautions at the patient's bedside every time.

The ICU and HDU are important reservoirs of antibiotic-resistant bacteria that may spread to other clinical areas of the hospital. In most cases, resistant organisms are transmitted to patients by the hands of HCW. A simple, inexpensive and effective means of reducing HAI in the ICU and HDU is to ensure that all staff observe the '5 Moments of Hand Hygiene' when caring for or attending to any patient.

Intravascular devices, mechanical ventilation and urinary catheterisation are major risk factors for HAI. The indications for their use should be evaluated daily and they should be discontinued as soon as it is clinically indicated.

The spread of MDROs is influenced by:

- a. Antibiotic use
- b. Proportion of colonised patients
- c. Use of isolation practices (barrier precautions and hand washing)
- d. Poor compliance with hand-washing protocols (especially among the clinical staff)
- e. Nursing staff shortages
- f. Crowding of patients which promotes horizontal transmission of resistant strains

7.1.4 IPC Practice

The risk of infection is related to host factors, the frequent or long use of invasive devices, mechanical ventilation and urinary catheterisation are major risk factors for nosocomial infections and the emergence of microorganisms resistant to antibiotics, and their use should be evaluated daily and discontinued as soon as clinically possible.

WHAT

1. Daily Routine
 - a. Apply Standard Precautions at all times when in contact with any patient
 - b. Apply Contact Precautions with MDRO infected patients
 - c. Use antibiotics appropriately
2. In the event of an outbreak, staff should adhere to these infection control measures.
 - a. isolating patients
 - b. washing hands
 - c. using protective clothing, cleaning and disinfecting equipment
 - d. cleaning the environment, and
 - e. providing education and training

Hand washing before and after examining every ICU patient is considered to be one of the most important procedures for preventing cross contamination.

7.2 Policy 29 – Neonatal Intensive Care Units

7.2.1 Intent

To set out the standards of care and services required of the hospital, ensure that optimal health outcomes are consistently produced at all levels in the Neonatal Intensive Care Units (NICU).

7.2.2 Policy Statement

Policies shall be formulated to specifically address the care of the newborn, the HCW, nursing mothers as well as all areas, equipment and devices involved in the care of the neonate in particular, within the first 28 days of life and until the time of discharge.

7.2.3 Background

The ultimate responsibility for the admission and care of every newborn in the NICU lies with the doctor appointed by the hospital to be in charge of the unit.

Doctor in charge of NICU

The NICU shall be overseen by an accredited paediatrician who has the necessary training and experience in neonatal intensive care or its equivalent; OR

The hospital may appoint a Neonatal Care Advisory Committee (which shall include an accredited paediatrician) to establish, maintain and enforce standards for professional care, compliance with Clinical Guidelines and competency requirements for doctors in the NICU. The Committee shall also be responsible for all services and educational activities of the NICU..

Patients

A designated Paediatrician is responsible for each neonate admitted to the NICU. Hospital visiting policies shall reflect the principle of reducing parent-infant separation. The policies shall include requirements for Nursing Mothers and the preparation of infant feeds.

Facilities

A designated Paediatrician is responsible for each neonate admitted to the NICU. Hospital visiting policies shall reflect the principle of reducing parent-infant separation. The policies shall include requirements for Nursing Mothers and the preparation of infant feeds.

7.2.4 Common Types of Hospital Infections in the NICU

- a. Blood stream infections (BSI)
- b. Central Venous Catheter (CVC/PICC)
- c. Umbilical catheter-associated blood stream infections
- d. Ventilator-associated pneumonia (VAP) - 6.8% to 32.2%.

The standard of IPC practice in the NICU setting has a significant impact on neonatal morbidity, mortality, hospital costs and length of stay. The outcome of implementing best IPC practice is the reduction of HAIs in vulnerable newborns.

Most frequent infective agents:

- a. Gram-negative pathogens (VAP)
- b. Coagulase-negative staphylococci (CVC/UC, BSIs)

7.2.5 Preventive Strategies in the NICU**WHAT**

- a. Cohort in selective outbreak situations.
- b. Regular surveillance of infections.
- c. Vaccination of health care workers.
- d. Appropriate visitation policies.
- e. Overcrowding should be avoided.
- f. Hand hygiene.

- g. Environmental hygiene.
- h. Use of personal protective equipment.
- i. Safe use and disposal of sharps.
- j. Prevention of a central line-associated bloodstream infection (CLABSI).
- k. Prevention of Ventilator Associated Pneumonia (VAP).
- l. Judicious antibiotic use and prevention of misuse (a hospital Antibiotic Stewardship Programme should be established).
- m. Use of breast milk and early enteral feeding.
- n. Reduce the duration of Total Parenteral Nutrition.
- o. Avoid the use of topical emollients.

7.2.6 Additional IPC Measures

7.2.6.1. Within the first hour of life

WHAT

- a. Initiate early breastfeeding within 1 hour of birth.
- b. Encourage exclusive breastfeeding.
- c. Administer Vitamin K and recommended immunizations (birth dose of oral polio vaccine and HBV vaccine), using safe injection practices and sharps safety.
- d. Apply relevant IPC precautions (Transmission-Based Precautions and prophylaxis) to those who are exposed or infected during or before birth (e.g., congenital syphilis, rubella, HIV, HBV, and other infectious diseases).

7.2.6.2 For Newborns in the Neonatal Unit

WHAT

- a. All staff must follow Infection Control Standard Precautions for each neonate.
- b. Adhere to the '5 Moments for Hand Hygiene.'
- c. Instruct all visitors in appropriate hand hygiene and infection prevention measures.
- d. Remove all rings watches and other jewellery before performing hand hygiene and handling of neonatal patients.

- e. Keep natural nails clean with the nail tip not extending beyond the end finger nail polish fresh and in good condition and no artificial nails or nail enhancements.
- f. If used, nail polish should be fresh and not chipped; artificial nails and nail enhancements are unacceptable anywhere in the NICU.
- g. Arms should always be kept 'bare below the elbows' during direct patient care.
- h. Wear clean gloves when handling invasive devices such as peripheral IVs and indwelling chest tubes.
- i. Central lines are managed according to the Neonatal Guideline "Central Venous Access Device Management in Neonates".
- j. Discontinue invasive devices including chest tubes, drains and urinary catheters as early as possible to minimise the risk of infection.
- k. Provide skin antisepsis prior to invasive procedures using the appropriate antiseptic options.

Note: for umbilical catheter insertions, prevent potential chemical burns by carefully cleaning the umbilical cord only and not the surrounding abdominal skin.

- l. Cover gowns or appropriate alternative barrier must be worn if an infant is on isolation precautions and when a patient care activity is likely to generate splashes or sprays of blood and/or body fluid.
- m. A HCW should not hold more than one infant at any time. Only one neonate should be attended to at any time and Hand Hygiene must always be performed immediately before and after touching a neonate or any item in the patient zone.
- n. Gather all clean supplies with clean hands and assemble them on a clean surface.

- o. Use medication bedside bins for medications only. Clean bins daily and when visibly soiled.
- p. Use hospital approved disinfectant to clean contaminated surfaces and objects.
- q. Clean surfaces with hospital approved disinfectant before and after preparing infant feeds.
- r. Wipe the patient bedside area at the start of every shift and as often as necessary. This includes bedside table or cart, counter tops, monitor, ventilators, IV pump control pads and any computer keyboards that are in the area.
- s. Clean incubators/infant warmers according to a schedule and additionally as required. When cleaning an incubator or warmer, remove and scrub all detachable parts. If the incubator has a fan, clean and disinfect it according to the manufacturer's instructions. Maintain the air filter as recommended by the manufacturer. Replace mattresses as soon as deterioration in surface integrity is noticed or when the surface covering is torn or worn. Clean and disinfect portholes, cuffs and sleeves frequently.
- t. HCWs who have cold sores (herpetic lesions) must not work with newborns until the lesion is crusted and dry.
- u. HCWs with significant hand lesions, dermatitis or presumed allergies to hospital products should inform the designate Supervising Nurse or Physician in accordance with the facility Policy.
- v. Visitors who have been identified as having an infection can visit only after consultation with the IPC Team/Focal Person and the attending Neonatologist.
- w. Families should be strongly discouraged from bringing toys to the NICU/HDU as they pose a potential source of infection transmission from multiple handling.

7.2.7 Human Resources Requirements

WHAT

Ensure optimal staffing in the NICU based on the acuity level. Recommended Nurse to Patient ratios:

- a. Intensive Care Unit 1:1 – 1:2 patients
- b. High Dependency Unit: 1:2-3 patients
- c. Special Care Baby Unit 1:3-4 patients

References

1. WRHA (Winnipeg Regional Health Authority) Infection Prevention and Control Manual. Neonatal Clinical Practice Guideline June 2015.

7.3 Policy 30 - Operating Room (Theatre)

7.3.1 Intent

To set up and maintain effective IPC practices in the Operating Theatres, and prevent SSIs and transmission of infection to patients and healthcare workers during surgical procedures.

7.3.2 Policy Statement

Surgical procedures are undertaken within a confined space and defined area by a team of multi-skilled HCW working in synergy. The inputs and processes must be free of infection and the outcome must have zero or minimal opportunities for infection. IPC interventions are therefore important in containing surgery-related infections. It is essential that IPC practice is effectively performed by everyone involved directly or indirectly with the Operating Room (OR) as well as the surgical procedure to be performed.

7.3.3 Background

The OR is an environment where almost all procedures involve the exposure of HCW to copious amounts of blood and body fluids. The procedures are complex and require precision. It is essential that the transmission of infection between the environment of care, immediate vicinity, medical equipment and devices, HCWs and patient is minimised – before, during and after each procedure. The environment must be free of clutter at all times and only contain the minimum essential equipment and devices.

The OR should have IPC policies, processes, protocols and work instructions that specify how the various medical equipment and devices must be operated, managed and by whom. Signage within and in the immediate vicinity of the OR must be minimal and where displayed they should be laminated and/or easy to wipe clean.

7.3.4 Recommended Infection Control Practice

7.3.4.1 Environment

WHAT

The surgical suite is usually divided into two designated areas: semi-restricted and restricted, based on the physical activities performed in each area.

The semi-restricted area includes the peripheral support areas of the surgical suite, including storage areas for clean and sterile supplies, sterile processing rooms, changing rooms, scrub stations, and corridors leading to restricted areas. Access to this area is restricted to authorised persons who are directly and indirectly involved with preparation and cleaning of the areas as well as patient care. Surgical attire and head covering are recommended in this area.

The restricted area is primarily intended to support a high level of asepsis control. It includes the OR and clean core. Surgical attire, head covering, and masks are required where open sterile supplies or scrubbed persons are present.

Modern operating rooms which meet current air flow standards, should be virtually free of particles larger than 0.5microns when the room is occupied. To achieve this, ORs should be equipped with positive-pressure systems to ensure that air travels from ORs to adjacent areas, thereby minimising inflow of air to the room. This positive pressure system is challenged every time a door is opened.

Ventilation of ORs

Air should be filtered at a minimum of 20 air changes/hour (ACH) of which at least four changes should be with fresh air. When resources permit, this air should be high-efficiency filtered (HEPA). The temperature in ORs should be maintained between 68oF and 75oF with a humidity level between 20% and 60%. The inanimate theatre environment should make a negligible contribution to the incidence of SSIs.

7.3.4.2 Cleaning and Disinfection

WHAT

A precise schedule which includes times, frequency, cleaning devices and materials, disinfectant types and concentrations of solutions to be used in the restricted and semi-restricted areas should be accessible to all pertinent HCW.

Standard operating procedures, Work Instructions and Job Aids for cleaning various surfaces (ceiling, walls, floors, doors etc) should be provided preferably in the form of algorithms, flow charts or diagrams to optimize effectiveness and compliance.

Cleaning and disinfection of the operating theatre should follow a precise schedule:

- a. floors should be cleaned once a day, and at the end of each session.
- b. horizontal surfaces and all surgical items should be cleaned between procedures.
- c. Specific blood or body fluid spillages should be cleaned immediately.
- d. Walls and ceilings should be cleaned at least monthly to remove residual dust and cobwebs.
- e. Walls and ceilings in non-restricted areas are rarely heavily contaminated; therefore, cleaning them at least twice a year is reasonable.

7.3.4.3 Surgical Team and the Surgical Field

WHAT

- a. All members of the surgical team who will work within the operating field should scrub their arms and hands with antiseptic solution for at least 2 minutes before the first procedure of the day. A shorter period may be appropriate for subsequent procedures. The first scrub of the day should include a thorough cleaning underneath fingernails.

- b. All jewellery should be removed and artificial nails must not be worn as these are associated with enhanced hand colonization with bacteria and fungi.
- c. After performing the surgical scrub, members of the surgical team should keep hands up and away from the body so that the water runs from the tips of the fingers toward the elbows.
- d. Sterile gloves should be of good quality. Wearing two pairs of gloves is advisable during orthopaedic surgery. Gloves should be changed immediately after any accidental puncture.
- e. The operative site should be scrubbed with a detergent and an antiseptic soap should be applied. Alcohol solutions are preferred to aqueous solutions for skin preparation but it is important to allow the alcohol to dry after application and before the use of electrocautery. The best reduction in bacteria at the surgical site has been achieved with chlorhexidine-alcohol when compared with povidone-iodine in a surgical population undergoing clean-contaminated surgery.
- f. Sterile drapes must be placed on the patient and on any equipment included in the sterile field. Once a sterile drape is in position, it must not be moved until the procedure is completed.
- g. Good surgical technique may be reflected in shorter durations of procedures which have been clearly associated with a lower risk of SSI.
- h. The practice of scheduling 'dirty cases' at the end of the day should be discontinued.

7.3.3.4 Surgical Attire

- a. Members of the surgical team entering the OR when an operation begins or is already in progress should wear a medical mask and head covering which fully covers hair, sideburns, neckline. Sterile gloves and impervious surgical gowns should also be worn as barriers.

- b. Shoe covers can be replaced by ordinary shoes dedicated exclusively to the operating theatre or clean shoes. These shoes must be easy to wash. The practice of wearing plastic or paper shoe covers for the purpose of decreasing SSIs should be abandoned.
- c. For procedures associated with a high risk of blood contamination, a waterproof apron or more resistant gowns should be worn.
- d. Any member of the surgical team who suffers from a skin lesion such as a boil should refrain from working in the OR. Dermatitis of the hands sometimes caused by glove allergy should also be taken seriously for the same reason.

7.3.3.5 Patient Considerations

WHAT

- a. Antibiotic prophylaxis is a very important preoperative practice and excellent guidelines have been published.
- b. The choice of antibiotic according to the procedure, the dose according to the patient's weight, the timing of administration before incision, and the timing of intra-operative re-dosing, where appropriate, are important considerations and should be administered in the OR by a designated person. Use a checklist for preoperative briefing to ensure that the antibiotic is correctly administered.

7.3.3.6 Consideration in Settings with Limited Resources

WHAT

- a. Keeping the number of HCWs to a minimum in the OR during a procedure.
- b. Limiting idle conversations as this creates dispersion of bacteria.
- c. Keeping doors closed.

- d. Keeping entries into the OR to a minimum during a procedure, as the opening/closing of doors can generate significant air currents and increase the probability of bacteria being deposited in the surgical site.

The preparation of the surgical team and maintaining a clean operating environment are important because a number of risk factors can contribute to the development of SSIs.

References

1. ([https://www.idsociety.org/uploadedFiles/IDSA GuidelinesPatient_Care/PDF_Library/2013 Surgical Prophylaxis ASHP, IDSA, SHEA, SIS\(1\).pdf](https://www.idsociety.org/uploadedFiles/IDSA_GuidelinesPatient_Care/PDF_Library/2013_Surgical_Prophylaxis_ASHP_IDSA_SHEA_SIS(1).pdf)).
2. International Society for Infectious Diseases. Guide to Infection Control
3. in the Hospital Chapter 22: The Operating Room. M-C Roy, MD, MSc

7.4 Policy 31 – The Dialysis Centre/Unit

7.4.1 Intent

To establish the minimum essential guidelines for IPC that will prevent the transmission of infection between HCWs and patients undergoing haemodialysis or peritoneal dialysis - from the procedure or the environment of care.

