MANUAL

INFECTION PREVENTION AND CONTROL POLICIES AND GUIDELINES FOR HEALTH CARE SERVICES

Prepared by
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in consultation with
Health Services Quality Management
Ministry of Health, Trinidad and Tobago

October 2006
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The Ministry of Health Trinidad and Tobago wishes to acknowledge the valuable contributions of stakeholders from the World Health Organization Regional Office for Africa (WHO/AFRO), Commonwealth Regional Health Community Secretariat (CRHCS) and East, Central, Southern African College of Nursing (ECSACON) who participated in the development of the WHO/AFRO/CRHCS Manuals of Infection Prevention and Control (IPC) Policies and Guidelines, and Training Programme Curriculum*, which was adopted/adapted for the Health Sector, Trinidad and Tobago.

While it is impossible to name everyone who participated in the national and sub-national surveys, meetings and workgroups during the development of the Manual, we wish to acknowledge the contributions of:

- The multidisciplinary team of the health professionals who participated in the IPC Workgroup sessions for adapting/adopting the Manual;
- The Oversight Committee members representing the Pan American Health Organization/World Health Organization (PAHO/WHO), Ministry of Health, Medical Board, Nursing Council, College of Nursing COSTAATT, Faculty of Medicine, University of the West Indies (UWI), and the Pharmacy Board for closely monitoring the project to ensure the objectives are achieved;
- The administrators and staff of the public and private health care facilities, who participated in the pre-consultancy and verification survey of IPC practices;
- The staff of the Directorate of Quality Management, Ministry of Health for spearheading the process;
- The staff of the Project Administration and Technical Assistance Procurement Units for their support;
- PAHO/WHO and the Inter-American Development Bank (IADB) for sponsoring the consultancy;
- Dr. Una V. Reid, HRD Consultant contracted by PAHO/WHO and the IADB, and the Ministry to facilitate the process;
- Mr. Robert Harris, book designer, Kingston, Jamaica for the re-design of the Manual.


PREFACE

The Government of the Republic of Trinidad and Tobago through the Ministry of Health is implementing a Comprehensive Health Sector Reform Programme. This Programme is aimed at improving the quality of health care by introducing new organizational structures and systems, re-engineering ineffective systems and shifting expenditure to health promotion and disease prevention initiatives.

In keeping with one of the main goals, which is to improve and maintain the quality of health care delivered to the population, the Ministry has introduced a sector-wide comprehensive Continuous Quality Improvement (CQI) Programme. Key elements of the CQI Programme include Accreditation and Licensing; Monitoring and Audit; Training and Capacity Building; Risk Management; Quality Management Information Systems (QMIS); Systems re-engineering and Evaluation.

In the context of the accreditation and risk management systems of the Quality Programme, the Sector is introducing a structured programme for the prevention and control of infection since it maximizes patient outcomes, and is part of the Ministry's strategy for providing safe, effective and efficient quality health services.

In Trinidad and Tobago, like many other countries in the world, increasing numbers of different organisms are developing resistance to greater numbers of available antibiotics. Increased global travel is bringing more persons into contact with diseases, which are incubating; additionally there are greater numbers of persons in a state of immuno suppression who are more susceptible to invasion by pathogens (organisms causing diseases) or those usually considered non-pathogenic. It is well recognised that poor infection prevention and control practices result in patient dissatisfaction, increased patient stay and overall costs including litigation. It is therefore imperative that a holistic approach be instituted in the prevention and control of infection in Trinidad and Tobago. To achieve this goal public and private sector partnership is absolutely essential. It is mandatory that all health care facilities implement the infection prevention and control policies and guidelines in order to reduce the risks and improve quality.

As Minister of Health, I give the assurance that patient safety is of utmost importance and that the necessary infrastructure and resources will be made available and I feel confident that you the health care professionals, managers, and support staff will ensure that the goals of the programme are achieved and maintained.

Hon. John Rахael, M.P.
Minister of Health
FOREWORD

The Government of the Republic of Trinidad and Tobago through the Ministry of Health has as one of its goals, improvement in the quality of health care. In order to achieve this goal, the Ministry of Health has introduced a Risk Management System including the strengthening of programmes for the prevention and control of infection.

A Manual of Infection Prevention and Control Policies and Guidelines prepared in consultation with Dr. Una V. Reid outlines the polices and guidelines which must be implemented by all health care personnel in primary, secondary and tertiary health care environments in both public and private health care facilities. Key areas of infection prevention and control such as epidemiology, isolation, standard precautions, disinfection and sterilization, waste management and risk management are addressed.

It is therefore mandatory that all health care personnel become aware of this Manual and diligently implement the policies and guidelines in order to minimize and control the occurrence of infection thereby improving the overall quality of health care delivery to the population.

Dr. Rohit Doon
Chief Medical Officer
SECTION 1

INTRODUCTION
Infections can develop in a health care facility through various sources, namely, patients, visitors, staff, as well as objects. Comprehensive infection prevention and control practices are required to effectively prevent, identify, monitor, and control the spread of infections in all health care facilities.

The most important dimensions of such practices are:

- Scientifically sound measures used for prevention and control of infections
- Consistency with the use of infection prevention and control policies and guidelines
- Monitoring of health care practices
- Surveillance of infection in health care facilities
- Reporting process
- Adequate infrastructure, e.g., sinks, ventilation
- Available appropriate supplies and equipment
- Education/training of staff
- Education of patients, families and members of the community
- Effective management
- Monitoring and periodic evaluation of the infection prevention and control policies and guidelines.

The infection prevention and control policies and guidelines are based on research findings and recommendations from expert authorities, as well as on professional judgement. Where necessary, these have been modified to meet local requirements.
PURPOSE

The primary objective of infection prevention and control is to prevent the spread of infection in health care facilities and settings; thereby assisting health care workers in the provision of quality health care in Trinidad & Tobago.

Infection prevention and control policies and guidelines are required in the monitoring, surveillance, and control of infections in health care facilities and settings.

The *Manual of Infection Prevention and Control Policies and Guidelines* was developed to provide a central reference for all health care facilities/settings and health care workers. The policies and guidelines can be expected to change in response to new knowledge and technology.

While adaption/adoptive will create the framework for governing the system, emphasis will be placed on implementation of the policies and guidelines.

To ensure maintenance of the system, health care workers will be supported with adequate infrastructure and supplies, appropriate supervision, quality control and requisite training followed by periodic in-service education.

Continuous monitoring and periodic evaluation of patient care practices, preferably under the supervision of the Infection Prevention and Control Committees, assure continued performance of correct practices.

Efficient management practices at the institution/department and ward/unit levels are the key to effective infection prevention and control practices.
The comprehensiveness of infection prevention and control is directed by the scope of services provided at the health care facility and setting.

THE FOLLOWING policy statements are general to the overall infection prevention and control practices and may be adjusted to satisfy local conditions:

1. Comprehensive infection prevention and control practices shall be adhered to in each health care facility and setting. These include hospitals, health centres/clinics, special care facilities (government and private), and homes.

2. Infection prevention and control in the health care facility shall be effectively and efficiently supervised, and supported by appropriate and adequate resources.

3. Standard Precautions shall be implemented when contact with any of the following is anticipated:
   - Blood
   - All body fluids, secretions and excretions except sweat, regardless of whether they contain visible blood
   - Non-intact skin
   - Mucous membranes.

4. Expanded Precautions shall be observed when additional precautions are deemed necessary.

5. There shall be an active Infection Prevention and Control Committee (IPCC) in each Regional Health Authority and each health care facility. The Committee shall be representational of all disciplines or departments in the facility.

6. The IPCC shall be empowered to monitor and ensure compliance with the infection prevention and control policies and guidelines in all public and private health care facilities.

7. An Infection and Prevention Control Officer (IPCO) shall be assigned to each major health care facility, as well as each district health care facility in each Regional Health Authority. Similar arrangements to be in place to accommodate smaller health care facilities in each Regional Health Authority.

8. Infection prevention and control policies and guidelines within the health care facility shall be defined by and/or agreed by the Infection Prevention and Control Committee.
9. The Infection Prevention and Control Committee shall approve all chemicals used for disinfection and all methods of sterilization.

10. The health care provider shall report the following to the Infection Prevention and Control Officer:

- Patients with an order for isolation
- Situations where the nurse feels that the patient should be isolated but there is no written order
- Suspected or confirmed cases of the country’s notifiable diseases
- Staff exposure to blood and body fluids.

11. The head of the department/ward/unit shall ensure that all categories of staff, patients and visitors where applicable, are aware of, and comply with the requirements of **Standard Precautions**.

12. The Infection Prevention and Control Officer shall:

- Act as a resource for information
- Monitor the proper utilization of the Standard Precautions policy
- Consult with care givers regarding patient placement and the implementation of Standard Precautions
- Educate employees on Standard Precautions
- Consult with and advise managers/supervisors on personal protective equipment and occupational health and safety protocols.

13. All new staff members shall be oriented to the health care facility infection prevention and control policies and guidelines.

14. There shall be a facility-wide on-going in-service education programme on infection prevention and control directed at assisting all categories and levels of staff understand basic concepts of hygiene, microbiology, immunology, epidemiology, the infectious diseases process, and the prevention and control of nosocomial and other infections, as well as compliance with infection prevention and control policies and guidelines.
15. It shall be the responsibility of the head of department/unit to ensure all staff attends the in-service education programmes.

16. New employees in all departments/units shall be oriented to the *Infection Prevention and Control Policies and Guidelines* by the Infection Prevention and Control Officer and the designated supervisor.

17. There shall be an occupational health and safety programme at national and/or regional health care facility level, which monitors the health and safety of health care workers, and provide the relevant services.

18. The review and update of the infection prevention and control policies and guidelines shall be every three years and more frequent as determined by surveillance reports, etc.

19. The infection prevention and control policies and guidelines shall be integrated with the national as well as the health care facility quality improvement programme.