7.4.2 Policy Statement

Dialysis is routinely performed in hospitals where care is integrated with other clinical disciplines. Stand-alone purpose-built dialysis centres are however increasing across Nigeria and a small but growing population is opting for home-based care or self-dialysis.

The burden of infection among patients undergoing dialysis is high and IPC is essential to patient safety. Regardless of the setting in which dialysis is provided, the potential for infection must be recognised and a policy which establishes the minimum essential IPC requirements for the HCW, patient, environment of care as well as equipment and devices must be available and effectively implemented. This policy is applicable to all settings where haemodialysis and/or peritoneal dialysis is provided.

7.4.3 Background

Dialysis is a treatment that helps to get rid of harmful toxins, waste products as well as excess fluids which build up in the body when the kidneys have failed. There are two types: **haemodialysis** and **peritoneal dialysis**. Both procedures involve accessing the patient's blood by inserting a needle into a surgically created arteriovenous fistula or a catheter or by inserting a central vein into the peritoneal cavity. The treatment can be done at home, in a hospital or in a stand-alone unit or centre.

Infection is the second most common reason for hospital admissions - after cardiovascular disease. It is also the second leading cause of mortality in dialysis patients (from bacteria, Hepatitis B, Hepatitis C and HIV). Mortality rates from infections by antimicrobial-resistant bacteria are 2 - 5 times higher than that from infections due to susceptible bacteria. Antimicrobial-resistant infection rates have been found to be highest among patients undergoing long-term haemodialysis.

7.4.4 Factors Contributing to the Risk of Infection in Hemodialysis Patients

7.4.4.1 General

WHAT

1. Immunocompromised status of patients' kidney failure as a result of uraemia.
2. Frequent insertion of dialysis fistula needles to access the bloodstream.
3. Regular and prolonged blood exposure during treatment sessions.
4. Temporary or semi-permanent vascular catheters placed for treatment access.
5. Proximity to other patients during treatment in the dialysis unit.
6. Frequent contact with the healthcare workers who attend to several patients and their assigned dialysis machines.
7. Malnutrition.
8. Presence of other comorbidities such as diabetes.
9. Older age of patient.

7.4.4.2 Routes of Infection Transmission

1. Patient-to-patient or staff-to-patient.
2. Physical contact with contaminated devices, equipment and supplies, environmental surfaces and hands of medical personnel.
3. Blood-borne transmission.
4. Respiratory.
5. Contaminated food and medication.

7.4.5 Preventing Infection During Haemodialysis

WHAT

1. *Establishment and routine monitoring of HIV, Hepatitis B and C serologic status:* it is important to know the HIV, Hepatitis B and Hepatitis C status of every new patient. Subsequently, routine monitoring is done monthly for HBV and every 6 months for HCV.
2. *Hepatitis B vaccination:* is recommended for all HCW and all patients with end-stage kidney disease prior to commencement of dialysis.
3. *Isolation of patients infected with Hepatitis B: HBV positive patients* are to be dialysed in a separate room or area with machines, equipment and instruments dedicated only for their use. If the unit is well staffed, it is recommended that a HCW should be dedicated to the care of these patients for the duration of the shift.
4. *Implementation of standard/universal IPC measures:*
 - a. Dialysis staff are to be effectively trained in standard precautions and other IPC measures.
 - b. Good hand hygiene is the most important universal precaution practice to be implemented and units should have easily accessible wash hand basins and alcohol-based hand sanitizers.
 - c. Healthcare workers should wear gloves whenever they are caring for a patient; or touching equipment, dialysis software, blood specimens and other surfaces.
 - d. Gloves are to be removed and hands washed between patients or stations.
 - e. Any item taken to or placed on a patient's machine should be considered contaminated and should be either discarded or decontaminated before being used by another patient.
 - f. Medications should be prepared in an area away from the patient's machine. Medication should be administered to only one patient at a time.
 - g. Trays or carts for communal use should not be moved between patients and single-use vials are not to be punctured more than once.
 - h. Healthcare personnel are not to eat or drink in the dialysis unit.

- i. The dialysis machines are to be cleaned manually to remove any particulate matter or stains before being disinfected after each use.

5. Central Venous Catheter (CVC) care:

HOW

- a. At the start of a dialysis session, the catheter dressing should be removed and the exit site skin cleaned with chlorhexidine plus alcohol.
- b. The CVC caps are then removed and the catheter hubs scrubbed with appropriate antiseptic (e.g. 70% alcohol, povidone-iodine or alcoholic chlorhexidine).
- c. Once disinfected, the hubs should not come in contact with nonsterile surfaces.
- d. At the end of the treatment, an antibiotic lock solution is instilled in the catheter and an antimicrobial ointment or chlorhexidine-impregnated dressing applied to the catheter exit site.

6. Injection safety protocols:

- a. Proper hand hygiene must be practiced prior to the preparation and administration of medications or infusions.
- b. Sharps boxes are to be within reach every time medical sharps are used.
- c. The practice of reusing dialysers is strongly discouraged as this has been associated with outbreaks of gram-negative bacterial infections. Units that however engage in this practice must ensure strict adherence to the protocols for reprocessing used devices.
- d. Dialysis lines and dialysers must be double bagged and placed in the appropriately labelled clinical waste container immediately after use.
- e. Dialysate containers are to be discarded or recycled after each use.
- f. Guidelines for rational and judicious use of antibiotics should be followed in order to prevent the emergence of antimicrobial resistance (Antimicrobial Stewardship Programme).

- g. Visitors and visiting professionals are to clean their hands before entering and after leaving the dialysis unit.
- h. Patients with catheters should be educated about the risks associated with having catheters, the importance of hand hygiene, general care of the access while at home such as bathing with a catheter, signs and symptoms of infection. Those with fistulas are also advised not to pick at or scratch the site.

7.5 Policy 32 – Dental Department/Unit

7.5.1 Intent

To prevent infection transmission between the patient and the healthcare worker using IPC practices and procedures that are applicable to dental care and services.

7.5.2 Policy Statement

All dental staff (dentist, dental nurse, dental hygienist, dental laboratory technologist and dental assistant) and HCW involved in equipment maintenance, housekeeping, waste disposal and management shall document and ensure effective implementation of policies, procedures and protocols for all aspects of dental services.

7.5.3 Background

The application and implementation of Standard and Transmission-based Precautions are integral aspects of dental care and service provision. The routine practice of dentistry always involves exposure to and direct contact with blood, mucous membranes, saliva and other body fluids during the examination, conservation and restoration of teeth, management of oral diseases, soft tissue lesions and facial fractures.

The outcome of every dental procedure depends on the effectiveness of IPC which is critical in wound healing. Standard and Transmission-based Precautions are therefore mandatory for all dental procedures including dental examinations. It is essential that infection between HCW, between patients and between HCW and patients is prevented during every procedure.

7.5.4 Responsibility

All dental healthcare practitioners and support staff directly or indirectly involved in the care of patients, dental instruments, dental equipment as well as the preparation and manipulation of dental materials.

7.5.5 IPC Considerations in Dental Practice

7.5.5.1 Standard Precautions

WHAT

1. Hand Hygiene

- a. Hand hygiene resources (soap, disposable paper towel or hand drier, running water and a lined and covered waste container) must be available in every dental cubicle or suite.
- b. A wash hand basin with running water or alcohol-based hand sanitizer must be easily accessible to all patients and staff.

2. PPE

- a. Provide sufficient and appropriate PPE and ensure they are readily accessible when needed.
- b. Educate all dental practitioners about the proper selection and use of PPE.
- c. Wear gloves for all procedures as every procedure involves contact with and exposure to blood, body fluids, mucous membranes and non-intact skin or contaminated equipment.
- d. Do not wear the same pair of gloves for the care of more than one patient.
- e. Do not wash gloves. Gloves cannot be reused.
- f. Perform hand hygiene immediately after removing gloves.
- g. Wear protective clothing that covers skin and personal clothing during all dental procedures.
- h. Wear mouth, nose, and eye protection during all procedures as the potential for generating aerosol, detritus as well as splashes or spattering of blood or other body fluids is always present especially from the use of high-speed rotary hand pieces and ultrasonic scalers.

- i. Remove all PPE before leaving the work area.

3. Respiratory Hygiene/Cough Etiquette

- a. Implement measures to contain respiratory secretions in patients and accompanying individuals who have signs and symptoms of a respiratory infection, beginning at the point of entry to the facility and continuing throughout the visit.
- b. Post signs at entrances with instructions to patients with symptoms of respiratory infection to:
 - i. Cover their mouths/noses when coughing or sneezing.
 - ii. Use and dispose of tissues.
 - iii. Perform hand hygiene after hands have been in contact with respiratory secretions.
- c. Provide disposable paper towels and covered no-touch receptacles for their disposal.
- d. Provide resources for performing hand hygiene in or near the Waiting Areas.
- e. Offer masks to coughing patients and other symptomatic persons when they enter the dental setting.
- f. Provide enough space to sit away from others if possible. If space permits, place patients who are coughing in a separate area or have a different seating arrangement with increased distance (more than 1 metre apart) while waiting for care.
- g. Schedule dental appointments such that the seating capacity does not exceed 50% at any one time.
- h. Educate dental staff about the importance of complying with IPC measures to contain respiratory secretions when examining and caring for patients with signs and symptoms of a respiratory infection.

4. Sharps Safety

- a. Consider all sharps (i.e. needles, scalers, burs, reamers, files and wires) that are contaminated with patient's blood and saliva as potentially infective and establish engineering controls and work practices to prevent injuries.

- b. Do not recap used needles using both hands or any other technique that involves directing the point of a needle toward any part of the body e.g. irrigating the root canals.
- c. Use either a one-handed scoop technique or a mechanical device designed for holding the needle cap when recapping needles (e.g. between multiple injections and before removing from a non-disposable aspirating syringe).
- d. Place used disposable syringes and needles, scalpel blades, and other sharp items in appropriate puncture-resistant sharps containers located as close as possible to the area where the items are used.

5. Safe Injection Practices

- a. Prepare injections using Aseptic Technique in a clean area.
- b. Disinfect the rubber septum on medication vials with alcohol before piercing.
- c. Do not use needles or syringes for more than one patient
- d. Medication containers (single and multi-dose vials, ampoules, and bags) are pierced with a new needle and new syringe, even when obtaining additional doses for the same patient.
- e. Use single-dose vials for parenteral medications when possible.
- f. Do not use single-dose (single-use) medication vials, ampoules, bags or bottles of intravenous solution for more than one patient.
- g. Do not combine the leftover contents of single-use vials for later use.
- h. The following measures should be taken if multi-dose vials are used:
 - i. Dedicate multi-dose vials to a single patient whenever possible.
 - ii. If multi-dose vials will be used for more than one patient, they should be restricted to a centralised medication area and should not enter the immediate patient treatment area (e.g. dental suite or cubicle) to prevent inadvertent contamination.
 - iii. Multi-dose vials should be dedicated for single-patient use and discarded immediately after use.
 - iv. Date multi-dose vials when first opened and discard within 28 days, unless the manufacturer specifies a shorter or longer date for that opened vial.

- i. Do not use fluid infusion or administration sets (e.g. IV bags, tubings, connections) for more than one patient.
- j. When using a dental syringe to administer local anaesthesia do not use the needle or anaesthetic cartridge for more than one patient.
- k. Ensure that the dental cartridge syringe is appropriately cleaned and heat sterilised before use on another patient.

6. Sterilisation and Disinfection of Patient-care Devices

- a. Clean and reprocess (disinfect or sterilise) reusable dental equipment and devices appropriately before use on another patient.
- b. Clean and reprocess reusable dental equipment and instruments according to manufacturers' instructions. They are only suitable for multi-patient use if it is stated as such by the manufacturer.
- c. The manufacturers' instructions for reprocessing reusable dental instruments, devices and equipment must be readily available in or near the reprocessing area.
- d. Assign responsibilities for reprocessing dental equipment to appropriately trained dental staff.
- e. Wear appropriate PPE when handling and reprocessing contaminated patient equipment.
- f. Use mechanical, chemical, and biological indicators according to the manufacturers' instructions to ensure the effectiveness of the sterilisation process. Maintain sterilisation records in accordance with the hospital policy and protocols and applicable State and Local Government regulations.

7. Environmental Infection Prevention and Control

- a. Establish policies and procedures for the routine cleaning and disinfection of environmental surfaces in dental healthcare settings.
- b. Use surface barriers to protect clinical contact surfaces, particularly those that are difficult to clean (e.g., switches on dental chairs, computerised equipment) and change such surface barriers between patients.

- c. Clean and disinfect clinical contact surfaces that are not barrier-protected with a hospital disinfectant after each patient. Use an intermediate-level disinfectant (e.g. tuberculocidal claim) if visibly contaminated with blood.
- d. Select disinfectants or detergents with label claims for use in healthcare settings.
- e. Follow manufacturers' instructions for using cleaners and disinfectants (i.e. amount, dilution, contact time, safe use, disposal).
- f. A form should be maintained for all cleaning agents and disinfectants used in the reprocessing of instruments and devices.

References

1. CDC MMWR. Guidelines for Infection Control in Dental Health-Care Settings—2003 pdf icon
2. Division of Oral Health, National Center for Chronic Disease Prevention and Health Promotion. Revised June 18, 2018
3. Standard Precautions – CDC.www.cdc.gov › oral health › summary-infection-prevention-practices

7.6 Policy 33 – Pathology Laboratory

7.6.1 Intent

To safely collect, handle and process specimens from patients and to prevent transmission of infection between healthcare workers.

7.6.2 Policy Statement

Policies should be developed to address the identification, collection, handling, transfer, processing, storage and terminal disposal of specimens obtained from patients. The policies should also address safety of the environment in which the specimens are processed – during and afterwards.

7.6.3 Background

Two major roles of the Pathology Laboratory are (i) to detect and accurately identify organisms isolated from pathological specimens; and (ii) to provide, where appropriate, accurate antimicrobial susceptibility results. These functions form the basis for evaluating any recent advances in testing by the Clinical Microbiology Laboratory and its impact on IPC.

7.6.4 IPC Considerations

7.6.4.1 Standard Precautions

WHAT

- a. Healthcare workers who collect specimens from patients should wear appropriate PPE for Standard, Contact and All other precautions.
- b. Facility-wide standard operating procedures for specimen collection and transport to the clinical laboratory should be documented and followed.
- c. All specimens should be appropriately contained (bagged if necessary) and accompanied by a completed Laboratory Requisition Form. In addition to patient identification details, the information on the Request Form should indicate what the patient is or could be infected with.

- d. Laboratory Scientists, Technicians and Assistants as well as Housekeeping staff involved in the disposal of specimens should be trained in the proper handling of high-risk specimens and ensure that additional precautions can be undertaken where indicated.
- e. Biosafety Levels should be specified according to specimen type prior to processing.

7.6.4.2 Handling of Human Remains

- a. The procedures and protocols for the removal and handling of infected human remains should be consistent with those used for any safe autopsy procedure except otherwise specified (e.g. VHF).
- b. Additional respiratory protection is required during autopsy procedures which generate aerosols (e.g. use of oscillating saws).

7.6.4.3 PPE

- a. Wear standard autopsy PPE including a scrub suit under an impervious gown or apron, eye protection (i.e. goggle, face shield), double surgical gloves with an interposed layer of cut-proof synthetic mesh, surgical mask or respirator and shoe covers.
- b. Additional respiratory protection (N95 or N100 disposable particulate or powered-air purifying respirators (PAPR) should be used if aerosol generation is anticipated. Healthcare workers performing autopsies who cannot wear a disposable particulate respirator because of facial hair or other fit limitations should wear a loose-fitting suit (i.e. helmet or hood PAPR).
- c. Remove PPE before leaving the autopsy suite and dispose of them in accordance with the facility policies and procedures for healthcare waste management.

7.6.4.4 Engineering Controls

- a. Whenever possible, perform autopsies on human remains in settings that have adequate air-handling systems. This includes a minimum of 6 (old-construction) to 12 (new-construction) ACH; negative pressure relative to adjacent areas in accordance with recommendations for AIRs. Exhaust air should be directed outside or passed through a HEPA filter if the air is recirculated. Exhaust systems around the autopsy table should direct air (and aerosols) away from the HCW performing the procedure (e.g. exhaust downward).
- b. Use containment devices whenever possible. Use biosafety cabinets for the handling and examination of smaller specimens. When available, use vacuum shrouds for oscillating saws to contain aerosols and reduce the volume released into the ambient air environment.

7.6.4.5 Prevention of Percutaneous Injuries

Follow standard safety procedures for preventing percutaneous injuries during autopsy..

References

1. Infection Control for Laboratory and Pathology Procedures. Supplement I: Infection Control in Healthcare, Home, and Community Settings. Public Health Guidance for Community-Level Preparedness and Response to Severe Acute Respiratory Syndrome (SARS) Version 2/3
2. Betty A. Forbes. Infectious Disease Advisor. Hospital Infection Control. Laboratory advances for Infection Control.

7.7 Policy 34 – General Outpatient Areas/Department

7.7.1 Intent

To provide basic infection prevention and control recommendations for outpatient care settings.

7.7.2 Policy Statement

This policy emphasises Standard Precautions as the foundation for preventing the transmission of infectious agents in all areas where outpatient (ambulatory) care and services are provided. Basic IPC guidelines shall be established for outpatient (ambulatory care) settings in all healthcare facilities and settings.

7.7.3 Background

The scope and volume of services as well as the size and diversity of patients who access ambulatory care present the greatest and an enduring opportunity for infection transmission in any healthcare setting. It is therefore essential that infection prevention and control is practiced continually across the facility including the environment immediately outside of the building where patients congregate and wait to receive care.

When compared with inpatient care and services, infrastructure, facilities and resources for outpatient or ambulatory care are usually inadequate to support effective IPC practices and surveillance activities.

As more patients seek care in the outpatient setting, the opportunities for HAI and associated outbreaks will increase. The implementation of core IPC procedures and activities through formal Infection Prevention programmes is essential for the reduction in outbreaks and HAI.

7.7.4 Responsibility

All healthcare workers and support staff directly and indirectly involved in ambulatory patient care (in outpatient care settings).

7.7.5 IPC Considerations

7.8.5.1 Administrative Resources

WHAT

- a. Administrative Resources for Infection Prevention must be made a priority in all settings where healthcare is delivered.
- b. Ensure adequate human resources are available to develop and maintain infection prevention and occupational health programmes.*
- c. Sufficient and appropriate equipment and supplies necessary for the consistent observation of Standard Precautions must be prioritised, including hand hygiene products, injection equipment and PPE (i.e. gloves, gowns, face and eye protection) must always be available.
- d. At least one individual with training in IPC must be employed in larger healthcare facilities or regularly available in small healthcare facilities (e.g. on contract or locum tenens arrangements) to manage the facility's IPC programme.
- e. Develop written IPC policies and procedures appropriate for the range and level of services provided by the facility using evidence-based guidelines and standards.
- f. Educate and train HCWs and provide competency-based training for physicians and nurses to ensure effective implementation and compliance.

7.7.5.2 Education

- a. Provide education about basic IPC principles and practices to all HCW. Training should be provided during the orientation and induction of new staff.
- b. Proficiency assessment as well as process and compliance audits should be conducted periodically.
- c. Records of training attendance and proficiency verification should be maintained to support continual improvement and reduction in infection transmission rates.

7.7.5.3 Hand Hygiene

Effectively performed hand hygiene has been shown to reduce infection transmission by as much as 85% in healthcare facilities. The type and location of hand hygiene facilities can be a barrier to performing hand hygiene effectively or with the desired frequency. Hand hygiene facilities (a wash hand basin with running water or alcohol-based hand sanitizer) must be placed in each examination room, medication preparation area, treatment room, reprocessing area and any other patient-care areas.

7.7.5.4 Environment of Care, Cleaning, Sterilisation and High-level Disinfection

- a. Non-critical items such as thermometers, stethoscopes, and baby weighing scales should be cleaned according to the manufacturers' instructions.
- b. Standardisation of glucometers and training in their use and disinfection must be a priority because they have been associated with the transmission of blood-borne pathogens.
- c. Registered disinfectants that have broad-spectrum claims should be used by applying the right amount of product and allowing it to be exposed to instruments and devices for the required contact time.
- d. All staff who reprocess critical or semi-critical instruments must receive training, perform initial and annual competency assessments and be retrained when new devices are introduced.
- e. There should be a clear distinction and separation between clean and dirty processes and the environments/areas where the respective procedures are undertaken.

7.7.5.5 Injection Safety

WHAT

The following should be available and effectively implemented as an irreducible minimum:

- a. Unrestricted access to hand hygiene facilities and resources
- b. No reusing of single-dose vials
- c. No reusing of syringes
- d. No use of multi-dose vials that are not dated
- e. No drug diversion
- f. No multi-dose vials should be taken into a patient treatment area.

7.7.6 Waiting Rooms/Areas: Transmission-based Precautions

WHAT

7.7.6.1 Ventilation

1. Clinics are generally restricted to small and confined areas, with limited ventilation and a rapid rate of patient turnover.
2. They are therefore a source of and pose a risk of infection transmission.
3. Early detection of potentially infectious patients is necessary to limit transmission and must include triage during scheduling or in the Waiting Room.
4. Move infectious patients to their dedicated Examination Room as quickly as possible.

7.7.6.2 Airborne Infections

- a. Measles and Tuberculosis (for example), can present unique challenges to the outpatient clinic as there is a potential for the spread of airborne droplets throughout the clinic area. The best way to prevent airborne droplet exposures is to implement airborne Isolation Precautions.

- b. If a patient is known or suspected to have an airborne illness before arriving, have a room ready as well as a back or alternative entrance through which the patient can come into the clinic.
- c. A surgical mask should be placed on the patient, and the door to their Examination Room should remain closed for the duration of the consultation session. Health care providers must don N95 masks prior to contact with the patient. Depending upon the air exchange rate for the clinic, after discharge, the room should remain unoccupied for the specified duration before reuse.

7.7.6.3 Contact-based Infections

- a. Contact-based infections can be more difficult to identify in the Waiting Room. To facilitate rapid identification and isolation, a 3 – 5 item questionnaire should be used to identify patients during the Registration process.
- b. Diarrhoea can be recognized by HCW, but it can be difficult to identify patients with scabies or lice within a short time. Such patients may be seen by a series of HCW before being identified as having these conditions or infections.

7.7.6.4 Droplet-based Infections

- a. Infections such as influenza and rhinovirus can be prevented from spreading through the application of respiratory hygiene/cough etiquette which also includes hand hygiene.
- b. Masks and paper tissues provide a mechanical barrier against infections like influenza in the Waiting Rooms and the other clinic areas.
- c. To improve compliance, Front Desk staff should ask all patients and visitors with respiratory symptoms and children with a rash to perform hand hygiene and don masks. The staff should also inform the HCW to ensure that such patients are attended to promptly.

7.7.7 Occupational Health

1. Infection prevention collaborates with occupational health to assess, prevent, and control infections and communicable disease in HCWs. Three key components of the Occupational Health Programme are immunization; tuberculosis (TB) control; and blood-borne exposure prevention.
2. Screening new HCWs for their immune status and administering necessary vaccines help to reduce the incidence of vaccine-preventable diseases.
3. Advise employees who test positive for TB to report any communicable diseases to the designated Department/Unit or Officer immediately they become aware. They should be managed according to the relevant facility policies and procedures.
4. Staff should practice and implement measures and controls that will prevent exposure to sharps, needlestick injuries and blood-borne pathogens. The use of safety devices as well as the safe handling and disposal of sharps should be actively promoted. The notification and management procedure should be referred to when needlestick injuries occur.

7.7.8 Epidemic Preparedness

Increased global population mobility increases the ease with which infectious diseases spread between and within countries. Ambulatory care clinics must be prepared to identify and transfer cases safely without disease transmission.

Preparation for all types of infectious diseases must include as a minimum:

- a. Screening and isolating potentially infectious persons.
- b. Appropriate and effective use of PPE.
- c. Cleaning and disinfection of the surfaces, seats and environment.
- d. The first step is to create simple and short Screening Questionnaires for early detection of potentially infectious persons. Travel advisory posters can be posted strategically to facilitate the screening process by prompting patients to self-report recent travel history.

7.7.9 Reference

1. CDC's Guide to Infection Prevention for Outpatient Settings: Minimum Expectations for Safe Care

Health Facility Surveillance

8.1 Policy 35 – Surveillance for Healthcare-associated Infections

8.1.1 Intent

To establish a formal documented system and procedures for identifying, monitoring, evaluating and reporting the incidence of HAI in the various patient-care and mission-critical areas in the facility.

8.1.2 Policy Statement

There shall be designed healthcare workers who are trained, competent in identifying potential sources of, opportunities for the transmission of as well as the production of reliable and valid reports about the status of HAI across the facility. These reports shall also include recommendations about appropriate IPC interventions required to minimize, contain or eliminate them.

8.1.3 Background

Surveillance is an organised method for collecting, analysing and sharing information. It involves collecting information (data) about when, how, why and in which patient or staff categories these incidents occur.

An important aspect of surveillance is communicating the results to the people who can improve the outcome being measured, e.g. the IPC Committee, Hospital top management, Ward Manager or Head of Department/Unit.

The findings of surveillance activities or programmes should be used to understand the problem and then identify changes or interventions needed to prevent or manage the problem. Surveillance for HAI is an essential part of any IPC programme. It helps to determine the priority areas and clinical practices which require intervention to reduce infection rates.

The burden of HAI including those caused by multi-drug resistant organisms remains underestimated or even unknown because HAI diagnosis is complex and surveillance activities to guide interventions require expertise and resources. The HAI-surveillance system tracks and monitors HAI in healthcare facilities. It involves the systematic collection, collation, analysis, interpretation and timely dissemination of information that is related to HAIs and using such information to guide appropriate action. HAI Surveillance provides good information to patients and clinical teams and is critical to infection control.

8.1.4 Key components of an HAI surveillance system

- a. Data collection using standard case definitions
- b. Collation of data
- c. Analysis and interpretation of data
- d. Timely dissemination of information.

The IPC programme of every healthcare facility should include a HAI surveillance programme that aims to reduce HAIs. This results in improved health outcomes.

8.1.5 Scope of Surveillance

1. Common HAI
 - a. Central Line Associated Bloodstream Infection (CLABSI)
 - b. Surgical-Site Infection (SSI)
 - c. Ventilator Associated Pneumonia (VAP)
 - d. Catheter-associated Urinary Tract Infection (CAUTI)
2. Epidemiologically significant organisms including MDRO
 - a. Methicillin Resistant *Staphylococcus Aureus* (MRSA)
 - b. Vancomycin Resistant *Enterococci* (VRE)
 - c. Multi-Drug Resistant Gram-negative Bacteria (MDRGNB)
 - d. *Clostridioides Difficile*
 - e. Respiratory viruses
3. The main objectives of HAI surveillance:
 - a. To establish the baseline data on endemic rates and types of HAI
 - b. Reduce infection rates within healthcare facilities.

- c. Evaluate the impact of IPC measures and inform improvement activities.
 - d. Identify trends and shifts in microbial pathogen spectrum and infection rates.
 - e. Detect breakdowns in IPC practices.
 - f. Establish priorities for IPC activities using information from HAI trend analysis and other attributes.
 - g. Identify outbreaks of HAI and identify the need for intensified IPC measures at certain periods.
 - h. Convince healthcare workers to adopt recommended preventive practices.
4. HAI Surveillance enables the:
- a. Establishment of baseline data on infection rates, before implementing an intervention.
 - b. Detection of outbreaks when there is an increase in the cluster of particular infections above baseline rates
 - c. Monitoring of the effectiveness of IPC control measures
 - d. Identification of:
 - Important pathogens to target with interventions.
 - Areas within the facility with highest and lowest infection rates
 - Patients with greatest infection risk
 - The most common HAI
5. Prerequisites for effective HAI surveillance
- a. Standard definition for different HAI
 - b. Surveillance tools
 - c. Defined surveillance methods e.g. continuous, periodic, targeted, laboratory-based or clinical surveillance
 - d. Identified personnel for data collection
 - e. Data management processes and procedures
 - f. Information dissemination procedures and protocols

8.1.6 Surveillance Methods

The type of surveillance method for HAI will depend on local factors (i.e. the type and size of hospital, case mix and availability of human and material resources).

Active surveillance

Trained personnel, mainly IPC Practitioners, vigorously look for HAI information accumulated by using a variety of data sources within and beyond the nursing wards.

Passive surveillance

Persons who do not have a primary surveillance role, such as ward nurses or other staff, identify and report suspected HAI to the IPC Team or Focal Person.

8.1.7 HAI Surveillance Reporting

1. Outcome measures – e.g. HAI rates; infection with specific pathogens; needlestick injuries
2. Process measures - e.g. hand hygiene compliance

HOW

1. Most commonly reported as rates i.e. the number of occurrences of a particular infection over a specified period
2. Calculate HAI rates by dividing the number of people who develop the target infection within a particular period (numerator) by the total population at risk of that infection in that same period of time (denominator).

8.2 Policy 36 - Surveillance for other Notifiable Diseases

Disease notification involves the prompt and accurate reporting of the occurrence of specific diseases and conditions to designated public health authorities by the appropriate healthcare workers in a standardized manner using specific reporting tools. Disease notification is a sine qua non in data collection for effective disease surveillance. Disease Surveillance and Notification (DSN) are essential strategies in the prevention and control of epidemic-prone diseases.

8.2.1 Intent

To ensure that all notifiable diseases are known by relevant healthcare workers in all healthcare settings and relevant Local, State and National authorities are notified promptly in compliance with the statutory requirements.

8.2.2 Policy Statement

Some conditions are 'Notifiable diseases' (see list below). This is a legal term denoting diseases that must, by law, be reported to the 'proper officer' based upon Nigeria's health system and system for reporting. It is the responsibility of the clinician in charge of each case to make the notification.

8.2.3 Background

There are some infectious conditions and diseases that can adversely affect patients, staff and the community. They are recognised nationally and internationally as being public health significant and are required by law to be reported. It is therefore imperative that the relevant authorities are notified as soon as possible whenever any of these conditions are identified in any healthcare setting. The notification processes including documentation should be standardized across the country.

8.2.4 Responsibility

All doctors, nurses, staff in the Health Information Management or Medical Records Department, IPC Team or Focal Person

8.2.5 Procedure

The outlined conditions must be recorded in the designated Forms and sent to the relevant authorities for national collation and documentation. A Register of recorded notifiable diseases must be maintained by the IPC Team or Focal Person in every healthcare facility. The information should include personal details, date, time and possible contacts.

Table x. List of Nigeria IDSR Notifiable Diseases, Conditions and Public Health Events

NOTIFIABLE DISEASES, CONDITIONS AND PUBLIC HEALTH EVENTS		
SN	CATEGORY	NAME
1	Epidemic-prone (13)	Anthrax
		Cholera
		Dengue Fever
		Diarrhoea with blood (<i>Shigella</i> Sd1)
		Dracunculiasis
		Leprosy
		Human influenza caused by a new Subtype
		Measles
		Meningitis
		Severe Acute Respiratory Illness (SARI)
		Severe Acute Respiratory Syndrome (SARS)
		Smallpox
		Viral Haemorrhagic Fevers (Ebola Virus Disease, Lassa)
Yellow fever		
2	Targeted for eradication and elimination (6)	Acute Flaccid Paralysis (AFP)/Poliomyelitis
		Dracunculiasis
		Leprosy
		Lymphatic Filariasis
		Neonatal tetanus
		Tuberculosis (Miliary, Extended-Drug-Resistant, Multiple Drug Resistant)

Reference

1. Health-care-associated infection in Africa: a systematic review Sepideh Bagheri Nejad, Benedetta Allegranzi, Shamsuzzoha B Syed, Benjamin Ellis & Didier Pittet
2. Policy for Surveillance and Reporting of Infectious Disease, Healthcare Associated Infection and Antibiotic Resistant Organisms V5 20.09.17
3. Damani N, N. Manual of infection control procedures, 2nd Edition.
4. Iseri EE, Fatiregun AA and Ajayi IO. An overview of disease surveillance and notification system in Nigeria and the roles of clinicians in disease outbreak prevention and control. Niger Med J. 2015 May –June; 56(3): 161- 168.
5. Global infection prevention and control priorities 2018–22: a call for action.
6. CDC-Outline For Healthcare-Associated Infections Surveillance April 2006.