20. Periodic research shall be done in infection prevention and control, the findings used for review and adjustment as necessary.

21. Content on infection prevention and control shall be integrated into the curricula for education and training of all health care workers.

22. There shall be a programme of education for the community to create awareness of infection prevention and control.

23. A multi-disciplinary/multi-sectoral approach to programme planning, implementation, and evaluation shall be adopted.
SECTION II

MANAGEMENT OF THE INFECTION PREVENTION AND CONTROL POLICIES AND GUIDELINES
RESPONSIBILITY AND AUTHORITY

There are various levels of responsibility and authority for infection prevention and control in health care facilities and settings including home-based care.

LEVELS OF RESPONSIBILITY

- **Ministry of Health**
  At central level, the ultimate responsibility and authority for ensuring the availability and utilization of infection prevention and control policies and guidelines lies with the Ministry of Health. The Directorate of Health Services Quality Management within the Ministry of Health is responsible for the monitoring, evaluation, review and update of the *Infection Prevention and Control Policies and Guidelines*.

- **Regional Health Authorities**
  The Board of the Regional Health Authority is responsible for operational policies, monitoring and evaluation of infection prevention and control practices. The Board is also responsible for ensuring that adequate and appropriate resources are available to support infection prevention and control practices within these facilities.

- **Primary Health Care Team**
  The team is responsible for promoting infection prevention and control practices in the public, in addition to monitoring and surveillance.

- **Health Care Facility**
  At individual health care facility level (government and private): hospitals, health centres/clinics, etc., the implementation of infection prevention and control is intimately linked to the institution’s quality initiatives. The Infection Prevention and Control Committee monitors, coordinates and evaluates its implementation.

- **Health Care Personnel**
  All categories of health care personnel at the individual level are responsible and accountable for effective and efficient implementation of the infection prevention and control policies and guidelines.

- **The Regulatory Bodies (Dental, Medicine, Nursing and Professions related to Medicine), and Education/Training Institutions**
  The Regulatory Bodies and related education/training institutions have the responsibility for ensuring that the respective curricula reflect adequate and appropriate content on infection prevention and control.

- **Community and Community Representatives**
  Individual members of communities have a responsibility for complying with infection prevention and control at the community level. It is the responsibility of community representatives (NGO, CBO) to ensure compliance.
INFECTION PREVENTION AND
CONTROL INFRASTRUCTURE

RATIONALE

On admission to a health care facility, patients may present with a community-acquired infection, transmissible from patient-to-patient, as well as to health care workers, and visitors and vice-versa. Patients, visitors and staff are therefore vulnerable to opportunistic pathogens. As well, issues relative to the misuse of antibiotics and compliance with isolation technique, predispose to the spread of nosocomial and other infections. Effective measures must be developed to prevent, identify and control infections.

At the national level and within the health care facility, infection prevention and control is a quality standard of health care and is essential for the well-being and safety of patients, families, staff, and community.

ORGANIZATION OF INFECTION PREVENTION AND CONTROL

Certain components, as well as an effective infection prevention and control committee are necessary for infection prevention and control in a health care facility. The health care facility manager and/or medical director are therefore responsible for ensuring that the appropriate infrastructure is in place.

A. Components of Infection Prevention and Control

The following are the most important components of infection prevention and control:

1. Available supplies and equipment to the health care facility staff to maintain effective infection prevention and control practices.

2. Policies and guidelines for procedures used within the facility.

3. Ongoing educational programmes for all health care facility staff in the use of such policies and guidelines.

4. Monitoring process for staff health to identify and prevent staff-to-patient and patient-to-staff spread of infection.

5. Monitoring the use of disinfectants, frequency of cleaning, etc.

6. Collaboration with appropriate committee(s) in monitoring the use of antibiotics.
Section II: Management of the Infection Prevention and Control Policies and Guidelines

B. Infection Prevention and Control Committee (IPCC)

Members of this Committee represent key personnel who are in decision-making positions from the various health care facility departments: Administration, Central Supply and Sterilization, Clinical Laboratory, Dental, Dietary, Epidemiology, Equipment Technicians, Housekeeping, Laundry, Medicine, Microbiology, Mortuary, Nursing, Operating Theatre, Public Health (Public Health Nurses and Environmental Health Officers), Pharmacy, Quality Improvement, Transport Services, X-ray, and other departments. Community representation should be included.

The Committee is an integral component of the continuous quality improvement (CQI) programme of the health care facility, and is responsible for establishing and maintaining infection prevention and control, its monitoring, surveillance, reporting, research and education. The National Infection Prevention and Control Committee within the ambit of the Directorate of Health Services Management, has the authority to recommend and/or revise the Infection Prevention and Control Policies and Guidelines, which should be subjected to periodic reviews.

The IPCC should be responsible to the health care facility manager or Medical Superintendent/Clinical Director.

Responsibilities of the Infection Prevention and Control Committee

1. Providing a Manual of Infection Prevention and Control Policies and Guidelines to each department and ward/unit.

2. Ensuring needed equipment and supplies for infection prevention and control are identified, made available and used appropriately.

3. Advising staff on all aspects of infection prevention and control, and maintaining a safe environment for patients, visitors and staff.

4. Planning and conducting ongoing training programmes in order to ensure that all members of staff are sensitized to measures to prevent the transmission of infections.

5. Encouraging participation of all health care facility staff in infection prevention and control by orientation, regular meetings and in-service education.

6. Establishing a system for identifying infections or suspected sources of infections by means of departmental rounds, review of clinical reports and also identifying at-risk patients and taking appropriate actions.

7. Reviewing the levels of nosocomial and other infections (including identifying common sources and routes of entry of infections) on a monthly basis and implementing recommendations where necessary.
8. Verifying the effectiveness of the recommendations implemented for infection prevention and control.

9. Assessing on an ongoing basis whether recommended precautions are being adhered to, i.e., hand hygiene, decontamination, disinfection and sterilization.

10. Investigating the spread of infection outbreaks in collaboration with medical, nursing and other staff.

11. Liaising with all disciplines and sectors to foster team work in infection prevention and control.

12. Providing relevant information on infection problems to management and others.

13. Introducing new techniques and providing general reminders of the importance of the maintenance of an infection-free environment for the safe delivery of health care.

14. Developing education/training programmes on infection prevention and control for integration in the pre-service curricula of all health care workers.

15. Performing any other duties as and when required, (e.g., kitchen inspections, pest control, waste disposal).

Monitoring and surveillance processes are required to ensure compliance by employees with the infection prevention and control policies and guidelines throughout the health care facility. This is accomplished through a series of audits and quality control activities.

Recording and reporting processes are essential for ensuring information flow and for verifying the status of infection prevention and control, as well as the status of infections, such as outbreak of a specified disease in the health care facility.
Chairperson of the IPCC

The Chairperson is responsible to the health care facility manager or medical director for infection prevention and control in the facility. The incumbent should be a senior member of the institution staff: medical microbiologist, epidemiologist, physician or other. He/She should have training and experience in infection prevention and control.

Responsibilities of the post include:


2. Acting as a link between the medical staff and the Infection Prevention and Control Committee.

3. Promoting infection prevention and control.

4. Ensuring that infection prevention and control policies and guidelines are developed, and/or adapted/adopted, implemented, reviewed and updated as needed.

5. Coordinating infection prevention and control activities, including:
   - surveillance activities for the collection, processing, analysis and reporting of nosocomial and other infections, and taking appropriate control measures
   - supporting staff development (orientation, in-service education) on infection prevention and control for health care facility staff
   - communication and consultation processes between the Infection Prevention and Control Committee and internal and external sources.

6. Reviewing and consolidating individual departmental infection prevention and control reports into facility-wide report for dissemination.
Infection Prevention and Control Officer (IPCO)

The duties of the Infection Prevention and Control Officer are primarily associated with infection prevention and control practices.

He/She should be a health professional with post-basic education in infection prevention and control, is an active member of the Infection Prevention and Control Committee and is responsible for the day-to-day activities of infection prevention and control to include:

1. Monitoring of clinical care, housekeeping, laboratory, other units, and environmental practices.
2. Conducting surveillance activities.
4. Recording and reporting.
5. Advising on management of ‘at risk’ patients relating to isolation categories and prevention and control measures.
6. Updating staff on the availability of supplies such as disinfectants and gloves.
7. Conducting learning needs assessment on infection prevention and control for all categories and levels of staff.
8. Planning, conducting and/or participating in orientation and education programmes on infection prevention and control.
9. Monitoring staff health and reporting accordingly.
10. Conducting research on infection prevention and control practices (see Appendix 3 for sample job description).
11. Keeping health care workers abreast of new information on infection prevention and control.
12. Serving as the Recording Secretary of the IPCC.

The IPCO reports to the Medical Chief of Staff/Hospital Medical Director/Country Medical Officer of Health of that facility. He/She serves as a resource to staff of all disciplines and levels in matters related to infection prevention and control.

- Because infection prevention and control policies and guidelines have such an impact on all aspects of patient care, standards in congruence with the policies and guidelines focussing on care outcomes where appropriate are written with content related to current infection prevention and control measures. Associated indicators are necessary for the measurement of performance.

- The Infection Prevention and Control Officer serves as a member on the various TQM/CQI Committees, assisting with the definition of infection prevention and control standards. He/She conducts and reports monitoring/surveillance activities and outcomes related to nosocomial and other infection rates, compliance with infection prevention and control practices and employees’ safety and health.
THE INFECTION PREVENTION AND CONTROL POLICIES AND GUIDELINES MANUAL POLICIES

1. Policies
All health care facilities employees shall adhere to the policies and guidelines in the Manual as agreed.

2. Control
The Infection Prevention and Control Committee under the direction of its Chairperson has the overall responsibility for the infection prevention and control policies and guidelines within the health care facility.