Checklist

1. The IPC Committee is aware of every notification and ensures that containment programmes or strategies are effective.
2. The outcomes of containment programmes are documented and shared with the Head of the facility and relevant healthcare workers.
3. The IPC Team or Focal Person knows all areas that are (and can be) used for isolation purposes.
4. A weekly surveillance of the healthcare facility is conducted by the IPC Team or Focal Person.
5. Healthcare-associated-infection rates are monitored monthly by the IPC Team or Focal Person. Collected data are site and bacteria-specific and reviewed at the IPC Committee meeting.
6. Service Level Agreements or Terms of Reference for outsourced services include IPC standards (PPE, cleaning frequency, agents, materials, solutions and strengths) and are monitored by the IPC Team or Focal Person. Reports are shared with the IPCC.

Documents and Records

1. Disease Notification Register (accurate, complete and up-to-date)
2. Patients Notes'
3. Laboratory Results confirming the notifiable disease or condition diagnoses in patients' notes

Occupational Health

9.1 Policy 34 – Occupational Health

9.1.1 Intent

All HCW are at a risk of exposure to different infections because they constantly perform procedures and tasks in an environment where the potential for an unknown infectious hazard is always present. Measures and procedures that will ensure the protection of all HCW are therefore an important and integral component of the IPC and Occupational Safety Programmes of every healthcare facility

9.1.2 Policy Statement

Healthcare workers must be informed about, understand, and comply with the requirements of the Occupational Health and IPC Policies as part of their employment contract. The failure to follow policies and procedures may constitute grounds for disciplinary action.

The leaders and managers of healthcare facilities have a duty of care to HCW who in turn also have a responsibility to protect themselves and avoid putting others at risk. Healthcare workers with infections must manage their condition by seeking appropriate and timely medical care and receiving counselling about their work options where indicated.

9.1.3 Background

Healthcare workers can become exposed to infectious agents through direct contact with an infectious patient, their blood and body fluids and/or as a result of a sharps injury. Infections contracted from an exposure to risk factors arising from work activity, are known as occupational infections.

Infection prevention measures that must be put in place to protect HCW include health status screening, education about safe work practices that minimize the transmission of infection, safe systems of work, workplaces and workspaces that are designed to minimise infection transmission,

physical protection including the use of PPE, immunisation as well as reporting systems for compliance monitoring and identification of breaches in IPC protocols.

9.1.4 Responsibility

All healthcare workers in every facility should understand and be aware of their respective risks of infection through exposure as well as the measures they need to take in order to prevent such infections and what to do when they occur.

9.1.5 Procedure

1. An assessment of disease and immune status for all HCW must be done at the beginning of their employment - a specific questionnaire may be developed for this purpose if necessary. A detailed medical history, particularly for rubella, measles (rubeola), mumps, chickenpox (varicella), hepatitis B, immune disorders, skin conditions, and prior exposure to TB (including work or residence in high-risk settings or locations and high-risk demographic background) must be documented.
2. Facility Immunization Policy and Guidelines for HCW must be strictly adhered to. They should be developed if none exists.
3. Ensure that all necessary laboratory and other tests which may include a tuberculin skin test are done.
4. Institute work restrictions for infected HCW.
5. Ensure that pregnant HCW follow stipulated guidelines applicable to and intended for them in the performance of their duties.
6. All HCW must receive Hepatitis B vaccination and those who need CSM vaccination must also receive it after conducting a risk assessment.
7. Prevent exposures of HCW by using the hierarchy of controls of prevention which include administrative, elimination, work practice and use of PPEs.
8. A post-exposure management and prophylaxis Policy and procedure must be available and implemented when indicated.

9.2 Policy 35 – Pre-employment Assessment

9.2.1 Intent

To identify the pre-employment medical history and assess the immune status of all HCW at the beginning of their employment. This provides the basis of pre-employment evaluation for all staff employed by the healthcare facility.

9.2.2 Policy Statement

Pre-employment assessment must be done for every HCW for the prevention and control of occupationally acquired infections and hazards, particularly those related to hospital work; the identification of any infection risk related to employment and the institution of appropriate preventive measures.

9.2.3 Background

Determining the immune status and immunization requirements of employees for vaccine-preventable diseases is of paramount importance. This will enable the facility to institute appropriate measures to ensure that HCW are fit to undertake the job without risk to themselves, other healthcare providers and the patients.

This baseline medical examination conducted at the start of employment will define the initial health status. Subsequent examinations will be used to evaluate the evident health effects of the work environment and other work conditions.

9.2.4 Procedure

1. Employers will advise and instruct all potential employees of the pre-employment medical requirements.
2. All potential employees must complete the pre-employment form with the assistance or guidance of a medical doctor.
3. All potential employees must meet the requirements outlined in the pre-employment physical examination form.

4. Details of employees' medical results and final clearance will be documented and kept confidential.
5. The completed pre-employment history form, the physical examination form, and laboratory and other test reports will form the basis of each employee's medical record.
6. All newly recruited employees will be entitled to clinical services after clearance from the IPC Department/Unit.
7. The Head of the IPC Department/Unit shall verify the Medical Clearance Letter for all newly employed staff in their respective departments prior to scheduling any clinical responsibility.

9.3 Policy 36 - Immunization Guidelines for Healthcare Workers

9.3.1 Intent

To outline evidence-based vaccinations recommended for HCW in every healthcare facility in Nigeria in line with minimizing infection transmission within the facility and across communities.

9.3.2 Policy Statement

Healthcare workers who work directly with patients, in patient care areas or who handle materials that could spread infections should get appropriate vaccines to reduce the risk of infection from or spread of vaccine-preventable diseases. Healthcare workers must protect themselves, the patients they care for and their families. They must be up to date with the recommended vaccines and their immune status must be known to the Head of the IPC Department/Unit.

9.3.4 Background

Immunisation of HCW can prevent the transmission of certain diseases. It protects individuals and others in the community by increasing the overall level of immunity in the population thereby minimising the spread of infection.

An Immunisation Programme must be in place to reduce vaccine-preventable infections among hospital staff. Information on preventive measures must be provided to all staff with potential exposure risk to blood and blood products. All health care workers with potential exposure risk should be vaccinated. Prevention is more cost-effective than case management and outbreak control.

9.3.5 Procedure

HOW

1. A Vaccination Policy should be developed and implemented
2. Undertake a risk assessment to estimate the specific infection risks that may be faced by HCW in your facility and determine the types and quantities of vaccines that will be required.
3. Provide information on vaccine-preventable diseases to all HCW
4. Confirm and document the vaccination history for specific vaccine-preventable diseases as well as the history of infections for each HCW.
5. Maintain the following details for each HCW:
 - a. screening results
 - b. immunisations provided
 - c. history of vaccine-preventable diseases
 - d. history of other infections
 - e. date and results of serology tests
 - f. record of immunisations (consented to/refused)
 - g. date of immunisations
 - h. batch numbers
 - i. vaccine type and brand name
6. Establish a protocol for managing vaccine refusals by HCW.
7. All live vaccines should be given on the same day or separated by at least 1 month.
8. In addition to immunization, all HCWs should be educated and trained in:
 - a. Hand hygiene.
 - b. Modes of disease transmission.

- c. TB control measures
- d. The importance of:
 - i. cooperating with the IPC Department/Unit.
 - ii. observing standard precautions
 - iii. screening and immunization
 - iv. presenting themselves to the employee health Unit or designated Unit when they suspect an infectious disease may be present.

Table 24. Routine immunizations recommended for healthcare workers

HEALTHCARE WORKER	DISEASE/VACCINE
All HCW including all workers directly involved in patient care or the handling of human tissues, blood or body fluids.	Hepatitis B (3 doses after no serological evidence of immunity or prior vaccination) Influenza, one dose. DPT (Diphtheria, Pertussis and Tetanus) MMR (if non-immune) Varicella (if non-immune) Vaccines Hep A Vaccine depending on the risk of exposure Polio – Routine childhood immunization (from history or record)
HCW who may be at high risk of exposure to cases of drug-resistant TB or who work in TB-DOT Centers	Vaccines listed for 'All HCW as well as BCG (Bacillus Calmette-Guérin) vaccine if not immune

Table 25. Immunizations Recommended for HCW in special circumstances

HEALTHCARE WORKER	DISEASE/VACCINE
Scientists or Technicians in the Microbiology Laboratory who frequently work with Salmonella Typhi	Typhoid Vaccine
Laboratory Scientists or Technicians who directly handle cultures with vaccinia or orthopox viruses that infect humans	Vaccinia Vaccine
HCW exposed to faeces of infectious patients	Hepatitis A Immune Globulin
HCW likely to be exposed especially those who work where seasonal epidemics of meningitis occur	Meningococcal Polysaccharide vaccine

9.4 Policy 37 – Hepatitis B Immunisation for Healthcare Workers

9.4.1 Intent

To protect all healthcare workers from developing Hepatitis B virus infection if they become exposed in the course of their duties.

9.4.2 Policy Statement

The HBV vaccine has contributed to a significant reduction of HBV in HCWs and the infection is 95% preventable with immunization. All non-immune HCWs must be immunised with 3 doses of HBV after their non-immune status has been confirmed.

9.4.3 Background Information

1. Hepatitis B is transmitted to HCWs by occupational exposure to blood and body fluids infected with the Hepatitis B virus which is a blood-borne pathogen.
2. The probability of becoming infected by HBV from a needle-stick injury ranges from 1.9% to 40%.
3. In some regions of the world, less than 20% of HCWs have received all three doses of vaccine required for immunity from HBV infection.

9.4.4 Procedure

HOW

A. Pre-vaccination Testing

1. Screen all new HCWs for HBsAg and anti-HBs to verify their HBV immune status.
2. Provide Hepatitis B immunization to those HCWs who are non-immune (i.e. anti-HBs <10mIU/L) unless they provide valid documentation of a completed vaccination series and anti-HBs levels > 10mIU/L 1 to 2 months post-vaccination.
3. Explain the risks of non-immunization to all HCWs who refuse immunization and ensure they sign a disclaimer form.

B. Administration of the Vaccine

Give 3 doses of Hepatitis B vaccine with the second and third doses at 1 and 6-month intervals as recommended by the manufacturer.

C. Post-vaccination Serological Testing

To ensure adequate seroconversion and protection, HCWs should be evaluated 1 to 2 months after completing the series for the level of anti-HBs which should be >10 mIU/L.

D. Non-responders to the First Series of Vaccination

If anti-HBs levels are <10 mIU/L one to two months post-vaccination, take the following steps:

1. A complete second series of 3 doses should be given.
2. One month after completing the second series, HCWs should be evaluated for the level of anti-HBs which should be >10 mIU/L.
3. HCWs who remain anti-HBs-negative should be considered as non-responders and should be counselled accordingly.

E. Counselling Non-responders

1. If the measures outlined in (A) to (D) were taken and the HCW remains anti-HBs-negative, no further doses should be administered.
2. The importance of Standard Precautions and the Policy should be emphasized to the HCW.
3. The HCW should be tested for HBsAg and if positive, counselling should be provided. Professional duties should be reviewed along with the appropriate referrals.
4. HBsAg-negative HCWs who fail to seroconvert should receive HBIG if exposed to HBsAg positive blood products or body fluid. Refer to the Policies on Management of Sharps Injury and Exposure to Bloodborne Pathogens.

9.5 Policy 38 - Cerebrospinal Meningitis (CSM) Immunization

9.5.1 Intent

To educate HCWs about the risks associated with contact with respiratory secretions from an infected person without wearing a mask when carrying out procedures such as suctioning, resuscitating or intubation.

9.5.2 Policy Statement

All HCWs who are likely to be exposed especially those who work in areas where seasonal epidemics of meningitis occur must be immunised with the CSM vaccine.

9.5.3 Background

Healthcare workers are exposed to the infectious agent by airborne and droplet transmission. All HCWs working in areas where CSM occurs seasonally must be effectively educated about the signs and symptoms as well as measures that can be taken to prevent or minimize the risk of infection.

In cases of occupational exposure, appropriate prophylactic regimens should be administered in a timely manner. Work can be resumed after 24 hours of prophylactic antibiotic therapy.

9.5.4 Procedure

Prophylaxis

One of the following:

- a. Rifampin 600mg every 12 hours for 2 consecutive days (contraindicated in pregnancy) or
- b. Ciprofloxacin 500mg as a single dose (contraindicated in pregnancy) or
- c. Ceftriaxone 250mg IM as a single dose (safe during pregnancy)

9.6 Policy 39 - Occupational Exposure of HCW to Blood-Borne Pathogens

9.6.1 Intent

To protect HCWs from exposures to blood-borne pathogens and hazards in the workplace using a hierarchy of controls.

9.6.2 Policy Statement

Occupational exposures to blood-borne pathogens and occupational seroconversions must be prevented with practical low-cost measures. There is the co-benefit of preventing exposure to other viruses and bacteria.

9.6.3 Background

The goal of occupational health activities is to protect HCWs and patients from acquiring an infection while working in a healthcare facility. This is achieved by identifying work-related infection risks and preventing them and ensuring prompt, appropriate and effective management of any occupational exposures to infections.

9.6.4 Procedure

Control measures are actions taken to prevent the introduction and transmission of blood-borne pathogens in the workplace. Methods which help to reduce the risk of exposure include:

1. Elimination of hazards

- a. Complete removal of a hazard from the work area (the most effective control method) whenever possible
- b. Removing sharps and needles when possible (by substituting jet injectors for needles and syringes or using needleless intravenous systems)
- c. Eliminating all unnecessary injections
- d. Eliminating unnecessary sharps such as towel clips

2. Standard Precautions

The scope of precautions should be implemented

3. Administrative Controls

- a. Policies, Processes and SOPs which aim to limit exposure to hazards
- b. Allocation of resources to demonstrate the commitment of executive management to HCW safety
- c. Needle-stick injury prevention committee (IPCC)
- d. Exposure Control Plan
- e. Removal of all unsafe devices
- f. Consistent and continual training in the use of safe devices

4. Engineering Controls

Implemented to isolate or remove a hazard from a workplace and include:

- a. Sharps disposal containers (safety boxes)
- b. Use of sharps protection devices for all procedures (devices with needles that retract, sheathe or blunt immediately after use)

5. Work practice controls

Implemented to change the behaviour of HCWs and to reduce exposure and include:

- a. Non recapping of needles
- b. Placing sharps containers at eye level and within arms' reach
- c. Sealing and discarding sharps containers when they are three-quarters full
- d. Establishing a means for the safe handling and disposal of sharps devices before beginning a procedure

6. Personal Protective Equipment (PPE)

These provide barriers and filters between the HCW and the hazard. They help to prevent exposures to blood splashes but will not prevent needle-stick injuries (e.g. eye goggles, gloves, masks and gowns).

9.7 Policy 40 - Post-Exposure Prophylaxis (HIV, Hepatitis B)

9.7.1 Intent

To provide evidence-based guidelines for the timely post-exposure evaluation, management and follow-up of HCWs who have had an occupational exposure to infectious blood and/or body fluids.

9.7.2 Policy Statement

Post-exposure evaluation and the initiation of prophylaxis, if indicated, should be available to all HCWs who have been exposed to blood or body fluids which may be infected with blood-borne pathogens. These measures can potentially minimize the morbidity and mortality that result from such exposures. Standard regimens for post-exposure management and follow-up must be adhered to.