3. Distribution
The Manual of Infection Prevention and Control Policies and Guidelines shall be distributed to all health care facilities (public and private), education/training institutions for educational preparation of all health care workers, and Regulatory Bodies (Dental, Medicine, Nursing, Professions related to Medicine), as well as community representatives.

4. Review Cycle
The Manual shall be reviewed and updated every three (3) years; more often, if warranted (see Table 1).

APPROVAL:

[Signatures]

Valerie Allegra - Rainnie
Director
Health Services Quality Management

Robert Don
Chief Medical Officer

Approved by:  

John Rafael
Minister of Health

Approval Date:  

JAN/17/2007

Review Date:  

June 20th, 2009
The Review Cycle as indicated is every three (3) years or more often as warranted. This table is to be used to document the outcome.

### Table 1:
**Status of Infection Prevention and Control Policies and Guidelines**

<table>
<thead>
<tr>
<th>Title of Policies and Guidelines</th>
<th>Reviewed</th>
<th></th>
<th>Approved</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>By</td>
<td>Date</td>
<td>By</td>
</tr>
</tbody>
</table>
SECTION III

EPIDEMIOLOGY
A comprehension of the infectious disease process is necessary for the understanding of the spread of infections in health care facilities. The spread of infection requires three (3) interrelated elements: source of infecting organisms, a susceptible host, and mode of transmission for the micro-organism.

- **SOURCE**

  The source of the infecting agent may be patients, staff or visitors. It may include persons with the active disease, those in the incubation period of the disease or those who are colonized by the infectious agent, but have no apparent disease (carriers).

  Other sources of infecting micro-organisms can be the patient’s own endogenous flora (autogeneous infection), which may be difficult to control, and inanimate environmental objects that have become contaminated, including equipment and medications.

- **HOST**

  The susceptible host is the second element in the spread of infection. Persons lacking effective resistance to a particular micro-organism are susceptible to those micro-organisms.
Patients’ resistance to pathogenic micro-organisms vary greatly. Some persons may be immune or able to resist colonization by an infectious agent, others exposed to the same agent may establish a commensal relationship with the infecting micro-organism and become asymptomatic carriers, and still others may develop a clinical disease.

Host features such as age, underlying diseases such as diabetes, certain treatments with antimicrobials, corticosteroids, or other immunosuppressive agents; irradiation and breaks in the first line of defence mechanisms caused by such factors as surgical operations, anaesthesia, and indwelling catheters may render patients more susceptible to infection.

TRANSMISSION

Micro-organisms are transmitted in health care facilities by several routes, and the same micro-organism may be transmitted by more than one route. There are five (5) main modes of transmission:

1. Contact
2. Droplet
3. Airborne
4. Common vehicle
5. Vectorborne.
1. **Contact Transmission**

This is the most important and most frequent mode of transmission of noscomial infection and is divided into two sub-groups: direct-contact transmission, and indirect-contact transmission.

(a) **Direct-contact transmission** involves a direct body surface-to-body surface contact and physical transfer of micro-organisms between a susceptible host and an infected or colonized person, such as occurs when a person turns a patient, gives a patient a bath, or performs other patient care activities that require direct personal contact. Direct transmission also can occur between two patients, with one serving as the source of the infectious micro-organisms and the other as a susceptible host.

(b) **Indirect-contact transmission** involves contact of a susceptible host with a contaminated intermediate object, usually inanimate, such as contaminated instruments, needles or dressings, or contaminated hands that are not washed and gloves that are not changed between patients.

2. **Droplet Transmission**

Droplets are generated from the source person primarily during coughing, sneezing and talking during the performance of certain procedures such as suctioning and bronchoscopy. Transmission occurs when droplets containing micro-organisms generated from the infected person are propelled a short distance through the air and deposited on the host’s conjunctivae, nasal mucosa, or mouth. For transmission to occur, the source and the susceptible host need to be within appropriately one meter (3 feet) of one another.

3. **Airborne Transmission**

Airborne transmission occurs by dissemination of either airborne droplet nuclei (small-particle residue) of evaporated droplets containing micro-organisms that remain suspended in the air for long periods of time, or dust particles containing the infectious agent. Micro-organisms carried in this manner can be dispersed widely by air currents and may be inhaled by a susceptible host within the same room or over a long distance from the source patient, depending on environmental factors.

Micro-organisms transmitted by airborne transmission include *Mycobacterium tuberculosis*, rubeola and varicella viruses.

Control of airborne transmission is the most difficult, as it requires control of air flow through special ventilation systems.
4. **Common Vehicle Transmission**

Common vehicle transmission applies to micro-organisms transmitted by contaminated items such as:

- Foods – e.g., salmonellosis
- Water – e.g., shigellosis
- Medications/intravenous solutions
- Blood – e.g., Hepatitis B, C, HIV
- Equipment and devices.

These serve to transmit infection to multiple hosts. Such transmission may result in an explosive outbreak.

5. **Vectorborne Transmission**

Vectorborne transmission refers to transmission by insect vectors and is prevented by appropriate health care facility construction and maintenance, closed or screened windows, and proper housekeeping.

Vectorborne transmission occurs when vectors such as mosquitoes, flies, rats and other vermin transmit micro-organisms.
SECTION IV

STANDARD PRECAUTIONS
INTRODUCTION

In the 1990’s, *CDC Guideline for Isolation Precautions in Hospitals* was revised. The revised guideline contains two tiers of precautions. In the first, and most important tier, are those precautions designed for the care of all patients in hospitals regardless of their diagnosis or presumed infection status. Implementation of these “Standard Precautions” is the primary strategy for successful nosocomial infection control. In the second tier are precautions designed only for the care of specified patients. These additional “Transmission-Based Precautions” are used for patients known or suspected to be infected or colonized with epidemiologically important pathogens that can be transmitted by airborne or droplet transmission or by contact with dry skin or contaminated surfaces. Resulting from the Severe Acute Respiratory Syndrome (SARS) epidemic, further revision of these Guidelines indicates that Expanded Precautions has replaced Transmission-based Precautions (CDC).

A. STANDARD PRECAUTIONS

Standard Precautions is a set of infection prevention and control practices including the use of personal protective equipment designed to protect health care workers and patients from contact with infectious agents in recognized and unrecognized sources of infection. They are recommended for health care workers when having contact with all patients wherever health care is delivered, regardless of patient diagnoses or presumed infectious status (CDC). Implementation of these Precautions is the primary strategy for successful nosocomial infection control.

Standard Precautions applies to 1) blood; 2) all body fluids, secretions, and excretions except sweat, regardless of whether they contain visible blood; 3) non-intact skin, and 4) mucous membranes.

Patients may also be assigned an additional category of isolation precaution dependent upon the patient’s clinical situation.

Standard Precautions consists of the following nine elements:

- Hand hygiene
- Personal protective equipment (PPE): gloves, gowns/plastic aprons, masks, goggles, face shields, eye protectors
- Sharps
- Occupational health and bloodborne pathogens
- Environmental control
Patient care equipment

Patient placement

Patient resuscitation

Linen.

B. EXPANDED PRECAUTIONS

The precautions of this second tier are designed only for the care of specified patients.

Expanded Precautions are barrier or isolation techniques, based upon knowledge of the mode of transfer of an infectious organism, applied to control the spread of the organism. There are four categories of Expanded Precautions: Contact Precautions, Droplet Precautions, Airborne Infection Isolation (AII), and Respiratory Hygiene/Cough Etiquette. More than one category may be used for diseases that have multiple routes of transmission (e.g., SARS). When used singularly or in combination, they are always to be used in addition to Standard Precautions. Expanded Precautions replaces Transmission-based Precautions (CDC).

The following outline the four (4) types of Expanded Precautions:

1. **Contact Precautions** – for patients known or suspected to have serious illnesses easily transmitted by direct patient contact or by contact with items in the patient’s environment. Examples of such illnesses include:
   - Gastrointestinal, respiratory, skin, or wound infections
   - Enteric infections
   - Respiratory syncytial virus, parainfluenza virus, enteroviral infections in infants and young children
   - Skin infections: scabies, pediculosis, etc.
   - Viral/haemorrhagic conjunctivitis
   - Viral haemorrhagic infections (Ebola, Lassa or Marburg)

2. **Airborne Infection Isolation** – for patients known or suspected to have serious illnesses transmitted by airborne droplet nuclei. Patients requiring Airborne Infection Isolation must be given a private room with special air handling and ventilation (negative pressure). Respiratory protection for health care workers is necessary when entering the room. Examples of diseases/organisms requiring Airborne Infection Isolation include:
   - SARS
   - Tuberculosis (pulmonary or laryngeal, suspected or confirmed)
   - Varicella (also requires Contact Precautions)
   - Herpes Zoster (shingles) in immuno-compromised patients.
   - Measles (rubeola)
3. **Droplet Precautions** – for patients known or suspected of being infected with microorganisms transmitted by droplets that can be generated by the patient during coughing, sneezing, talking, or the performance of procedures. Examples of diseases/organisms include:

- Rubella
- Influenza
- Group A streptococcal pneumonia, pharyngitis
- Menigitis, pneumonia (infants and small children)

4. **Respiratory Hygiene/Cough Etiquette** – for all patients requiring additional airborne infection isolation precautions, e.g., SARS.

The following measures to contain respiratory secretions are recommended for all individuals with signs and symptoms of a respiratory infection:

- Cover the nose/mouth when coughing or sneezing;
- Use tissues to contain respiratory secretions and dispose of them in the nearest waste receptacle after use;
- Perform hand hygiene (e.g., hand washing with non-antimicrobial soap and water, alcohol-based handrub, or antiseptic handwash) after having contact with respiratory secretions and contaminated objects/materials.
- Health care facilities should ensure the availability of materials for adhering to Respiratory Hygiene/Cough Etiquette in waiting areas for patients and visitors.
- Provide tissues and no-touch receptacles for used tissue disposal.
- Provide conveniently located dispensers of alcohol-based hand rub; where sinks are available, ensure that supplies for hand washing (i.e., soap, disposable towels) are consistently available (CDC).