9.7.3 Background

Occupational exposure is a percutaneous injury (e.g. a needle-stick puncture or cut with a sharp object) or contact of mucous membranes (e.g. splashes to eyes, nose, oral cavity) or non-intact skin (e.g. exposed skin that is chapped, abraded or affected by dermatitis) that may place the HCW at risk for infection with Hepatitis B virus (HBV), Hepatitis C virus (HCV) or the human immunodeficiency virus (HIV).

Any direct contact (i.e. contact without barrier protection) with a concentrated virus in a research laboratory or production facility is also considered as an exposure that requires clinical evaluation.

Potentially infectious materials include blood, body fluids containing visible blood, tissue as well as medical supplies, equipment or environmental surfaces contaminated with these substances. Cerebrospinal fluid, synovial fluid, pleural fluid, pericardial fluid, amniotic fluid, semen and vaginal secretions are considered to be potentially infectious.

9.7.4 Procedure

HOW

A. Any exposed HCW should report immediately to the Staff Clinic or designated Physician during work hours or to the Emergency Department after hours or over the weekend. The HCW should report the incident to his/her immediate Supervisor and a Safety Reporting Systems (SRS) Form should be completed.

B. The HCW should take the following steps immediately after exposure:

1. First Aid.

If you have a needle-stick or sharps injury or are exposed to blood or other body fluid of a patient during the course of your work, follow these steps immediately:

a. Percutaneous injuries

Wash the site of the needle-stick injury or cuts with soap and copious amount of potable water

b. Mucocutaneous and non-intact skin exposures

- i. Splash copious amounts of water onto the nose, mouth or non-intact skin.
- ii. Irrigate the eyes with clean or sterile water or saline.
- iii. Flush the site continuously for 10 minutes

2. Reporting the injury

- a. The HCW should report the incident to his/her supervisor and complete a Safety Reporting System (SRS) Form.
- b. The report should include:
 - i. The date and time of the incident
 - ii. The location where the incident occurred
 - iii. The Department/Unit where the HCW works
 - iv. The Medical Record Number (MRN) of the source

- c. The physician evaluating the exposure should obtain the following information:
 - i. The name and identification of the source.
 - ii. The time and date of the exposure.
 - iii. The nature of the exposure (i.e. non-intact skin, mucosal or percutaneous, human bite).
 - iv. The type of fluid involved (i.e. blood, blood-contaminated fluid or other contaminated fluid).
 - v. The exact anatomical site of the exposure and the duration of contact with the contaminated fluids.
 - vi. Infection status of the source (i.e., HIV, HCV, HBsAg). If known, include the date of testing.
 - vii. The exposed HCW should be questioned about the circumstances surrounding the exposure:
3. For percutaneous injuries, the depth of the wound, solid versus hollow needle, type of sharps used in the source patient.
4. HBV immunization and post-immunization titre, if known (the HCW's medical records can be reviewed to ascertain this information).
 - i. Previous testing for HIV, HBV, and HCV
 - ii. Tetanus immunization status
 - iii. Current medical condition
5. In case of a needle-stick injury and or mucocutaneous exposure from a known HIV-positive source, the ER or designated physician should initiate antiretroviral regimen immediately upon consultation with the ID consultants on call or according to the Policy for HIV post-exposure prophylaxis. They should be questioned about the circumstances of the exposure.
 - a. The blood of the exposed HCW should be tested for HBV, HCV and HIV. Follow institutional policies for

consent requirements in order to obtain blood from the source patient for testing.

- b. The blood of the source individual should be tested as soon as possible to determine HBV (HBsAg, HBsAb, anti-HBc), HCV (anti-HCV), and HIV (HIV test) serological status. When the source individual is already known to be infected with HCV or HIV, testing of the source individual does not need to be repeated.

The nurse will notify the patient's most responsible physician (MRP) of the incident.

HBV Immunization for Post-exposure Prophylaxis

HBV post-exposure prophylaxis (PEP) is determined by the HBsAg status of the source and the immune status of the exposed person.

Recommended Post-exposure Prophylaxis for Exposure to Hepatitis B virus:

1. Post-exposure prophylaxis with Hepatitis B immunoglobulin (HBIG) and/or vaccine should be administered as soon as possible (preferably within 24 hours).
 - a. The effectiveness of HBIG when administered more than 7 days after percutaneous or mucosal exposure is unknown.
 - b. If the exposed person has an adequate antibody response ($>10\text{mIU/ml}$) documented after completion of an HBV vaccination series, no testing or treatment is needed.
 - c. Hepatitis B vaccine and HBIG can be administered simultaneously at separate anatomical sites (the vaccine should always be administered in the deltoid muscle)
2. It is the responsibility of the primary physician or MRP to order the following baseline serology tests on the source patient after obtaining consent:

- a. HBsAg
 - b. Anti-HCV
 - c. Anti-HIV I/II
3. Counsel the HCW regarding the risk of transmission of blood-borne pathogens and post-exposure prophylaxis.
 4. HBV post-exposure prophylaxis (PEP) is determined by the HBsAg status of the source and the immune status of the exposed person.

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9.8 Policy 41 - Work Restrictions for Healthcare Workers

9.8.1 Intent

To provide guidelines for preventing the transmission of infections from infected healthcare workers to patients, communities and the environment.

9.8.2 Policy Statement

Every healthcare facility should have comprehensive documented policies regarding disease-specific work restrictions and exclusion for HCW. Healthcare workers must not come to work if they have signs or symptoms of a potentially infectious disease.

9.8.3 Background Information

Prevention and management of infectious diseases in HCW ensure their health, prevent health restrictions and subsequently prevent hospital acquired infections. Healthcare workers should seek appropriate preventive and curative care and report their illnesses, medical conditions or treatments that can render them more susceptible to opportunistic infections or exposures. They should not be penalised with loss of wages, benefits or job status.

9.8.4 Procedure

Any employee who has an infectious disease has a responsibility to:

1. Consult with an appropriate medical practitioner to determine that they are capable of performing their tasks without putting patients or other workers at risk.
2. Undergo regular medical follow-up and comply with all aspects of informed clinical management regarding their condition.
3. Observe strictly laid out protocol for work restrictions.

Table 26. Exclusion Periods for Infectious Illnesses for Health Workers

ACUTE INFECTION	EXCLUSION PERIOD AND ACTIONS TO TAKE
Conjunctivitis	Duration of the symptoms (while eye discharge is present). Patient care activities must not be performed.
Gastroenteritis	Duration of the symptoms (diarrhoea and/or vomiting) and until 24 hours after symptoms have resolved. If the cause is unknown exclude for 48 hours after the cause is identified. HCW who handle food should always be excluded until 48 hours after symptoms have resolved.
Hand, foot and mouth disease	Until all blisters have dried. Those who may have been in contact with someone who has hand, foot and mouth disease do not need to be excluded from work however consideration should be given to those who care for patients who are more susceptible to infection
Herpes Simplex (Cold sores)	Must not provide direct care to neonates, patients in the OR, labour and post-natal wards, patients who are severely immunocompromised, have burns, extensive eczema or an exposed herpetic lesion. May provide direct care to other patients and do not need to wear a mask. Sores should be covered with a dressing where possible and hand hygiene must be maintained to minimise the risk of transmission.
Herpes Zoster	Must not provide any direct patient care if lesions cannot be covered (e.g. ophthalmic zoster). If active lesions can be covered, can provide care to all patients except pregnant women, neonates, severely immunocompromised patients, burns patients and patients with extensive eczema
Influenza	Duration of the symptoms and until 24 hours after the resolution of fever, provided: <ul style="list-style-type: none"> • They have received 72 hours of anti-influenza medication; or • 5 days have elapsed since onset of respiratory symptoms. HCW involved in the care of patients who are more susceptible to infection (e.g. hematopoietic stem cell transplant patients) exclusion from patients/areas should be for 7 days from the onset of symptoms or until symptoms have completely resolved, whichever is longer.
Pertussis (Whooping Cough)	At least 5 days after commencement of appropriate antibiotic therapy; or for 21 days after the onset of symptoms if not receiving antibiotic treatment; or 14 days after the onset of paroxysmal cough (if the onset is known

ACUTE INFECTION	EXCLUSION PERIOD AND ACTIONS TO TAKE
Scabies and lice	HCW should remain off work until 24 hours after first treatment started
Staphylococcal Infection	Any staphylococcal lesions (e.g. boils, wound infections) must be covered with an occlusive dressing while at work. If lesions cannot be covered, must not perform patient care or prepare hospital food until they have received appropriate antibiotic therapy and the infection has resolved.
Streptococcal Infection	HCW with streptococcal lesions (e.g. impetigo, streptococcal tonsillitis) must ensure that lesions are covered with an occlusive dressing while at work. If lesions cannot be covered, they must not provide direct patient care or prepare hospital food until 24 hours after commencement of appropriate antibiotic therapy. HCW with pharyngitis/tonsillitis should avoid patient contact for at least 24 hours after starting appropriate antibiotic therapy.
Tuberculosis (TB)	Notify TB Services and treat the staff. HCW with pulmonary TB is to be excluded from the workplace until cleared by TB Services. All active TB cases must be monitored by TB Services.

Pregnant Healthcare Workers

Table 27. Guide to Management of Pregnant HCW following occupational exposure to infectious agents that may be detrimental to them and their unborn children

<p>Viral Rashes</p>	<p>Before starting employment, personnel should be screened by completing a pre-employment health assessment for measles, mumps, rubella and varicella. Non immune healthcare workers should be offered vaccination unless contraindicated.</p> <p>Measles (rubeola)—If suspected must remain off of work until appropriate test results are known. May return to work if they have serological evidence of immunity (i.e. are IgG sero-positive and IgM sero-negative); but must be excluded until 4 days after the appearance of the rash if they develop measles.</p> <p>Mumps—If suspected must remain off work until appropriate test results are known. May return to work if they have serological evidence of immunity (i.e. are IgG sero-positive and IgM sero-negative). If mumps develop, they must be excluded from work for 9 days after the onset of parotid gland swelling or until the swelling goes down.</p> <p>Rubella (German Measles) - If suspected, must remain off work until appropriate test results are known. They may return to work if they have serological evidence of immunity (i.e. IgG sero-positive and IgM sero-negative). If they develop Rubella, they must be excluded for at least 4 days after the appearance of the rash.</p> <p>Chickenpox (Varicella) - if healthcare worker develops Varicella, they must be excluded until all blisters have dried (this usually takes at least 5 days).</p> <p>Human Parvovirus B19 (Slapped Face) - does not require exclusion from work, non-infectious once rash develops.</p>
<p>Viral respiratory tract infections (e.g. common cold)</p> <p>Norovirus</p>	<p>Healthcare workers should be excluded from contact with susceptible persons, until they are no longer symptomatic. Healthcare workers with viral respiratory tract infections should stay at home until they feel well.</p> <p>Must not come to work for at least 48 hours after symptoms have stopped (e.g. diarrhoea and/or vomiting)</p>

DISEASE	MODE OF TRANSMISSION	PREVENTION	COMMENTS
Cytomegalo virus (CMV)	Urine, blood, vaginal secretions, semen and saliva	Standard Precautions	No additional Precautions
Hepatitis B	Blood and body Fluid	Standard Precautions Vaccine available, HBIG to infant if exposed to non-immune HCW	Hepatitis B vaccine for all HCWs including those who are pregnant
Hepatitis C	Blood and Body Fluid	Standard Precautions	No additional Precautions for pregnant HCW
Herpes Simplex	Contact with lesions	Standard Precautions or Contact Precautions depending on severity of illness	No additional Precautions needed for pregnant health worker
HIV infection	Blood and body fluids	Standard Precautions	Report any blood/body fluid exposure immediately according to Hospital Policy
Influenza	Droplet Infection	Droplet Precaution Vaccine	Vaccination safe for pregnant women
Parvovirus B19 (Fifth's Disease)	Respiratory secretions (and rarely blood)	Droplet Precaution	Reassign Pregnant HCW
Pulmonary or Laryngeal Tuberculosis	Airborne Droplet Nuclei	Airborne Precautions	Report any unprotected exposure
Rubella	Respiratory Secretions	Droplet precautions Vaccine Contact precautions for congenital rubella	Non-immune HCW, pregnant or not, should not care for patients with rubella or rubeola until vaccination is complete.
Rubeola	Respiratory secretions	Airborne Precautions	The MMR vaccine and component vaccines should not be given to pregnant women. Reassign them to avoid risk of exposure

Varicella Chicken pox	Respiratory secretions and lesion contact	Airborne and Contact Precautions	Non-immune HCW, pregnant or not, should not care for patients with varicella. Reassign to avoid risk of exposure. Non immune women should be evaluated for post-exposure prophylaxis
Varicella Zoster, Disseminated or localized in Immuno-compromised patient	Respiratory secretions and lesion contact	Airborne and Contact Precautions	Non-immune HCW, pregnant or not, should not care for patients with varicella zoster. Reassign them to avoid risk of exposure. Non-immune women should be evaluated for post-exposure prophylaxis.
Varicella Zoster (Shingles), localized	Contact with lesions	Standard Precautions	Non-immune HCW, pregnant or not, should not care for patients with varicella. Reassign them to avoid risk of exposure. Non-immune women should be evaluated for post-exposure prophylaxis.
Pertussis	Respiratory	Droplet Precautions Vaccination	Pregnant HCW should receive a dose of DPT during each pregnancy regardless of history of receiving DPT

Outbreak Management

10.1 Policy 10 - Outbreak Management

10.1.1 Intent

Outbreaks of healthcare-associated infections (HAI) can lead to increased morbidity and mortality of patient, healthcare workers and visitors. This policy outlines the activities that need to occur in the event of an outbreak of a healthcare associated infection. It provides for the rapid investigation, reporting and control of outbreaks.

10.1.2 Policy Statement

All healthcare facilities are required to implement an outbreak management plan when risk assessment identifies that there is an infection with the potential to or that has spread within the healthcare facility or the community. It applies to all staff involved in clinical care delivery as well as other health personnel and visitors who have patient contact.

10.1.3 Background

Healthcare associated infections occur because of transmission of microorganisms from a reservoir to a susceptible host. When a cluster (two or more similar cases related in time and space) occur or an outbreak is identified, an outbreak investigation must be implemented to determine the source of infection and route of transmission. Sometimes the source of an outbreak is from the community but becomes amplified through transmission within the healthcare facility. In all cases, the required infection control and quality measures must be applied to contain and prevent further spread.

The pattern of spread provides an indication of the mode of transmission. For example, if many cases occur after a shared exposure, it is referred to as a common source outbreak. If on the other hand, there is a steady increase of cases over time, that are separated by an interval approximately equal to the incubation period, it is likely to be because of person to person spread.

The investigation of an outbreak may be simple but on occasion may require expert epidemiological advice on procedures requiring escalation to NCDC and relevant state and local government officials.

10.1.4 Procedure

Definitions

- **Outbreak** – May be defined as two or more cases of the same infection related in time and place with evidence of transmission. In occasional cases, the presence of a single case or an unusual, rare organism or disease would be managed as an outbreak, e.g. hospital acquired Lassa Fever or Legionella.
- **Outbreak Control Team** – A multidisciplinary team of relevant stakeholders within the healthcare facility, with the expertise to lead the investigation, manage and control the outbreak.
- **Major Outbreak** – An outbreak that is serious either due to the number of people affected, the impact on the organisation's operational capacity or the potential negative impact on public health. It is often beyond the financial resource or human capacity requirements of the healthcare facility and requires escalation to Federal (NCDC), State and Local government epidemiological teams.
- **Minor Outbreak** – An outbreak that is confined to the healthcare facility and either affects a small number of people or causes less severe illness and can be managed within existing resources. Whilst an outbreak meeting might be convened, the management can be co-ordinated by Infection Control and Outbreak Control Team.