SUMMARY OF STRATEGIES FOR RESPIRATORY HYGIENE/COUGH ETIQUETTE

- Education
- Cover mouth for coughs, using tissue or surgical mask
- Hand hygiene
- Spatial separation.
ELEMENTS OF STANDARD PRECAUTIONS

1. Hand hygiene

   * Hand hygiene before and after contact with every patient is the single most important means of preventing the spread of infection.

(a) *Purpose*

The purpose of hand hygiene is to remove soil, organic material and transient microorganisms from the skin. Four elements are essential for effective hand hygiene:

   * Soap
   * Running water
   * Alcohol-based handrub
   * Friction.

(b) *Types of hand hygiene (see Table 4)*

There are four types of hand hygiene.

1. **Routine handwashing**, i.e., washing hands with plain soap and running water. Routine handwashing:

   * Removes transient micro-organisms and soil, blood or other organic material from hands.

   * Is appropriate in all situations when hands should be washed, including after arriving at work.

2. **Handwashing with antiseptic** soap and running water:

   * Removes transient micro-organisms and soil and kills or inhibits the growth of resident micro-organisms.

   * May reduce the risk of infections in high-risk situations, such as:
     * when there is heavy microbial contamination
     * before performing invasive procedures, (e.g., the placement and care of intravascular devices, indwelling urinary catheters)
• before contact with patients who have immune defects, damage to the integumentary system (e.g., burns, wounds) and percutaneous implanted devices
• before and after direct contact with patients who have antimicrobial resistant organisms.

3. Alcohol-based handrub
   ♦ Is only one kind of antiseptic handrub
   ♦ Kills or inhibits the growth of most transient and resident micro-organisms, but does not remove micro-organisms or soil
   ♦ Can be used when handwashing with soap and running water is not possible, as long as hands are not visibly soiled with dirt, blood, or other organic material.

4. Surgical handscrub
   ♦ Scrubbing with antiseptic before beginning surgical procedures will help prevent the growth of micro-organisms for a period of time
   ♦ Reduces the risk of infections to the patient if the gloves are damaged.

(c) Policy Statements
1. Patients and family members shall be instructed in proper hand hygiene.
2. The patient’s hands shall be washed before eating, after toileting and when soiled.
3. A health care facility approved soap and/or alcohol handrub shall be used for routine hand hygiene.
4. Repeat handwashing shall not be done in the same container of water.
5. Hands shall be washed under running water.
6. Hands shall not be dried on personal clothes, wet and soiled towels. Air blow dryers are not recommended.
   ♦ Wash hands with anti-bacterial soap and running water, or plain soap and running water when visible dirty or contaminated with proteinaceous material.
   ♦ Use an alcohol-based hand product for routinely decontaminating hands, if hands are not visibly soiled, or contaminated.
   ♦ DO NOT use alcohol-based hand products when hands are visibly soiled.
   ♦ Ensure hands are dry after handrub before handling food or feeding a patient.

Perform hand hygiene:
♦ Immediately
1. On arrival at work.
Before
2. Direct contact with a patient
3. Putting on gloves for performing clinical and invasive procedures (e.g., administering intravenous and intra-vascular injections, insertion of IUD)
4. Medication preparation
5. Preparing, handling, serving or eating food
6. Feeding a patient, and
7. Leaving work.

Between
8. Certain procedures on the same patient where soiling of hands is likely, to avoid cross-contamination of body sites.

After
9. Contact with a patient's skin
10. Diapering or toileting infants and children
11. Contact with blood, body fluids, secretions, excretions, exudates from wounds, and contaminated items
12. Contact with items/surfaces known or considered likely to be contaminated with blood, body substances, or excretions (e.g., bedpans, urinals, wound dressings) whether or not gloves are worn
13. Personal body functions such as using the toilet, wiping or blowing one's nose
14. Removal of gloves
15. Removal of other protective equipment

Whenever
16. Whenever there is a chance of contamination.

(d) Guidelines
1. Routine handwashing is accomplished by vigorously rubbing together all surfaces of lathered hands followed by thorough rinsing under a stream of running water. This should take 10–15 seconds to complete. Hands should be dried with a paper towel.

2. Immediate re-contamination of the hands by touching sink fixtures may be avoided by using a paper towel to turn off taps.

3. When running tap water is not available, use a bucket with a tap which can be turned on to wet hands, off to lather hands and turned on again for rinsing.
4. If a bucket with a tap is not available, a bucket/basin and pitcher can be used to create a running stream of water. A helper can pour water from the pitcher over the hands being washed.

5. Similarly, a bucket/basin and a tea kettle may be used.

6. For alcohol-based handrub:
   - Dispense the product into hand
   - Rub vigorously including backs of hands, between fingers, into nail beds and up wrists
   - Allow to air dry
   - **DO NOT WIPE OR WASH OFF!**

(e) **Skin Care**

1. Frequent hand hygiene and gloving can irritate skin.

2. Hand hygiene cannot reduce the bacterial counts of personnel with dermatitis.

3. Staff responsible for processing instruments who have open sores or cuts on their hands or forearms should **not** clean instruments until the lesions are healed.

4. Health care providers with dermatitis carry high numbers of micro-organisms and may be at increased risk of exposure to bloodborne pathogens. Intact skin is a major defence from infection.

Antiseptic hand cleansers are designed to rapidly wash off the majority of the transient flora by their mechanical detergent effect and to exert an additional sustained microbiological activity on the resident hand flora.

The types of soaps and antiseptic agents for handwashing are shown at Table 2 and their characteristics at Table 3.

Hand hygiene techniques are indicated at Table 4.

**Figures 1, 1A, and 2** illustrate the dynamism of hand hygiene for infection prevention and control.

**Figure 3** shows the parts of the hands that are often missed during hand hygiene.
Figure 1

Routine Handwashing Techniques

Section IV: Standard Precautions
Figure 1A

Hand Hygiene with Alcohol-based Hand Sanitizer

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<tr>
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<tbody>
<tr>
<td><img src="http://www.med.govt.nz/upload/27589/fig-02-hand-alcohol.gif" alt="Image of hand hygiene" /></td>
<td><img src="http://www.med.govt.nz/upload/27589/fig-02-hand-alcohol.gif" alt="Image of hand hygiene" /></td>
<td><img src="http://www.med.govt.nz/upload/27589/fig-02-hand-alcohol.gif" alt="Image of hand hygiene" /></td>
</tr>
<tr>
<td>4. Cover all surfaces of the hands and fingers.</td>
<td>5. Rub backs of hands and fingers. Rub each thumb.</td>
<td>6. Rub fingertips of each hand in opposite palm.</td>
</tr>
<tr>
<td><img src="http://www.med.govt.nz/upload/27589/fig-02-hand-alcohol.gif" alt="Image of hand hygiene" /></td>
<td><img src="http://www.med.govt.nz/upload/27589/fig-02-hand-alcohol.gif" alt="Image of hand hygiene" /></td>
<td><img src="http://www.med.govt.nz/upload/27589/fig-02-hand-alcohol.gif" alt="Image of hand hygiene" /></td>
</tr>
<tr>
<td>7. Keep rubbing until hands are dry. **The volume required to be effective varies from product to product. Enough product to keep hands moist for 15 seconds should be applied. DO NOT use these products with water. DO NOT use paper towels to dry hands.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: Wash hands with soap and water if hands are visibly dirty or contaminated with blood or other body fluids. Certain manufacturers recommend washing hands with soap and water after 5–0 applications of gel.

Figure 2

Surgical Handscrub Techniques
Figure 3

Hand Hygiene: Areas for Special Attention

Areas to be given special attention when handwashing
(f) Care of hand hygiene products

Since micro-organisms grow and multiply in standing water:

1. Provide soap racks if bar soap is used; soft soap foams when bars of soap are not drained properly. Racks promote drainage and soap will stay drier.

2. Avoid dipping hands repeatedly into basins containing standing water, even if antiseptic agents, such as Dettol or Savlon have been added (micro-organisms can survive and multiply in these solutions).

3. Liquid hand wash products should be stored in closed containers and dispensed from either disposable containers or containers that are washed and dried thoroughly before refilling. **DO NOT** top up system.

Compliance with handwashing protocols by health care personnel is a major problem in health care facilities. The reasons for non-compliance are many and include elements of lack of knowledge about the importance of handwashing, as well as perceived obstacles such as understaffing, lack of supplies, equipment and water. The literature identifies a number of suggested strategies to improve compliance. These appear at Table 5.

1. **Disposable containers are preferred for liquid products. Reusable containers should be thoroughly washed and dried before refilling, and routine maintenance schedules should be followed and documented.**

2. **Liquid products should be stored in closed containers and should not be topped-up.**

3. **The use of anti-microbial soaps must be rotated to prevent the development of resistant organisms.**

4. **All dilutions to be done in Pharmacy.**
Table 2: Soaps and Antiseptic/Antimicrobial Agents for Hand Hygiene

<table>
<thead>
<tr>
<th>Products</th>
<th>Indications</th>
<th>Special Considerations</th>
</tr>
</thead>
</table>
| Plain soap, bar soap, liquid soap granules | • For routine care of patients.  
• For washing hands soiled with dirt, blood or other organic material. | • May contain very low concentrations of anti-microbial agents to prevent microbial contamination growth in the product.  
• Bar soap should be on racks that allow water to drain; small bars that can be changed frequently are safest. |
| Waterless antiseptic agents:  
• Alcohol rinses  
• Alcohol foams  
• Alcohol wipes  
• Alcohol towelettes  
• Germicidal hand rinse (Hibistat) | • Demonstrated alternative to conventional agents.  
• For use where handwashing facilities are inadequate, impractical or inaccessible (e.g. ambulances, home care, mass immunization).  
• For situations in which the water supply is interrupted (e.g. planned disruptions, natural disasters). | • Not effective if hands are soiled with dirt or heavily contaminated with blood or other organic material.  
• Follow manufacturer’s recommendations for use.  
• Efficacy affected by concentration of alcohol in product.  
• Lotions should be readily available to protect skin integrity. |
| Antiseptic/Anti-microbial agents:  
• Chlorhexidine gluconate scrub strengths: 2% aqueous foam or 4% liquid preparation, 0.5% tincture  
• Povidone-iodine scrub strengths: 10%, 7.5%, 2%, 0.5% | • May be chosen for hand scrubs prior to performance of invasive procedures (e.g. placing intravascular lines or devices).  
• When caring for severely immunocompromised patients.  
• Based on risk of transmission (e.g., specific micro-organisms).  
• Critical care areas.  
• Intensive care nurseries.  
• Operating theatre hand scrub.  
• When caring for individuals with antimicrobial resistant organisms. | • Antiseptic agents may be chosen if it is felt important to reduce the number of resident flora or when the level of microbial contamination is high.  
• For use in high risk areas such as ICU, neonatal units, operating theatre, labour and delivery rooms, isolation areas, laboratory and dialysis units, for invasive procedures.  
• Antiseptic agents should be chosen when persistent antimicrobial activity on the hand is desired. They are usually available in liquid formulations. Antiseptic agents differ in activity and characteristics. |

Table 3: Characteristics of Antiseptic Agents

<table>
<thead>
<tr>
<th>Group and subgroup</th>
<th>Gram-positive bacteria</th>
<th>Gram-negative bacteria</th>
<th>Mycobacterium tuberculosis</th>
<th>Fungi</th>
<th>Virus</th>
<th>Speed of killing sensitive bacteria</th>
<th>Inactivated by mucus or protein</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alcohols</td>
<td>Excellent</td>
<td>Excellent</td>
<td>Excellent</td>
<td>Good</td>
<td>Good</td>
<td>Fast</td>
<td>Moderate</td>
<td>Optimum strength 70% with added emollients (glycerine or cetyl alcohol is less drying), not recommended for physical cleaning of skin, good for hand antisepsis and for surgical site preparation. Not recommended when soil and debris are present.</td>
</tr>
<tr>
<td>Chlorhexidine gluconate 2% aqueous/foam (less effective than 4%) 4% liquid</td>
<td>Excellent</td>
<td>Excellent</td>
<td>Fair</td>
<td>Fair</td>
<td>Good</td>
<td>Intermediate</td>
<td>Minimal</td>
<td>Good broad spectrum. Acts more slowly than alcohols. Has persistent effect; good for both hand hygiene and surgical site or preoperative patient skin preparation; do not use near mucous membranes; toxic effects on ears and eyes reported; activity neutralized by non-ionic surfactants.</td>
</tr>
<tr>
<td>Hexachlorophene 3% aqueous</td>
<td>Good</td>
<td>Poor</td>
<td>Poor</td>
<td>Poor</td>
<td>Poor</td>
<td>Slow</td>
<td>Minimal</td>
<td>Provides persistent, cumulative activity after repeated use (washing with alcohol reduces persistent action), can be toxic when absorbed from skin especially in premature infants; good for handwashing but not for surgical site preparation; limited spectrum of anti-microbial activity.</td>
</tr>
<tr>
<td>Iodine compounds iodine in alcohol</td>
<td>Good</td>
<td>Good</td>
<td>Good</td>
<td>Good</td>
<td>Good</td>
<td>Fast</td>
<td>Marked</td>
<td>Causes skin “burns”, but this is unusual with 1% tincture; especially if it is removed after several minutes, too irritating for handwashing but excellent for surgical site preparation.</td>
</tr>
</tbody>
</table>
**Table 3:**
Characteristics of Antiseptic Agents (cont’d)

<table>
<thead>
<tr>
<th>Group and subgroup</th>
<th>Gram-positive bacteria</th>
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<tbody>
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<td>Iodophors</td>
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<td></td>
</tr>
<tr>
<td>Povidone-iodine</td>
<td>Good</td>
<td>Good</td>
<td>Fair</td>
<td>Good</td>
<td>Good</td>
<td>Intermediate</td>
<td>Moderate</td>
<td>Less irritating to the skin than iodine; good for both handwashing and surgical site preparations; rapidly neutralized in presence of organic materials such as blood or sputum.</td>
</tr>
<tr>
<td>0.05%, 2%, 7.5%, 10% solution</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Para-chloro-meta-xylenol (PCMX)</td>
<td>Good</td>
<td>Fair*</td>
<td>Fair</td>
<td>Fair</td>
<td>Fair</td>
<td>Intermediate</td>
<td>Minimal</td>
<td>Activity neutralized by non-ionic surfactants.</td>
</tr>
<tr>
<td>0.5%–3.75%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Triclosan</td>
<td>Good</td>
<td>Good</td>
<td>Fair</td>
<td>Poor</td>
<td>Good</td>
<td>Intermediate</td>
<td>Minimal</td>
<td>Effect over Gram-negative bacteria: low, absorbed through intact skin.</td>
</tr>
<tr>
<td>0.3%–2%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Activity improved by addition of chelating agent such as EDTA

Some of these agents, such as iodine or chlorhexidine, are combined with alcohol to form tinctures and are available in the combined formulation.


### Table 4: Hand Hygiene Techniques

<table>
<thead>
<tr>
<th>Types of Handwashing</th>
<th>Agent(s)</th>
<th>Procedure</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Routine handwashing</td>
<td>Liquid soap with or without antimicrobial agent</td>
<td>Routine handwashing <em>(Fig 1)</em>:</td>
<td>• Frequently missed areas are thumbs, under nails, backs of fingers and hands <em>(Fig 3).</em></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Remove hand-worn jewellery, e.g. rings, watches and bracelets.</td>
<td>• This technique should last 10–15 seconds, longer if hands are visibly soiled.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Turn on tap.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Wet hands thoroughly under running water to at least 4 inches above the wrist.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Soap hands adequately.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Rub hands vigorously back and front, in between fingers up to and including the wrist.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Rinse under clean running water until all traces of soap are removed.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Dry hands from tip of fingers to wrist with paper towel.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Use same paper towel to turn off tap if tap not elbow controlled.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• It is recommended that finger nails be kept short and clean.</td>
</tr>
<tr>
<td>2. Antiseptic handwashing</td>
<td>i. Liquid soap.</td>
<td>• Wash hands as above using antiseptic agent.</td>
<td>• Used in ICU, Labour and Delivery Units, Nursery, Isolation Units, etc.</td>
</tr>
<tr>
<td></td>
<td>ii. Antiseptics:</td>
<td></td>
<td>• Drying of hands achieves a further reduction in number of micro-organisms.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• 0.5% chlorhexidine with or without glycerol.</td>
<td>• Reusable towels are to be avoided because of the potential for microbial contamination.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Povidone-iodine scrub</td>
<td></td>
</tr>
<tr>
<td>3. Alcohol-based handrub</td>
<td>• 70% ethyl alcohol.</td>
<td>• Apply 3–5 ml of alcohol handrub solution.</td>
<td>• Only to be applied on hands not visibly soiled.</td>
</tr>
<tr>
<td></td>
<td>OR</td>
<td>• Rub hands together until dry.</td>
<td>• Artificial nails or chipped nail polish may increase bacterial load and impede visualization of solids under nail.</td>
</tr>
<tr>
<td></td>
<td>• Methylated spirit with glycerol</td>
<td></td>
<td>• Not to replace routine handwashing.</td>
</tr>
</tbody>
</table>

- **Routine handwashing** *(Fig 1)*: Remove hand-worn jewellery, e.g. rings, watches and bracelets. Turn on tap. Wet hands thoroughly under running water to at least 4 inches above the wrist. Soap hands adequately. Rub hands vigorously back and front, in between fingers up to and including the wrist. Rinse under clean running water until all traces of soap are removed. Dry hands from tip of fingers to wrist with paper towel. Use same paper towel to turn off tap if tap not elbow controlled.

- **Antiseptic handwashing** (i. Liquid soap, ii. Antiseptics: 0.5% chlorhexidine with or without glycerol, Povidone-iodine scrub): Wash hands as above using antiseptic agent.

- **Alcohol-based handrub** (70% ethyl alcohol OR Methylated spirit with glycerol): Apply 3–5 ml of alcohol handrub solution. Rub hands together until dry.
Table 4: Hand Hygiene Techniques (cont’d)

<table>
<thead>
<tr>
<th>Types of Handwashing</th>
<th>Agent(s)</th>
<th>Procedure</th>
<th>Remarks</th>
</tr>
</thead>
</table>
| 4. Surgical hand scrub | Providone-iodine 7.5% surgical scrub | • See Figure 2.  
• Remove hand-worn jewellery, e.g. rings, watches, bracelets.  
• Turn on tap.  
• Wet hands and arms up to the elbow under clean running water, always holding hands with fingers-up in a vertical position.  
• Apply antiseptic soap generously.  
• Using a circular motion to avoid abrasions, begin at the fingertips of one hand and lather and wash between the fingers, continuing from fingertips to elbow.  
• Wash surfaces between fingers, sides of hands, tips of fingers, palms and dorsum of hands up to the elbow of one arm.  
• Repeat procedure for the second hand and arm.  
• Continue washing for 3–5 minutes.  
• Rinse each arm separately, fingertips first, holding hands above the level of the elbow.  
• Dry hands in fingers-up vertical position with a sterile towel. Wipe from the fingertips to the elbow. | Use of scrubbing brushes is no longer recommended because of damage to the skin.  
• Surgical hand scrub should be for 3–5 minutes.  
• Always keep hands upright during washing so that fluid does not trickle back to hands.  
• DO NOT touch anything. |