10.1.5 Roles and Responsibilities

1. **Chief Medical Director:** Provides suitable and sufficient resources and facilities to enable effective management during an outbreak.
2. **Infection Prevention and Control Committee Chair:** Advises the Healthcare Facility Management about the nature and extent of the outbreak, the resources and facilities required to effectively manage the outbreaks.
3. **Infection Prevention and Control Team**
 - a. The Infection Prevention & Control Nurse in conjunction with the

Infection Control Doctor and Team will determine the nature and extent of response required.

- b. Assesses wards with suspected outbreaks and advises on outbreak investigations and restrictions and when these can be lifted.
- c. Reviews outbreak restricted areas on a daily basis and advises on IPC management to reduce the risk of spread.
- d. Initiates enhanced cleaning requirements in accordance with national guidance.
- e. Escalates and reports cases to the State Epidemiological Team.
- f. Signing off a terminal clean once completed.

4. Head of Affected Unit

- a. Informs the Infection Prevention and Control Team of suspected outbreaks.
- b. Monitors that all staff working on/or visiting an outbreak restricted area are following the IPC precautions in the policy.
- c. Ensures isolation or cohorting of all suspected cases and use of appropriate personal protective equipment and precautions in accordance with the nature and transmission routes of the infection.
- d. Maintains outbreak records.
- e. Escalates staff shortages in housekeeping to the management.
- f. Signs off completed terminal cleans.
- g. Attends outbreak meetings.

5. Medical staff

Promptly identifies patients and ensures appropriate management, including prompt isolation.

6. Head Nurse

- a. Review daily the bays/wards with outbreak restrictions in their area, and ensure the precautions detailed in this policy are in place.
- b. Ensure adequate cleaning staff are available.
- c. Sign off a terminal clean once completed

10.1.6 Investigating an Outbreak - Steps

1. WHAT - Recognition of the Outbreak

Table 31. Roles and Responsibilities of healthcare workers in Outbreak Management

SN	Roles	Responsibilities
1	Chief Medical Director	Provides suitable and sufficient resources and facilities to enable effective management during an outbreak
2	IPCC Chair	Advises the Healthcare Facility Management about the nature and extent of the outbreak, the resources and facilities required to effectively manage the outbreaks.
3	IPC Team	<p>The Infection Prevention & Control Nurse in conjunction with the Infection Control Doctor and Team will determine the nature and extent of response required.</p> <p>Assesses wards with suspected outbreaks and advises on outbreak investigations and restrictions and when these can be lifted.</p> <p>Reviews outbreak restricted areas on a daily basis and advises on IPC management to reduce the risk of spread.</p> <p>Initiates enhanced cleaning requirements in accordance with national guidance.</p> <p>Escalates and reports cases to the State Epidemiological Team.</p> <p>Signing off a terminal clean once completed.</p>
4	Head of Affected Unit	<p>Informs the Infection Prevention and Control Team of suspected outbreaks.</p> <p>Monitors to ensure that all staff working on/or visiting an outbreak restricted area are following the IPC precautions in the policy.</p> <p>Ensures isolation or cohorting of all suspected cases and use of appropriate personal protective equipment and precautions in accordance with the nature and transmission routes of the infection.</p> <p>Maintains outbreak records.</p> <p>Escalates staff shortages in housekeeping to the management.</p> <p>Signs off completed terminal cleans.</p> <p>Attends outbreak management meetings.</p>
5	Medical staff	Promptly identifies patients and ensures appropriate management, including prompt isolation.
6	Head Nurse	<p>Review the bays/wards with outbreak restrictions in their area daily, and ensure the precautions detailed in this policy are in place.</p> <p>Ensure adequate cleaning staff are available.</p> <p>Sign off a terminal clean once completed.</p>

HOW

- a. Determine if there an increase in the number of cases of a particular infection or a rise in the prevalence of an organism.
- b. Identify the site, the pathogen, and affected population.

2. WHAT - Set up an Outbreak Management Team and develop an Outbreak Management Plan**HOW**

This will be a multidisciplinary team that will decide on the steps that need to be taken, define the responsibilities and team members who will be part of the outbreak response. It must include members who have authority to make decisions within the facility. Members will vary depending on the nature of the outbreak but will include:

- a. Infection Control Physician (if available)/Clinical Microbiologist/
Public Health Physician
- b. Medical Health Officer or delegate
- c. An ICP or person responsible for infection control of that site
- d. An Occupational Health Practitioner or person responsible for occupational health
- e. An Environmental Health Officer or alternate
- f. A Laboratory Manager or representative
- g. Hospital Public Relations
- h. Front line HCW representative (e.g. Hospital Matron)
- i. May include representatives of other units as required such as:
 - i. A person responsible for support services such as housekeeping and laundry
 - ii. Food services supervisor
 - iii. CSSD

3. WHAT - Outbreak Management Plan (OMP)

The OMP provides the framework for the response. Every facility should have an outbreak management plan in place. The OMP should include:

- Actions to be taken when an outbreak is suspected or confirmed
- How to conduct a risk assessment to identify affected persons
- Communication strategies
- Formation of an outbreak response team
- Identification and implementation of immediate control measures appropriate to the mode of transmission of the suspected or causative organism
- Responsibilities for implementing control measures
- How to obtain administrative/management approval for the measures to be used
- Assessment of the need to obtain specimens
- How to document all aspects of the outbreak and its management
- Notification of the appropriate public health authorities
- Management of confidentiality issues
- Actions to be taken to conclude the outbreak, including preparation of a final outbreak report
- Actions to be taken to prevent similar outbreak from occurring in the future

4. WHAT - Verify the Diagnosis

HOW

- a. Each case should be reviewed to meet the definition.
- b. Confirm that an outbreak exists by comparing the present rate of occurrence with the endemic rate.

5. WHAT - Immediate Control Measures

HOW

- a. Determine the magnitude of the problem and institute immediate control measures.
- b. An intensive review of infection control measures should be made, and general control measures initiated at once. General measures include:
 - i. Isolation or cohorting of infected cases
 - ii. Strict hand washing

- iii. Intensification of environmental cleaning and hygiene
- iv. Adherence to aseptic protocols, and
- v. Strengthening of disinfection and sterilization.

6. WHAT - Communicate the Outbreak

HOW

- a. Inform the affected unit/department
- b. Notify the the hospital administration and relevant departments

7. WHAT - Develop a Case Definition

HOW

- a. Preliminary investigation must be begun by developing a case definition.
- b. The case definition must state a/an:
 - i. Place (site, location) - Where?
 - ii. Affected population – Who?
 - iii. Pathogen or enumerate the characteristic symptoms and signs – What?
 - iv. Unit of time – When?
- c. Standard definitions of Healthcare associated infections can be used

8. WHAT - Search for Additional Cases

HOW

- a. Examine clinical and microbiological records.
- b. Develop a Line listing (Appendix ?) for every case, patient details, place and time of occurrence and infection.
- c. Draw an epidemic curve based on place and time of occurrence and analyze the data for common features of the cases e.g., age, sex, exposure to various risk factors, underlying disease.
- d. Develop a hypothesis, based on literature search and the features common to the cases, about suspected causes of the outbreak.

- e. Additional microbiological investigations may be carried out based on the suspected epidemiology of the causative organism which may include environmental cultures, cultures from other patients, staff and cases and epidemiological typing of the isolates to identify clonal relatedness.
- f. Test the hypothesis by reviewing additional cases in a case control study, cohort study, or microbiological study.

9. WHAT - Implement Specific Control Measures

HOW

- a. These should be implemented as soon as the cause of outbreak is identified and are instituted on the basis of nature of agent and characteristics of the high-risk group and the possible sources. They include:
 - i. Identification and elimination of the contaminated product(s)
 - ii. Modification of nursing procedures
 - iii. Identification and treatment of carriers
 - iv. Rectification of lapse in technique or procedure

10. WHAT - Evaluation of Efficacy of Control Measures

HOW

- a. Continue monitoring to detect further cases as a means of assessing the effectiveness of control measures.
- b. This is done clinically as well as microbiologically.
- c. Control measures are effective if cases cease to occur or return to the endemic levels

11. WHAT - Document the Outbreak

HOW

- a. Prepare a report to present to the Infection Control Committee, the involved Units, and the Management. The final report should:

- b. Describe the:
- i. Outbreak
 - ii. Interventions
 - iii. Effectiveness
 - iv. Summarize the contribution of each team member that participated in the investigation.
 - v. Recommend quality improvements to prevent any future occurrence.

References

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2. Zaza S, Tokars J, Yomtovian R, Hirschler N, Jacobs M, Lazarus H et al. World Health Organization. *Outbreak Communication Planning Guide*. Available from: <https://www.who.int/ihr/elibrary/WHOOutbreakCommsPlanngGuide.pdf> [Accessed 21st August 2021]
3. Rasslan O. *Outbreak Management* In: Friedman C (ed.), Newsom W (ed.). *IFIC Basic Concepts of Infection Control*. 2nd ed. Malta: International Federation of Infection Control; 2011. p. 57-70.
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Appendices

A. Documentation Templates

1. POLICY STATUS PAGE²

Title/Name	
Issuing Authority	
Approved by	
Category/Type	
Issued/Compiled by	
Issue Date	
Next Review Date	
Reference No.	
Document Version	
Applicable Dept(s)/Unit(s)	
Related Policies	
Signature of Authorising Officer/Date	

AUDIT TOOL

SN	Scope and Description	C	NC	NA	Comments
1	This Policy is duly authorised and dated				
2	All relevant HCWs are aware of this Policy				
3	IPC Committee, IPC Team or IPC Focal Person are known to all relevant HCWs				
4	All relevant HCWs have been trained in the application and/or implementation of this Policy				
5	All applicable Policies have been read and are understood by all relevant staff				
6	This policy has been effectively implemented in all applicable Dept(s)/Unit(s)				
7	Copies of this Policy are accessible to all staff in the relevant Dept(s)/Unit(s)				
8	This policy has been reviewed/updated				
9	Compliance Score (Compliant Items/8 x 100)%				
10a	Observation(s)				
10b	Action(s) Taken				
11	Audited by (Name/Signature/Date)				
	Detailed Report Submitted on (Date)				

²The Status Page is a mandatory aspect of policy documentation – it establishes control, gives credibility and validates policies in current use. It is the first page of a valid Policy Document.

2. PROCESS

Name of Process	
Owning/Responsible Dept./ Unit	
Performers	
Process Level	
Process No./Ref	
Main/Primary Objective	
Applicability	
Duration	
Location(s)	
Frequency	
Exceptions	
Supplier(s)	
Inputs Required	
Customer(s)	
Output(s)	
Outcome(s)/KPIs	
Reviewed by <i>Name/Designation/Signature/Date</i>	
Authorised by <i>Name/Designation/Signature/Date</i>	

Description

Start by/with

1

2.

3.

4.

etc

End at/by/with/when

3. STANDARD OPERATING PROCEDURE

Name	
Category	
Owning Dept(s)/Unit(s)	
Procedure Ref.	
Procedure No.	
Performed by	
Applicable to	
Resources Required	
Indication(s)	
Frequency	
Duration (average)	
Location(s)	
Reviewed by <i>Name/Designation/Signature/Date</i>	
Authorised by <i>Name/Designation/Signature/Date</i>	

Details/Description

- 1.
- 2.
- 3.
- 4.
- 5.

4. WORK INSTRUCTIONS

Name of Task	
Task Location(s)	
Performed by	
Instruction Ref	
Instruction No.	
Duration (average)	
Indication(s)	
Resources Required	
Supervised by	
Other Details	
Authorized by	<i>Name and Designation</i>
	<i>Signature and Date</i>

Steps

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.
- 7.
- 8.

5. OPERATING INSTRUCTIONS - MEDICAL EQUIPMENT/DEVICES
(may also be used for general equipment and appliances)

Name of Device/ Equipment	
Manufacturer	
Brand	
Model	
This Location	
Other Location(s)	
Instruction Ref	
Instruction No.	
Routinely Operated by	
Purpose	
Frequency	
Time(s)	
Duration (average)	
Other handlers (non- operating)	
Customers, Clients	
Other Details	
Authorised by	<i>Name and Designation</i>
	<i>Signature and Date</i>

PROCEDURE/TECHNIQUE

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.

B. IPC Assessment Tool for Healthcare Facilities in Nigeria

Consisting of three (3) main parts (Section A: Demographic Parameters; Section B: Infection Control Programme and Infrastructure; and Section C: Direct Observation of Practices), this tool is designed to assess IPC programmes and practices in healthcare facilities. Direct observation of IPC practices should be completed within 24-48 hours by at least 2 persons when to ensure validity of the information.

Guidelines for Completion

1. 'Not Applicable' should only be selected if the element or domain is not applicable to the facility (e.g. point-of-care testing is not performed; controlled substances are never kept at the facility).
2. If a particular service provided by the facility cannot be observed during the assessment (e.g. no injections were prepared or administered at that time), the Section should be completed by conducting independent interviews of at least two relevant staff about their practices.

Section A: Demographic Parameters

Assessment Date	
Assessors	
Name	
Address	
Location	<input type="checkbox"/> Urban <input type="checkbox"/> Peri-urban <input type="checkbox"/> Rural <input type="checkbox"/> Other
Ownership	<input type="checkbox"/> Government <input type="checkbox"/> Private <input type="checkbox"/> Faith-based <input type="checkbox"/> Corporate
Service Level	<input type="checkbox"/> Primary Care <input type="checkbox"/> Secondary Care <input type="checkbox"/> Tertiary Care
Service Scope	<input type="checkbox"/> Single Specialty <input type="checkbox"/> Multispecialty/Comprehensive <input type="checkbox"/> Acute/Critical Care Other (specify)_____
Assessment Type	<input type="checkbox"/> On-site <input type="checkbox"/> Virtual/Audio-visual Other (specify)_____
Assessment Purpose	<input type="checkbox"/> Self-assessment by facility/Dept/Unit <input type="checkbox"/> External Assessment (Indicate Agency/Assessor) _____
Reason for Assessment (Select all that apply)	<input type="checkbox"/> Outbreak <input type="checkbox"/> Routine <input type="checkbox"/> Other (specify)_____
Available Specialties	<input type="checkbox"/> Anaesthesia <input type="checkbox"/> Cardiology <input type="checkbox"/> Dentistry <input type="checkbox"/> Dermatology <input type="checkbox"/> Endocrinology <input type="checkbox"/> Family Medicine <input type="checkbox"/> Gastroenterology <input type="checkbox"/> Internal Medicine <input type="checkbox"/> Maxillofacial Surgery <input type="checkbox"/> Medicine <input type="checkbox"/> Nephrology <input type="checkbox"/> Obs & Gynae <input type="checkbox"/> Ophthalmology <input type="checkbox"/> Orthopaedics <input type="checkbox"/> Otorhynolaryngology <input type="checkbox"/> Pathology <input type="checkbox"/> Paediatrics <input type="checkbox"/> Public Health <input type="checkbox"/> Radiology <input type="checkbox"/> Surgery Other_____
Diagnostic Services Provided	<input type="checkbox"/> CT <input type="checkbox"/> Endoscopy <input type="checkbox"/> ECG <input type="checkbox"/> ECHO <input type="checkbox"/> Angiography <input type="checkbox"/> MRI <input type="checkbox"/> Radiology <input type="checkbox"/> Other _____
Outpatient Clinics/ Services	<input type="checkbox"/> Immunization <input type="checkbox"/> Antenatal Care <input type="checkbox"/> Pharmacy <input type="checkbox"/> Physiotherapy <input type="checkbox"/> Other _____