Table 5: Proposed Strategies to Improve Hand Hygiene Techniques and Compliance

<table>
<thead>
<tr>
<th>Obstacle</th>
<th>Strategy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of knowledge</td>
<td>• Education with supportive literature, videotaped instructions, hand hygiene demonstrations; frequent involvement of personnel in education and feedback on infection rates.</td>
</tr>
<tr>
<td>Lack of motivation</td>
<td>• Direct observation and feedback on regular basis, role models; involvement of staff in studies; application of new technologies.</td>
</tr>
<tr>
<td></td>
<td>• Programmes on hand hygiene for patients and families.</td>
</tr>
<tr>
<td>Unavailability of hand hygiene facilities</td>
<td>• Hand hygiene facilities conveniently located throughout the health care facility.</td>
</tr>
<tr>
<td></td>
<td>• Available running water.</td>
</tr>
<tr>
<td></td>
<td>• Hand hygiene facilities in or adjacent to rooms where health care procedures are performed.</td>
</tr>
<tr>
<td></td>
<td>• Accessible, adequately supplied soap and disposable towels.</td>
</tr>
<tr>
<td></td>
<td>• Waterless antiseptic agents readily available in wall mounted dispensers, or in small containers for mobile care such as home care and for emergency responders.</td>
</tr>
<tr>
<td>Non-acceptance of hand hygiene products</td>
<td>• Availability of hand hygiene products that have a high level of acceptability to staff, with appropriateness, cost, supply, etc., being taken into consideration.</td>
</tr>
<tr>
<td>Dermatitis</td>
<td>• Lotions to prevent skin dryness.</td>
</tr>
<tr>
<td></td>
<td>• Lotion supplied in small non-refillable containers.</td>
</tr>
<tr>
<td></td>
<td>• Compatibility between lotion and antiseptic products and effect on glove integrity.</td>
</tr>
<tr>
<td></td>
<td>• Lotions approved by the Infection Prevention and Control Committee.</td>
</tr>
</tbody>
</table>

II. Personal Protective Equipment

1. Gloves  **Protect Hands**

   *(a) Types of gloves*

   There are three types of gloves:

   1. Sterile surgical single-use gloves, used for invasive procedures.
   2. Single-use examination disposable gloves for use in, e.g., insertion of suppositories, etc.
   3. Heavy duty/utility gloves used for decontamination of large equipment, cleaning of floors, walls, health care facility furniture such as beds, etc. These gloves can be re-used after cleaning.

   *(b) Policy Statements*

   1. Gloves shall be worn as an additional measure, **not** as substitute for hand hygiene
   2. Gloves are **not** required for routine care activities in which contact is limited to a patient’s intact skin.
   3. Wear **non-sterile**, disposable, single-use gloves

   - For direct contact with patient’s mucous membranes, blood, body fluids, moist body substances, non-intact skin
   - For handling potentially infectious materials or in contact with contaminated items and surfaces
   - For performing venepuncture
   - If the integrity of skin on the health care workers’ hands is compromised
   - When there is a probability of contact with blood or other potentially infectious materials (saliva in dental procedures), mucous membrane, or non-intact skin.

4. **Change gloves**

   - Between tasks and procedures on the same patient, and after contact with material that may contain a high concentration of micro-organisms
During a procedure if visibly soiled, torn or punctured

After contact with each patient.

5. Wear **sterile** gloves for

- Any procedure where aseptic technique is required (e.g., invasive procedures)

6. **After use**

- Remove gloves promptly and discard
- Perform hand hygiene immediately after removing and discarding gloves
- Discard gloves on completion of treatment and before leaving areas of patient care activities

- Gloves **DO NOT** replace the need for hand hygiene
- Gloves **DO NOT** provide protection from needlesticks or other puncture wounds caused by sharp objects. Use extreme caution when handling needles, scalpels, etc.
- **DO NOT** wash or decontaminate gloves for reuse.
- **DO NOT** wear gloves away from the bedside or laboratory bench; at nursing stations to handle phones, charts; to handle clean linen, clean equipment or patient care supplies; in hallways or elevators.

**(c) Guidelines**

**Putting on gloves (Figure 4)**

1. **Always** check gloves for damage before using them.
2. Use the correct size, i.e., gloves that fit the hands.
3. Use gloves that are appropriate for the particular procedure (refer to types of gloves).
Removing gloves (Figures 5–6)

1. Remove gloves and discard after single use, e.g. between patients or after handling specimens.

2. To remove gloves, grasp the cuffed end of one glove with the other gloved hand and carefully pull off the held glove in a motion directed away from the body.

3. Either dispose of this glove or hold it in the remaining gloved hand.

4. Remove the second glove by placing a finger from the ungloved hand between the cuff of the remaining glove and the skin of the wrist to form a hook. Remove the second glove with a peeling motion, pulling it inside out and enclosing the other glove, if it is being held by that hand, during the process. Take care not to splash other people or surfaces.

5. Discard used gloves into the appropriate waste receptacle (Figure 6).

6. Wash hands after removal of gloves and other personal protective barrier equipment.

2. Gowns   Protect Skin and/or Clothing

(a) Policy Statements

1. The unnecessary use of gown is not recommended.

2. DO NOT wear gown outside the area for which it is intended.

3. Wear a clean, non-sterile gown/plastic apron:

   ♦ To protect skin and to prevent soiling of clothing during procedures and patient care activities that are likely to generate splashes or sprays of blood, body fluids, tissue, secretions, or excretions. Plastic aprons are recommended where splashes are likely to occur.

   ♦ For protective isolation.
4. **Change** gown daily or between patients if it should become moist or visibly soiled.

5. **After use:** Remove soil gown promptly.
   - Perform hand hygiene to avoid transfer of microorganisms to other patients or environment.
   - Dry hands with paper towel, using towel to turn off tap and discard towel in waste receptacle.

(b) **Guidelines**

**Putting on gown (Figure 7)**

1. Hold the gown so that the back is facing the front of the body.
2. Slip arms one at a time into the sleeves.
3. Next, fasten the neck tab located at the back of the gown to close the top of the gown.
4. Last, extend the ties found at the waist and tie them in the back of the gown, taking care to overlap the edges to protect clothing.

5. Generally, if both a gown and gloves are worn, the gown should be put on first.

**Removing the gown (Figures 8 & 9)**

1. Untie the waist ties and then unfasten the neck tab.
2. Next, remove the gown using a peeling motion; gently pull the gown from one shoulder towards the same hand, and then from the other shoulder towards that hand. The gown will turn inside out during the process.
3. Finally, hold the removed gown away from body and roll into a ball in a motion directed away from the body (Figure 10).

4. Discard the gown into an appropriate receptacle.

5. Perform hand hygiene after removal of gown and other personal protective barrier equipment.

3. Surgical Masks  **Protect Mouth/Nose**

   *(a) Types of Masks*

   There are two types of mask:

   1. The tie-back mask, which has four ties to fasten the mask around the mouth and nose. The side of the mask with the flexible metal tab is worn away from the face with the metal tab placed above the bridge of the nose to help secure the mask and minimize air escape from the sides (venting).

   2. The ear-loop mask is similar to the tie-back mask except that it has two elastic bands used for fastening.

Surgical masks with attached face shields to help provide a protective barrier against splashes and spatters of blood or other potentially infectious material are also available. These masks are fluid resistant, lightweight, and are adequate for most procedures and isolation precautions in which the use of mask is indicated.

   *(b) Policy Statements*

   1. Masks shall be worn during procedures and patient care activities that are likely to generate droplets of blood, other body fluids, or tissue to prevent exposure of mucous membranes of the mouth, nose, and eyes.

   2. **DO NOT** wear masks around the neck, or place in pocket, etc.

   3. Perform hand hygiene immediately after removal and disposal of mask.

   *(c) Guidelines*

   **Putting on a surgical mask (Figure 11).**

   1. Position the mask to cover both nose and mouth.

   2. Tie the two (2) top ties first firmly at the back of the head.
3. Tie the two (2) bottom ties at the back of the neck.
4. Bend the flexible metal tab above the bridge of the nose to help secure the mask.
5. The mask should conform to the shape of the face to minimize venting at the sides.
6. When using the mask with elastic bands, position the mask to cover both the nose and mouth with the bands looped behind each ear.
7. Adjust the flexible metal tab as described above.
8. Once in position, handling of the mask and talking shall be minimized.

A surgical mask becomes ineffective as a barrier if the integrity is damaged or if it becomes wet (i.e., from perspiration, or if splashed with blood or other potentially infectious material). If this occurs, remove mask and replace with another.

Removing a Mask (Figure 12)

1. First, untie the bottom ties.
2. Next, untie the top ties, being careful not to let go of the mask with both hands.
3. Masks with elastic bands should be removed by unlooping the bands from behind each ear, being careful not to drop the mask.
4. Mask to be removed last.
5. Used mask must not be crushed or squeezed before discarding into a waste receptacle.
6. Discard used masks into a waste receptacle for that purpose.

4. Protective Eye Wear  Protect Face/Eyes/Mouth/Nose

(a) Types of Eye Wear

1. Plastic glasses with solid side shields
2. Goggles
3. Masks with clear visors
4. Chin-length face shields.
(b) Policy Statements

1. Protective eye wear shall be worn where appropriate to protect the mucous membranes of the eyes during procedures and patient care activities likely to generate splashes or sprays of blood, body fluids, secretions, and excretions.

2. Use protective eye wear that is appropriate for the particular procedure.

(c) Guidelines

Putting on Plastic Glasses (Figure 13)

1. Place the eye wear in front of the eyes and loop the handles behind each ear.

Removing Plastic Glasses (Figure 14)

1. Lift the eye wear handles carefully from behind the ears and pull forward and away from the body.

2. If gloved hands are used for this procedure, the gloves should not be contaminated with blood or other potentially infectious material.

Putting on Protective Goggles (Figure 15)

Protective goggles provide a more secure barrier than plastic glasses.

1. Position goggles to cover both eyes and nose.

2. Hold the goggles in one hand, allowing head straps to fall below ears, to around neck.

3. Place goggles above the nose and over the eyes.

4. Raise top strap to back of head. Pull bottom strap over head, below ears, to around neck.

5. Adjust for comfort.
Removing Protective Goggles (Figure 16)

1. First carefully lift the top strap from the back of the head to the front.
2. Holding goggles with one hand, lift the bottom strap from the back of the head to the front.

Putting on Face Shield (Figure 17)

Face shield protects the face from splashes

1. Read the manufacturer’s instructions if the face shield needs assembling.
2. Be sure the face shield covers the face.

Removing Face Shield (Figures 18 & 19)

Removing the face shield is similar to removing glasses

1. Lift the face shield carefully from behind the ears and pull forward and away from the body. If the face shield has an elastic band, lift the face shield carefully from behind the ears and pull upwards, forward and away from the body.

2. If gloved hands are used for this procedure, the gloves should not be contaminated with blood or other potentially infectious material.

3. Some parts of the face shield, if not soiled with blood or other potentially infectious material, may be re-usable. Read and follow the manufacturer’s instruction.

Generally, if protective eye wear, mask, gown and gloves are worn, the sequence for donning is:

- Gown first
- Mask or respirator
- Goggles or face shield
- Gloves
And for removal:

- Protective eye wear first
- Gown
- Gloves
- Mask.

However:

1. If personal eye wear (with side shields) is worn, the eye glasses should be removed last, to check for visible soiling or to provide decontamination, cleaning and disinfection.

2. If gloves are contaminated with blood or other potentially infectious materials, the gloves should be removed first and hands washed and dried and a clean pair put on before removal of eyewear, gown, and mask.

1. If plastic eye wear or goggles are visibly soiled with blood or other potentially infectious material, then decontamination, cleaning and disinfection is indicated.

2. Single-use protective barriers should be discarded into the appropriate receptacle(s).

3. Re-usable protective barriers should be decontaminated, cleaned, and disinfected, according to the appropriate guidelines.

4. Dispose of all single use personal protective equipment immediately after use.

5 Perform hand hygiene after removal of protective barriers.
Summary for Personal Protective Equipment (PPE) For Standard and Expanded Precautions

1. Standard Precautions

Gloves

- Wear gloves when touching blood, body fluids, secretions, excretions, tissues, or contaminated items, other potentially infected material, and for touching mucous membranes and non-intact skin.

Gown/Apron

- Wear a gown during procedures and patient-care activities when contact of clothing and/or exposed skin with blood, body fluids, secretions, or excretions is anticipated.

  Aprons are sometimes used as PPE over scrubs (e.g., in haemodialysis centres when inserting a needle into a fistula).

Mask/Goggles/Face Shield

- Use during patient-care activities that are likely to generate splashes and sprays of blood, indicates the use of PPE in patient care activities. (See Table 6 pages 55–58)

2. Expanded Precautions

Contact Precautions requires gloves and gown for contact with the patient and/or the environment of care; in some instances, use of this PPE is recommended when entering the patient’s environment.

Droplet Precautions requires the use of a surgical mask within three feet of the patient.

Airborne Infection Isolation requires that a particulate respirator (e.g., N95) be worn and use of a negative-pressure isolation room.

Hand hygiene is an essential infection control practice to protect patients, health care personnel, and visitors, and is required for both Standard and Expanded Precautions. Perform hand hygiene immediately after removing PPE, during PPE changes (with removal if necessary), and between patient contacts.

Wash your hands thoroughly with soap and running water or, if hands are not visibly soiled, use an alcohol-based hand rub.
## Table 6: Use of Hand Hygiene and PPE in Patient Care Activities

<table>
<thead>
<tr>
<th>Task</th>
<th>Hand Hygiene</th>
<th>Gloves</th>
<th>Gown/ Apron</th>
<th>Masks</th>
<th>Eye Wear/ Face Shield</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entering a patient room with possible pulmonary tuberculosis</td>
<td>YES</td>
<td>NO</td>
<td>NO</td>
<td>YES</td>
<td>NO</td>
<td></td>
</tr>
<tr>
<td>Touching intact skin</td>
<td>YES</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
<td></td>
</tr>
<tr>
<td>Touching non-intact skin</td>
<td>YES</td>
<td>YES</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
<td></td>
</tr>
<tr>
<td>Taking patient history</td>
<td>YES</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
<td></td>
</tr>
<tr>
<td>Taking vital signs</td>
<td>YES</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
<td></td>
</tr>
<tr>
<td>Performing physical examination</td>
<td>YES</td>
<td>YES (1)</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
<td>1) Gloves for mucous membranes</td>
</tr>
<tr>
<td>Transporting patient: Wheelchair/ Stretcher</td>
<td>YES</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
<td></td>
</tr>
<tr>
<td>Personal care: bathing</td>
<td>YES</td>
<td>Consider (2))</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
<td>2) Gloves not required if patient and health care skin is intact. Gloves required for incontinent patients, etc.</td>
</tr>
<tr>
<td>Mouth care</td>
<td>YES</td>
<td>YES</td>
<td>NO</td>
<td>NO</td>
<td>Consider (3)</td>
<td>3) Use when caring for unpredictable patients</td>
</tr>
<tr>
<td>Perineal care</td>
<td>YES</td>
<td>YES</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
<td></td>
</tr>
<tr>
<td>Shampooing</td>
<td>YES</td>
<td>Consider (4)</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
<td>4) Patients at risk for head lice/scabies</td>
</tr>
<tr>
<td>Cleaning incontinent patient with diarrhoea</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>NO</td>
<td>YES</td>
<td></td>
</tr>
<tr>
<td>Responding to an emergency where blood is spurting</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td></td>
</tr>
</tbody>
</table>
### Table 6: Use of Hand Hygiene and PPE in Patient Care Activities (Cont’d)

<table>
<thead>
<tr>
<th>Task</th>
<th>Hand Hygiene</th>
<th>Gloves</th>
<th>Gown/ Apron</th>
<th>Masks</th>
<th>Eye Wear/ Face Shield</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Admitting a patient with gastrointestinal bleed</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stoma care: emptying</td>
<td>YES</td>
<td>YES</td>
<td>NO</td>
<td>NO</td>
<td>Consider (5)</td>
<td>5) If splash is anticipated</td>
</tr>
<tr>
<td>Pouch application</td>
<td>YES</td>
<td>YES (6)</td>
<td>NO</td>
<td>NO</td>
<td>Consider</td>
<td>6) May need to remove gloves to handle adhesives</td>
</tr>
<tr>
<td>Irrigation/ Flush</td>
<td>YES</td>
<td>YES</td>
<td>Consider</td>
<td>NO</td>
<td>Consider (7)</td>
<td>7) When blood is evident, protect eyes &amp; mouth</td>
</tr>
<tr>
<td>Gastro-intestinal lavage</td>
<td>YES</td>
<td>YES</td>
<td>NO</td>
<td>YES</td>
<td>YES</td>
<td></td>
</tr>
<tr>
<td>Suctioning oral secretions</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES (8)</td>
<td>YES (8)</td>
<td>8) Gown and mask/goggles or a face shield (This may depend on whether open or closed suction is being used)</td>
</tr>
<tr>
<td>Respiratory: naso-tracheal suctioning</td>
<td>YES</td>
<td>YES</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
<td></td>
</tr>
<tr>
<td>Endo-tracheal suctioning (inline)</td>
<td>YES</td>
<td>YES</td>
<td>NO</td>
<td>NO</td>
<td>Consider (9)</td>
<td>9) Increased incidence of splashes in adult care areas occur with this task</td>
</tr>
<tr>
<td>Tracheostomy care/ suctioning</td>
<td>YES</td>
<td>YES</td>
<td>Consider (10)</td>
<td>NO</td>
<td>YES</td>
<td>10) Especially with new tracheostomy or copious secretions</td>
</tr>
<tr>
<td>Phlebotomy/ Venepuncture</td>
<td>YES</td>
<td>YES</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
<td></td>
</tr>
<tr>
<td>Intravenous line insertion</td>
<td>YES</td>
<td>YES</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
<td></td>
</tr>
<tr>
<td>Intra-vascular devices &amp; systems: Large vessels</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES (11)</td>
<td>11) Consider blood splash</td>
</tr>
</tbody>
</table>
### Table 6: Use of Hand Hygiene and PPE in Patient Care Activities (Cont’d)

<table>
<thead>
<tr>
<th>Task</th>
<th>Hand Hygiene</th>
<th>Gloves</th>
<th>Gown/ Apron</th>
<th>Masks</th>
<th>Eye Wear/ Face Shield</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intra-vascular devices &amp; systems: <strong>Small vessels</strong></td>
<td>YES</td>
<td>YES</td>
<td>NO</td>
<td>NO</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Arterial lines manipulation</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>NO</td>
<td>YES</td>
<td>(12)</td>
</tr>
<tr>
<td>Intravenous injection/ infusion</td>
<td>YES</td>
<td>YES</td>
<td>NO</td>
<td>NO</td>
<td>NO (13)</td>
<td></td>
</tr>
<tr>
<td>Intramuscular injection</td>
<td>YES</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
<td></td>
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<td>Subcutaneous injection</td>
<td>YES</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
<td></td>
<td></td>
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<tr>
<td>Intradermal injection/skin testing</td>
<td>YES</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heelstick</td>
<td>YES</td>
<td>YES</td>
<td>NO</td>
<td>NO</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wound care/Irrigation: <strong>Complex</strong></td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>(14)</td>
</tr>
<tr>
<td>Wound care: <strong>Simple</strong></td>
<td>YES</td>
<td>YES</td>
<td>NO</td>
<td>NO</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Invasive diagnostic procedures (e.g., bronchoscopy, endoscopy, liver biopsy, etc.)</td>
<td>YES</td>
<td>YES</td>
<td>NO</td>
<td>YES</td>
<td>YES (15)</td>
<td></td>
</tr>
<tr>
<td>Contact with coughing patient in OPD/ER</td>
<td>YES</td>
<td>NO</td>
<td>NO</td>
<td>YES</td>
<td></td>
<td>(16)</td>
</tr>
<tr>
<td>Handling containers with body fluids</td>
<td>YES</td>
<td>YES</td>
<td>NO</td>
<td>NO</td>
<td>Consider</td>
<td>(16)</td>
</tr>
<tr>
<td>Handling laboratory specimens</td>
<td>YES</td>
<td>YES</td>
<td>NO</td>
<td>NO</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