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Laboratory Services Available	<input type="checkbox"/> Chemical Pathology <input type="checkbox"/> Clinical Chemistry <input type="checkbox"/> Cytology <input type="checkbox"/> Haematology <input type="checkbox"/> Histology <input type="checkbox"/> Microbiology <input type="checkbox"/> Pathology
Is acute care provided?	<input type="checkbox"/> Yes <input type="checkbox"/> No
If yes, please indicate which of these services are available	<input type="checkbox"/> Accident and Emergency Dept/Unit <input type="checkbox"/> Burns and Trauma Unit <input type="checkbox"/> Intensive Care Unit <input type="checkbox"/> Neonatal Intensive Care Unit <input type="checkbox"/> Special Care Baby Unit
No. of Infection Control Practitioners/Specialists	
No. of full-time (permanent) doctors	
No. of Nurses	
No. of patients seen in a week	
Are inpatient services provided?	<input type="checkbox"/> Yes <input type="checkbox"/> No
If yes, please provide this information:	No. of beds
	No. of wards
	Maximum no. of patients in a ward
	No. of Single/Private Rooms
	Average daily admissions
Are Isolation facilities available?	<input type="checkbox"/> Yes <input type="checkbox"/> No
	If yes, No. of Rooms
	No. of Beds
Are mortuary services available?	<input type="checkbox"/> Yes <input type="checkbox"/> No
If yes, is there a body holding room?	<input type="checkbox"/> Yes <input type="checkbox"/> No

Section B: Infection Control Programme and Infrastructure

Domains to be Assessed	
1	IPC Training and Competency Evaluation/Verification
2	Healthcare Workers' Safety
3	Surveillance and Disease Reporting
4	Hand Hygiene Practices and Resources
5	Personal Protective Equipment (PPE)
6	Injection Safety
7	Respiratory Hygiene/Cough Etiquette
8	Point-of-Care Testing
9	Environmental Cleaning
10	Decontamination, Disinfection and Sterilization of Reusable Equipment, Instruments and Devices
11	Healthcare Waste Management

1. IPC Training and Competency Evaluation/Verification

This assessment should include outsourced services, third party providers, contract staff and volunteers

Elements to be Assessed		Available (Y/N/NA)	Observations/Areas for Improvement
A	Documentation	Written IPC policies and procedures are available, current and evidence-based	
		Policies should be applicable to and appropriate for the services provided by the facility	
		IPC policies and procedures are re-assessed at least annually or in keeping with regulatory and statutory requirements and updated as indicated	
		Policies	
		Processes	
		SOPs	
		Work Instructions/Guides/Job Aids	

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B	Organisational Structure <i>(Indicate if these are available and functional)</i>	IPC Dept/Unit		
		IPC Committee		
		IPC Team		
		IPC Focal Person		
		IPC Nurse		
		IPC Link Nurse(s)		
		Clinical Microbiologist		
C	Training	At least one individual trained in IPC is employed/regularly accessible		
		IPC Training Programme		
		IPC Training Records (Attendance/Coverage)		
		Infectious Disease Notification Register/Log		
		Other Roles/Designation		
		Other Documents		
D	Competency Evaluation and verification	A competency-based training programme provides job-specific training on IPC Policies and procedures to healthcare workers		
		Competencies are evaluated periodically or when indicated		
		Remedial programmes are provided when indicated		
E	Risk Assessment and Management	An effective system is in place for early detection and management of potentially infectious persons at initial points of patient encounter		
F	Audits and Compliance Monitoring	Audits of compliance are undertaken		
		Outcomes of audits are documented		
		Feedback of audits are shared with relevant staff		
		Compliance is monitored periodically		

2. Healthcare Worker Safety		
<i>An exposure incident refers to a specific eye, mouth, other mucous membrane, non-intact skin, or parenteral contact with blood or other potentially infectious materials that results from the performance of the HCWs duties.</i>		
Elements to be Assessed	Available (Y/N/NA)	Observation/Areas for Improvement
A	The Occupational Health Unit or designated Department has an Exposure Control Plan that addresses facility-specific requirements (e.g. potential hazards identified by specific services).	
B	There is a SOP/Protocol for HCW whom contact with blood or other potentially infectious material is anticipated	
C	HCW whom contact with blood or other potentially infectious material is anticipated are trained on the protocol/ SOP for blood-borne pathogens during orientation, induction and at least annually.	
D	Following an exposure event, post-exposure evaluation and follow-up, including prophylaxis are provided at no cost	
E	HCWs who become exposed to blood and/or potentially infectious material are supervised by a trained/licensed healthcare professional.	
F	Exposure events are tracked	
G	Event data are evaluated	
H	Preventive and corrective action plans are developed and implemented to reduce recurrence	
I	Recommendations of the Public or Community Health Committee on Immunization Practices for the immunization of HCW, including offering Hepatitis B and Influenza vaccinations are followed.	
J	All HCW receive baseline screening for TB prior to placement	

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K	All HCW receive repeat testing for TB if appropriate, based on the facility-level risk assessment.		
L	If respirators are used, there is a respiratory protection programme that outlines worksite-specific procedures for required respirator use		
M	The respiratory protection programme includes the provision of medical clearance, training, fit testing and seal-checking.		
N	There are well-defined policies concerning restriction of contact with patients when HCW have potentially transmissible conditions.		
O	These policies include work-exclusion that encourages reporting of illnesses without penalties for loss of wages, benefits, or job status.		
P	These policies include education of HCW about prompt reporting of illnesses to their Supervisors		

3. Surveillance and Disease Reporting

Elements to be Assessed		Available (Y/N/NA)	Observations/Areas for Improvement
A	An updated list of diseases reportable to the Public Health Authority is readily available to all HCW.		
B	There is evidence of knowledge of and compliance with mandatory reporting requirements for notifiable diseases, HAI (as appropriate) and for potential outbreaks.		
C	Patients who have undergone procedures are educated regarding signs and symptoms of infections that may be associated with the procedure		
D	Patients who have undergone procedures are instructed to notify the facility if such signs or symptoms occur.		

4. Hand Hygiene Practices and Resources				
<i>Soap and water should be used when hands are visibly soiled (e.g. blood, body fluids) and is also preferred after caring for a patient with known or suspected disease especially during an outbreak.</i>				
Elements to be assessed			Available (Y/N)	Observations/Areas for Improvement
A	All HCW are educated	at orientation or before the provision of care		
B	regarding	at least once a year		
C	appropriate indications for hand hygiene	when new products and/or protocols are introduced		
D	All HCW are educated regarding appropriate indications for hand hygiene			
E	HCW are required to demonstrate competence in hand hygiene after each training			
F	Hand hygiene is routinely audited and monitored for adherence			
G	Outcomes of audits are documented (at least 200 observations a quarter/60 a month)			
H	Feedback from hand hygiene audits is provided to HCW regarding their performance through their respective Depts/Units.			
I	Hand hygiene policies promote the preferential use of alcohol-based hand rub (ABHR) over soap and water in most clinical situations.			

5. Personal Protective Equipment				
Elements to be assessed			Available (Y/N/NA)	Observations/Areas for Improvement
A	HCW who use PPE receive	at orientation or before the provision of care		
B	training on their	At least once a year		
C	proper selection and use	when new equipment or protocols are introduced		
D	HCW are required to demonstrate competence in the selection and use of PPE after each training			
E	Adherence to proper PPE selection and use is routinely audited and monitored			
F	Outcomes of audits are documented			
G	Feedback from audits is provided to HCW regarding their performance with the selection and use of PPE.			

6. Injection Safety <i>(This domain does not include an assessment of the Pharmacy Dept. or Compounding practices)</i>			
<i>If injectable medications are never prepared or administered at the facility, all elements in this domain should be deemed 'Not Applicable'.</i>			
Elements to be assessed	Available (Y/N/NA)	Observations/Areas for Improvement	
A	HCW who prepare and/or administer parenteral medications receive training on safe injection practices at orientation or before being allowed to prepare and/or administer parenteral medications		
B	HCW who prepare and/or administer parenteral medications receive training on safe injection practices at least once a year		
C	HCW who prepare and/or administer parenteral medications receive training on safe injection practices when new equipment or protocols are introduced		
D	HCW are required to demonstrate competency in safe injection practices after each training		
E	Adherence to safe injection practices is routinely audited and monitored and outcomes are documented.		
F	Feedback from audits is provided to HCW regarding their adherence to safe injection practices.		
G	Policies and procedures	are available to track HCW access to controlled substances to prevent narcotics theft, abuse or diversion.	
		address how data are reviewed	
		address how the facility will respond to unusual access patterns by HCW	
		address how the risk to patients will be assessed if tampering (alteration or substitution of medication) is suspected or identified	
		indicate who the facility will contact if diversion is suspected or identified.	

7. Respiratory Hygiene (Cough Etiquette)			
<i>Note: If available, facilities may wish to place patients with symptoms of a respiratory infection in a separate area while waiting for care.</i>			
Elements to be assessed		Available (Y/N/NA)	Observations/Areas for Improvement
A	Policies and procedures to contain respiratory secretions in persons who have signs and symptoms of a respiratory infection, beginning at point of entry to the facility and continuing through the duration of the visit are accessible to relevant HCWs.		
B	Policies and procedures include	offering face masks to coughing patients and other symptomatic persons upon entry to the facility, as a minimum, during periods of increased respiratory infection activity in the community	
C		providing space in Waiting Rooms/Areas	
D		encouraging persons with symptoms of respiratory infections to sit as far away from others as possible	
E	HCW are educated about the importance of infection prevention measures to contain respiratory secretions to prevent the spread of respiratory pathogens.		

8. Point-of-Care Testing (e.g. blood glucose meters, INR monitor)				
Elements to be assessed			Available (Y/N/NA)	Observations/Areas for Improvement
A	HCW who perform point-of-care testing receive training on recommended practices:	at orientation, or before being allowed to perform point-of care testing		
B		at least once a year		
C		when new equipment or protocols are introduced		
D	HCWs are required to demonstrate competency in recommended practices for point-of-care testing after each training			
E	Adherence of HCWs to recommended practices during point-of-care testing is routinely audited and monitored			
F	Outcomes of audits are documented.			
G	Feedback from audits is provided to HCWs regarding their adherence to recommended practices during point-of-care testing.			

9. Environmental Cleaning				
<i>The facility should verify compliance if environmental cleaning is outsourced</i>				
Elements to be assessed			Available (Y/N/NA)	Observations/Areas for Improvement
A	Policies and procedures for routine cleaning and disinfection of environmental surfaces, including the identification of responsible personnel are accessible to relevant HCWs			
B	Staff who clean and disinfect patient care areas (e.g. housekeeping, technicians, nurses) receive training on cleaning procedures:	at orientation, or before being allowed to perform environmental cleaning		
C		at least once a year		
D		when new equipment or protocols are introduced		
E	HCW are required to demonstrate competence in environmental cleaning procedures after each training.			

F	Adherence to cleaning and disinfection procedures, including using products in accordance with manufacturers' instructions (e.g. dilution, storage, shelf-life, contact time) is routinely audited and monitored		
G	The outcomes of audits are documented		
H	Feedback from audits is provided to HCW regarding their adherence to cleaning and disinfection procedures.		
I	A policy and procedure(s) for decontamination of spills of blood or other body fluids is accessible to all relevant staff		

10. Decontamination, Disinfection and Sterilization of Reusable Devices, Equipment and Instrument

The exact type of PPE depends on the infectious or chemical agent and anticipated type of exposure

Elements to be assessed		Available (Y/N/NA)	Observations/ Areas for Improvement
A	Adherence to reprocessing procedures is routinely audited and monitored (at least 200 observations a quarter/60 a month)		
B	Outcomes of audits are documented		
C	Feedback from audits is provided to HCW regarding their adherence to reprocessing procedures.		
D	Protocols to ensure that HCW can readily identify devices that have been properly reprocessed and are ready for patient use (e.g. tagging system, storage in designated area) are available.		
E	Policies and procedures outlining the facility's response (i.e. risk assessment and recall of devices) in the event of a reprocessing error or failure are accessible to relevant staff.		
F	Routine maintenance of reprocessing equipment (e.g. automated endoscope reprocessors, steam autoclave) is performed by qualified personnel in accordance with manufacturers' instructions.		
G	Outcomes of all reprocessing cycles are documented		
H	Supplies necessary for appropriate cleaning and disinfection procedures are always available		
I	High-touch surfaces in rooms where surgical or other invasive procedures (e.g. endoscopy, spinal injections) are performed are cleaned before being disinfected.		
J	Cleaning agents and disinfectants are used in accordance with manufacturers' instructions (e.g. dilution, storage, shelf-life and contact time).		

K	HCW engaged in environmental cleaning wear appropriate PPE to prevent exposure to infectious agents or chemicals		
---	--	--	--

11. Healthcare Waste Management				
Elements to be assessed			Available (Y/N/NA)	Observations/ Areas for Improvement
A	Policies and procedures for healthcare waste management are accessible to all HCWs			
B	All HCWs receive training in waste handling and disposal	at orientation		
C		at induction in their respective departments		
D		when new containers or changes to existing protocols are introduced		
E	Waste is segregated at every point of generation into appropriate containers			
F	Sharps containers are sealed off when they are three quarters full			
G	HCWs use appropriate PPE when handling waste			
H	Waste is handled and disposed of according to the facility Policy and SOP			
I	Waste containers are appropriately located, correctly identified and properly used by all HCWs			

Section C: Direct Observation of IPC Practices

A. Direct Observation of IPC Practices

Direct Observation of IPC Practices			
Domain	Practice/Procedure	Critical Control Points	Observation/ Score 0 or 1
Standard Precautions	Hand Hygiene	Duration	
		Timing	
		Frequency	
		Effectiveness	
	PPE Use	Appropriateness for procedure/task	
		Proper donning	
		Proper doffing	
		Appropriate disposal	
		Knowing when to change/replace	
	Use of Sharps Box	Location	
		Proper placement	
		Content level	
		Condition	
		Proper disposal	
	Injection Safety	Reuse of needles	
		Reuse of syringe	
		Use of multidose vial	
		Resheathing of needles	
		Shared storage in refrigerator	
		Appropriate disposal	
Segregation at point of generation			

APPENDICES

	Waste Management	Appropriate disposal	
		Appropriate type	
		Location of containers	
		Lined	
		Covered	
	Surveillance and Disease Reporting		
	Respiratory Hygiene (Cough etiquette)		
	Point-of-Care Testing		
	Decontamination, Disinfection and Sterilization of Instruments, Devices and Equipment		
	Environmental Cleaning		

B. Transmission-based Precautions

Direct Observation of IPC Practices			
Domain	Practice/Procedure	Critical Control Points	Observation/Score 0 or 1
Transmission-based Precautions	Contact		
	Droplet		
	Airborne		
	General		

D. Ward Infrastructure Checklist/ Ward Infrastructure Survey (WHO)



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Ward Infrastructure Survey

Period Number*

- The survey should be completed by the hand hygiene programme co-ordinator or an identified and informed health-care worker working within the ward (e.g. a senior nurse who can complete the survey while walking around the ward).
- This questionnaire is in two parts: 1) **questions** on handwashing and handrub facilities and resources available in the ward; 2) a **grid** to assess the exact number of hand hygiene resources and products in place, to be completed by walking to each room or area where patient care/treatment takes place (i.e. the point of care).

▪ **Short Glossary:**

Alcohol-based handrub formulation: an alcohol-containing preparation (liquid, gel or foam) designed for application to the hands to kill germs.

Facility: health-care setting where the survey is being carried out (e.g. hospital, ambulatory, long-term facility, etc).

Handrubbing: treatment of hands with an antiseptic handrub (alcohol-based formulation).

Handwashing: washing hands with plain or antimicrobial soap and water.

Service: a branch of a hospital staff that provides specified patient care.

Ward: a division, floor, or room of a hospital for a particular category or group of patients (it corresponds to the smallest segmentation of the health-care facility; one service can include multiple wards).

1. **Date:** 2. **Facility:**
3. **Ward:** 4. **Service**:**
5. **City**** 6. **Country****

7. **Department (please select the department which best represents yours):**

- Internal medicine Surgery Intensive care unit Mixed medical/surgical
- Emergency unit Obstetrics Paediatrics Long-term/rehabilitation
- Outpatient clinic Other

8. **Position of the person completing this questionnaire:**

- Head nurse Head physician Hand hygiene programme co-ordinator
- Hand hygiene programme deputy co-ordinator Other infection control team member Others

9. **Number of health-care workers on this ward:** Nurses Physicians Auxiliaries

10. **Is water regularly available?** Always Intermittently Rarely Never

* To be completed by the data manager.

** **Optional**, to be used if appropriate, according to the local needs and regulations.



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11. Is running water available? Yes No
12. Is water visibly clean? Yes No Don't know
13. What kind of taps is available? Hand-operated Elbow/wrist-operated
 Foot-operated Automatic
14. Are disposable towels available at all sinks? Always Intermittently Rarely Never
15. Is soap available at all sinks? Always Intermittently Rarely Never
16. Is an alcohol-based handrub available? Always Intermittently Rarely Never
17. If yes, what type of handrub dispensers are available? (select all applicable answers)
- Pocket bottle Bottle affixed to trolley/tray Bottle affixed to bed
 Wall dispenser Dispenser located on bedside table/trolley
18. If wall dispensers are available, are they placed at the point of care*?
- Yes Yes but not at each point of care No
19. Does every health-care worker have easy access to handrub pocket bottles?
- Always Intermittently Rarely Never Not applicable
20. Is there an assigned person responsible for the refilling or replacement of empty dispensers?
- Yes No
21. Are handrub dispensers replaced when empty?
- Always Intermittently Rarely Never Not applicable
22. Are posters illustrating handwash technique displayed beside each sink? Yes No
23. Are posters illustrating handrub technique displayed close to the dispensers and in multiple areas of the ward? Yes No
24. Are posters illustrating indications for hand hygiene displayed in multiple areas of the ward? Yes No
25. Is any other type of reminder on hand hygiene displayed/available on this ward? Yes No
26. Are examination gloves available on this ward? Always Intermittently Rarely Never
27. Are audits on hand hygiene compliance periodically performed on this ward? Yes No
28. If yes, how frequently? At least once a year At least once every 2 years Less frequently

Source: WHO ward infrastructure document



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Please now walk to each room or area where patient care/treatment takes place in this ward (i.e. the point of care*) and complete the table below.

Room N°/ID	Total N° of beds in this room/area	N° of beds with handrub within arm's reach	N° of sinks in this room/area	N° of sinks with clean water	N° of sinks with soap	N° of sinks with disposable towel	N° of sinks with clean water, soap, disposable towel	Total N° of handrub dispensers in this room/area	N° of fully-functioning and filled dispensers	N° of health-care workers encountered	N° of health-care workers encountered with handrub bottle in their pocket
A) Patient rooms on this ward											
1											
2											
3											
4											
5											
6											
7											
8											
9											
10											
TOT	/										
B) Treatment rooms (ambulatory, day hospital, etc.)											
1											
2											
3											
4											
5											
TOT	/										
C) Corridors and other areas with points of care*											
1											
2											
3											
4											
5											
TOT	/										

TOT = total; N° = number

*Point of care: the place where three elements occur together: the patient, the health-care worker, and care or treatment involving contact with the patient and his surroundings

Source: WHO Ward Infrastructure Document

E. Protocol for Dangerous Chemicals, Agents, Reagents and Drugs (PRODCARD)

Reference	
Name of Product	
Manufacturer	
Danger presented	
Properties that pose a risk	
Physical description [appearance]	
Purpose [used for]	
Where used (Location(s))	
Routinely used by	
Frequency of use	
Amount used on each occasion (maximum permissible dose, concentration or quantity)	
Adverse health effect(s)	
Level of risk with appropriate use	
Precautions during handling and use	
Storage Container (Type)	
Storage Conditions	
Disposal Method(s)	
Personal protection requirements	
First aid measure(s)	
Staff training required for routine use	
Additional Controls	

Assessed by _____ Date _____

Verified by _____ Designation _____ Date _____

Comments/Observations: _____

Material Safety Data Sheet [MSDS] and Manufacturers' instructions were used for this assessment

H¹. List of Tables

1.	WHO core components for IPC – Abridged Descriptions actions to be implemented at the healthcare facility level	
2.	WHO core components for IPC –actions to be implemented at the facility level	
3.	Summary of Key responsibilities of the various agencies	
4.	Broad responsibilities of the IPC Committee, Team and Link Nurse	
5.	Rationale for the 5 moments for Hand Hygiene	
6.	Raw materials for inclusion/consideration in the preparation of ABHR	
7.	DO’S and DO NOT’S when using Gloves	
8.	Types and Features of face masks	
9.	Face and Eye Protection	
10.	Use of PPE	
11.	Cough Etiquette - Summary	
12.	Injection Safety Recommendations	
13.	Recommended dilutions for household bleach disinfection	
14.	Preparation of 3.5% chlorine solution from household bleach	
15.	How to prepare chlorine solution from Calcium hypochlorite powder or chlorine granules (70% active chlorine)	
16.	DO’s and DO NOT’s for single-use items	
17.	Reprocessing of Reusable Medical Devices	
18.	Segregation of Healthcare Waste	
19.	Use of Aseptic Non-touch Technique (ANTT) for specific procedures	
20.	Safety Considerations in the maintenance of Asepsis	
21.	Choosing the appropriate catheter	
22.	Infection Control measures for low possibility of VHF	
23.	Infection Control measures for high possibility of VHF	
24.	Routine immunizations recommended for healthcare workers	
25.	Immunizations recommended for HCW in special circumstances	
26.	Exclusion Periods for Infectious Illnesses for Health Workers	
31	Table 31. Roles and Responsibilities of healthcare workers in Outbreak Management	
32.	Guide to Management of pregnant employees on occupational exposure to infectious agents that may be detrimental to them and their unborn children	

H². List of Figures

1.	Infection Prevention and Control Committee – Governance Structure	
2.	Infection Prevention and Control – Link System	
3.	The Chain of Infection	
4.	Probable areas of contamination during patient care	
5.	Five Moments for Hand Hygiene	
6.	Frequently missed areas during hand hygiene	
7.	How to Hand wash	
8.	Steps in Performing Alcohol Based Hand Rub Hand Hygiene (WHO 2009)	
9.	Technique for Surgical Hand Rub	
10.	Materials for preparing Alcohol-based Hand Rub Solution	
11.	Preparation of Alcohol-based Hand Rub	
12.	Alcoholmeter	
13.	Donning Gloves	
14.	How to doff contaminated gloves (Method Two)	
15.	The Glove Use Pyramid (WHO)	
16.	Donning and Doffing Face Masks and Respirators	
17.	Donning and Doffing Goggles and Face shields	
18.	Donning and Doffing Aprons and Gowns	
19.	Cough Etiquette	
20.	‘NEVER’ Actions for Injection Safety	
21.	Infection Transmission from Unsafe Injection Practice	
22.	What to do in the event of a Needlestick Injury	
23.	An improvised puncture-proof sharps container	
24.	Dilution of Sodium Hypochlorite (Bleach) Solution	
25.	PPE for Environmental Cleaning	
26.	Cleaning devices and equipment	
27.	Schematic Categorization of Healthcare Waste	
28.	Segregation of Solid Biomedical Waste	
29.	Waste Categories, Segregation and Treatment	
30.	Identification of microorganism entry points	
31.	The Properly Labelled Tube	
32.	Hierarchy of Controls for the Prevention of Tuberculosis	

I. Outbreak Management Form

Name of Facility _____

Outbreak Report Template _____

To: _____

From: _____

Date: _____

Executive Summary

Key features of the outbreak: Location; Who; What; Where; When; Lessons learned; Recommendations; Ongoing action(s); Further action(s) required

Introduction and Background

Demographics; Surveillance data; Previous similar outbreaks; Description of the Wards/ Units involved

Outbreak description

How was the outbreak discovered or reported?

Steps taken to verify it; What is known to date?; Why was an investigation undertaken?; How was the outbreak managed/; Members of the Outbreak Management Team; The Outbreak Management Plan and its objectives; Control measures taken and communications with the media?

Methods

Epidemiological; Case definition; Case finding; Study Design (descriptive-analytical); Laboratory; Clinical and environmental specimens - (types, how they were collected); Environmental studies; Site visit(s) and risk assessment; Other studies

Results

Epidemiological; Number of cases; Overall attack rates (by age, sex, exposure); Symptoms, duration and outcomes of illness; Description (time, place, person); Epidemic curve (incubation period); Laboratory findings; Environmental study findings; Inspection report; Other studies

Discussion

Main hypotheses (likely causative agent and mode of transmission); Justify conclusions and actions; Explain how results confirmed or disproved the hypothesis; Challenges; Limitations; Possible biases; Explain actions taken to protect rest of the hospital and the public if appropriate

Lessons learned

What were the problems? What errors were made? Suggestions for improvement

Recommendations

What should be done to control this outbreak and prevent future outbreaks?

How do/will you improve the management of future outbreaks?

References

Appendices: Relevant documents e.g. Line lists, pictures of epidemic curves etc

I. List of POLICIES⁴

1.	Infection Prevention and Control	
2.	Standard Precautions	
3.	Hand Hygiene	
4.	Personal Protective Equipment	
5.	Respiratory Hygiene	
6.	Injection Safety	
7.	Hospital Linen Management	
8.	Cleaning, Disinfection and Sterilization	
9.	Environmental Cleaning	
10.	Terminal Cleaning	
11.	Healthcare Waste (including Sharps) Management	
12.	Transmission-based Precautions	
13.	Isolation Precautions	

APPENDICES

14.	Droplet Precautions	
15.	Airborne Precautions	
16.	Protective Isolation	
17.	Aseptic Procedures	
18.	IV Catheter Insertion	
19.	Urinary Tract Catheters	
20.	Central Venous Pressure Line Insertion	
21.	Wound Management	
22.	Phlebotomy	
23.	Diseases and Pathogens of Interest	
24.	Occupational Exposure to HIV and other inoculation risk infections	
25.	Antimicrobial Resistance	
26.	Meningitis	

2. The template for the Status Page that must precede every policy is provided in Appendix B. The Status Page is mandatory and Controls and Validates any Policy that is currently in use.

J. Abbreviations and Acronyms

3TC	Lamivudine
ACH	Air changes per hour
AIIR	Airborne Infection Isolation Room
AMR	Antimicrobial resistance
ANTT	Aseptic non-touch technique
AZT	Zidovudine
BBF	Blood and Body Fluids
BSI	Blood Stream Infections
BSL	Biosafety Level
CABSI	Catheter-Associated Blood Stream Infection(s)
CAUTI	Catheter-Associated Urinary Tract Infection(s)
CDC	Centers for Disease Control
CPE	Carbapenem-resistant Enterobacteriaceae
CRPA	Carbapenem-Resistant Pseudomonas aeruginosa
CTC	Cholera Treatment Centre
CTU	Cholera Treatment Unit
DSNO	Disease Surveillance Notification Officer
ER	Emergency Room
FMoH	Federal Ministry of Health
HAP	Hospital-associated Pneumonia
HBeAg	Hepatitis B Antigen
HbsAg	Hepatitis B Surface Antigen
HAI	Healthcare-Associated Infection(s)
HCW	Healthcare Worker(s)
HIV	Human Immunodeficiency Virus
IHR	International Health Regulations
IPC	Infection Prevention and Control

APPENDICES

IPCC	Infection Prevention and Control Committee
LMIC	Low and Middle-Income Countries
LRTI	Lower Respiratory Tract Infection
MDRO	Multi-drug Resistant Organism(s)
MRP	Most Responsible (Primary Care) Physician
MRSA	Methicillin-resistant staphylococcus aureus
NIOSH	National Institute for Occupation Safety and Health
OR	Operating Room
PEP	Post-exposure Prophylaxis
PPE	Personal Protective Equipment
PoCRA	Point-of-Care Risk Assessment
PQS	Performance, Quality and Safety
SDG	Sustainable Development Goal(s)
SSI	Surgical Site Infection(s)
UTI	Urinary Tract Infection(s)
VAP	Ventilator-associated pneumonia
VHF	Viral Haemorrhagic Fever
WaSH	Water, Sanitation and Health
WHO	World Health Organisation

K. Glossary

Term	Full Meaning
Biohazard	Biological substance which presents a threat to human health or to the environment. Its presence is formally indicated by a standard and globally recognized symbol comprising three black intertwined incomplete circles around a solid black circle on a bright yellow background.
Cleaning	Physical removal of soiling/contaminants, such as organic matter, from surfaces or objects and making them safe for use.
Contamination	The presence of an infectious agent on a living or non-living surface, often invisible to the naked eye.
Disinfectant	An agent that destroys or inhibits some or most microorganisms. It is used on surfaces but not on skin.
Disinfection	Process which eliminates all pathogenic microorganisms except spores on inanimate objects or surfaces.
Fomites	Any inanimate objects which transfer disease to a new host when contaminated with or exposed to an infectious agent (pathogenic bacteria, viruses or fungi)
Frequently touched surfaces	Surfaces in patient care areas in the healthcare facility with frequent hand contact (door handles, light switches, countertops, bedrails and ends of beds, patient charts, tap handles, hand rails, toilet flushes, rounding and medical trolleys/carts, buttons on keyboards, telephones, and call bells).
Non-critical items	Classification or the purposes of cleaning and disinfection. and do not enter sterile body cavities or mucous membranes e.g. blood pressure cuffs, stethoscopes, pulse oximeters and crutches). Most items can be cleaned and disinfected at the point of use using a low-level disinfectant.
Soiling (Pollution):	The visible presence of dirt or offensive matter on a living or non-living surface that should be clean.

GENERIC DOCUMENTATION CHECKLIST FOR THE IPC PROGRAMME - OPERATIONAL LEVEL*(Select those applicable to the level and scope of services provided in your facility)*

Documents/Records	Resources (Human/Material)	Activities	Routines (Schedules/Rosters)	Outcomes
<input type="checkbox"/> Policies	<input type="checkbox"/> Availability	<input type="checkbox"/> Awareness	<input type="checkbox"/> Hourly	<input type="checkbox"/> Performance Indicators
<input type="checkbox"/> SOPs	<input type="checkbox"/> Adequacy	<input type="checkbox"/> Training	<input type="checkbox"/> Daily	<input type="checkbox"/> Goals
<input type="checkbox"/> Protocols	<input type="checkbox"/> Accessibility	<input type="checkbox"/> Retraining/Updating	<input type="checkbox"/> Weekly	<input type="checkbox"/> Measures
<input type="checkbox"/> Work Instructions	<input type="checkbox"/> Appropriateness	<input type="checkbox"/> Orientation	<input type="checkbox"/> Monthly	<input type="checkbox"/> Infection Rates
<input type="checkbox"/> Training Programmes	<input type="checkbox"/> Cost-effectiveness	<input type="checkbox"/> Induction	<input type="checkbox"/> Quarterly	<input type="checkbox"/> Incidence rates
<input type="checkbox"/> Training Attendance	<input type="checkbox"/> Timeliness	<input type="checkbox"/> Supervision	<input type="checkbox"/> Biannually	<input type="checkbox"/> Improvements (+/-)
<input type="checkbox"/> Appointment Letters	<input type="checkbox"/> Effectiveness	<input type="checkbox"/> Process Observation	<input type="checkbox"/> Annually	<input type="checkbox"/> Corrective Actions
<input type="checkbox"/> Job Descriptions	<input type="checkbox"/> Efficiency	<input type="checkbox"/> Process Review	<input type="checkbox"/> As Needed	<input type="checkbox"/> Trends
<input type="checkbox"/> Job Aids	<input type="checkbox"/> Competence	<input type="checkbox"/> Monitoring and Evaluation	<input type="checkbox"/> After each use	<input type="checkbox"/> Exceptions/Outliers
<input type="checkbox"/> Outbreak Reports	<input type="checkbox"/> Proficiency(Verified)	<input type="checkbox"/> Audits	<input type="checkbox"/> Contingency Plan(s)	<input type="checkbox"/> Benchmarks
<input type="checkbox"/> Statutory Reports	<input type="checkbox"/> Used/applied rationally/judiciously	<input type="checkbox"/> Advocacy	<input type="checkbox"/> Other	<input type="checkbox"/> Publications
<input type="checkbox"/> Surveillance Reports	<input type="checkbox"/> Value Contribution	<input type="checkbox"/> Procurement	<input type="checkbox"/> Other	<input type="checkbox"/> Sentinel Events

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THE NIGERIAN MANUAL OF INFECTION PREVENTION AND CONTROL

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