12) Consider blood splash  
13) May be needed if patient is agitated  
14) Wound irrigations increase risk of splash  
15) Wear Tuberculosis fit-tested mask if TB known or suspected for bronchoscopy  
16) If splash, pills/ anticipated when handling containers with body fluids
### Table 6: Use of Hand Hygiene and PPE in Patient Care Activities (Cont’d)

<table>
<thead>
<tr>
<th>Task</th>
<th>Hand Hygiene</th>
<th>Gloves</th>
<th>Gown/ Apron</th>
<th>Masks</th>
<th>Eye Wear/ Face Shield</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating/ Delivery Room Scrub Nurse</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td></td>
</tr>
<tr>
<td>Circulating Nurse</td>
<td>YES</td>
<td>YES</td>
<td>NO</td>
<td>YES</td>
<td>NO</td>
<td></td>
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<tr>
<td>Utility sink</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES (17)</td>
<td>17) When handling large amounts of fluids</td>
</tr>
<tr>
<td>Post-mortem care</td>
<td>YES</td>
<td>YES</td>
<td>Consider (18)</td>
<td>Consider (18)</td>
<td>Consider (18)</td>
<td>18) Wear when removing tubes such as naso-gastric, drains, etc.</td>
</tr>
</tbody>
</table>

III. Patient Care Equipment

Policy Statements

1. Reusable equipment and linen that has been in contact with a patient shall be cleaned and reprocessed before use in the care of another patient.

2. Patient care equipment soiled with blood or body fluids shall be decontaminated and cleaned to prevent transfer of micro-organisms to others and the environment.

3. Items that are routinely shared shall be cleaned and sanitized between patients.

4. A routine cleaning schedule shall be established and monitored for items that are in contact only with intact skin, if cleaning between patients is not feasible.

5. Procedures shall be established for assigning responsibility and accountability for routine cleaning of all patient-care equipment.

6. Any equipment that is being sent for repair or service shall be cleaned with a hospital-approved disinfectant (see Section VII: Disinfection and Sterilization).

7. Bedpans and urinals shall be decontaminated and disinfected between patient uses.

8. Toilets and commodes shall be cleaned regularly, and when soiled.

9. Soiled patient-care equipment shall be handled in a manner that prevents exposure of skin and mucous membranes and contamination of clothing and environment.

10. Mouth pieces, resuscitation bags, or other ventilation devices shall be provided for use in health care facilities where the need to resuscitate is likely to occur (see Section VII: Disinfection and Sterilization).

11. Disposable patient care equipment shall not be re-used and shall be discarded into a patient waste receptacle for disposal.

12. Patient-care supplies, (e.g., lotion, creams, soap) shall not be shared between patients.

13. Clothing, books, and magazines visibly soiled with blood, body fluids or other potentially infectious material shall be discarded or disinfected as appropriate.

14. Use of non-washable toys shall be discouraged.

15. Toys in play rooms and clinic areas that are of non-porous, impervious, smooth surface materials shall be disinfected.

16. Toys shall be monitored continuously during time of use; toys that are broken, malfunctioning, contaminated with blood, body substances or other potentially infectious material shall be removed promptly for discard or decontaminated, cleaned and disinfected.

17. Books, board games, arts/crafts materials, and other types of crafts shall be discarded if soiled with blood, body fluids or other potentially infectious material.
IV. Sharps

(a) Policy Statements

1. All health care workers shall take precautions to prevent injuries caused by needles, scalpels, and other sharp instruments or devices during procedures; when cleaning used instruments; during disposal of used needles; and when handling sharp instruments after procedures.

2. Used needles shall not be recapped by hand; if necessary, use the single hand “scoop” method (Figure 20)

3. Handful of sharp instruments shall not be picked up simultaneously.

4. Caution shall be exercised when rotating instruments are in use.

5. Sharp end of instruments shall be positioned away from oneself and others.

6. Sharps and surgical instruments shall be held in a puncture-resistant leak-proof container (labelled with a biohazard sign) for transport to the reprocessing area.

7. Used sharps shall be disposed of immediately in designated puncture-resistant containers (labelled with a biohazard symbol) (Figure 21) located in the area where the items were used, for transport to the incinerator for disposal. These containers shall not be located in areas open to the public.

8. Heavy duty/strong utility gloves shall be worn during decontamination, cleaning, and disinfection of instruments.
**Sharps Tips**

- **Handle hypodermic needles and other sharps minimally after use, and use extreme care whenever sharps are handled.**
- **DO NOT** recap, bend, break, or cut needles before disposal.
- Dispose of hypodermic needles, scalpel blades, and other sharps in puncture-resistant, liquid-proof containers immediately (or as soon as possible) after use.
- **Always** wear utility gloves when disposing of sharps containers.
- **Always** wear utility gloves when washing sharps.
- Use the ‘hands-free’ techniques to pass sharps during clinical procedures.

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(b) **Guidelines**

**Injection Safety: Medication**

1. Perform hand hygiene prior to handling all parenteral material.
2. Follow manufacturer’s guidelines for expiration date, storage, use, and disposal of pharmaceuticals.
3. Inspect the syringe and needle package for breaks. Discard syringe and needle if the package has been punctured, torn, damaged by exposure to moisture, or if it has expired.
4. Use a sterile, single-use disposable syringe and needle for each injection and discard intact in an appropriate sharps container immediately after use.
5. Use aseptic technique to avoid contamination of sterile injection equipment and medications.
6. Prepare each injection in a designated clean area where blood and body fluid contamination is unlikely.
7. Discard syringe and needle in a puncture-resistant, leak-proof container if contaminated during the medication preparation.
8. Use single-dose medication vials, pre-filled syringes, and ampoules when possible. **DO NOT** administer medications from single-dose vials to multiple patients or combine leftover contents for later use.
9. Select pop-open ampoules rather than ampoules that require use of a metal file to open.
10. If using an ampoule that requires a metal file to open, protect fingers with a clean barrier (e.g., small gauze pad) when opening the ampoule.

11. **No more than one** vial of a multi-dose medication should be opened at a time in each patient care area.

12. If multiple-dose vials are used:
   - restrict them to a centralized medication area or for single patient use to prevent inadvertent contamination by spray or spatter;
   - cleanse the access diaphragm with 70% isopropyl alcohol prior to entry of the vial and allow to air dry before inserting a device into the bottle. Avoid touching the diaphragm after disinfection with the alcohol;
   - use a sterile syringe and needle each time a multiple-dose vial is entered. **DO NOT** re-use a syringe even if the needle is changed;
   - discard syringe and needle if contaminated while entering the vial. Use a new sterile syringe and needle.

13. **NEVER** re-enter a vial with a needle or syringe used on one patient if that vial will be used to withdraw medication for the same patient or another patient.

14. **DO NOT** use bags or bottles of intravenous solution as a common source of supply for multiple patients.

15. Use sterile syringe and needle, and sterile diluent to reconstitute medication.

16. For medications requiring reconstitution, add a label, which must include:
   - date and time of preparation;
   - type and volume of diluent (if applicable);
   - final concentration;
   - expiry date and time;
   - name of and signature of the person reconstituting the drug.

17. For medications that **DO NOT** require reconstitution, add a label, which must include:
   - date and time of first piercing the vial;
   - name of and signature of the person first piercing the vial.

18. Discard multi-dose vials:
   - if sterility or content is compromised;
   - at expiry date/time;
   - without antimicrobial preservatives within 24 hours of opening;
   - with antimicrobial preservatives according to the manufacturer’s recommended expiration date on the vial;
   - all undated, dust-covered, improperly stored multi-dose vials inadvertently contaminated or perceived as contaminated immediately upon discovery regardless of expiration date.
19. Discard multi-dose vials according to manufacturer’s instructions or encapsulate, e.g., expired vaccines.

**Injection Safety: Syringes and Needles**

1. Used needles shall **not** be recapped by hand. If recapping is necessary, as in dental procedures use the single hand “scoop” method (**Figure 20**).

2. **DO NOT** bend, break, manipulate, or remove needles before disposal except to remove needles from non-disposable dental anaesthetic syringes.

3. Used syringes and needles shall be discarded as a unit in the designated puncture-resistant, liquid-proof container.

4. Close, seal and disposed of sharps container when ⅔ full.

5. If injured by sharps, the supervisor shall be contacted (see Section X: Risk Management).

**Injection Safety Activities: Management of Waste**

1. Place used disposable syringes and needles (as a unit) in appropriate puncture-resistant, leak-proof, closable containers immediately after use.

2. Alternatively, remove needles immediately after injection via needle remover/cutter and dispose of on site.

3. Place containers as close as feasible to the area in which the items are used. Ensure that area is secure.

4. Collect non-sharp infectious wastes in colour-coded bags, or marked with a biohazard sign.

5. Store and maintain infectious waste bags and sharps containers in a secure area prior to transportation for treatment/disposal.

6. Prior to transport for treatment/disposal, ensure that infectious waste bags and sharps containers are:
   - closed immediately before removal or replacement to prevent spillage or protrusion of contents during handling, storage, transport, or shipping;
   - placed in a secondary container if leakage is possible; the second container must be:
     • closable;
     • constructed to contain all contents and prevent leakage during handling, storage, transport, or shipping;
     • colour-coded or mark with a biohazard sign.

7. Place large-bore re-usable needles (e.g., bone-marrow needles and biopsy needles) and other re-usable sharps into a puncture-resistant container for transport to the reprocessing area.
Injection Safety: Environmental Control

1. Maintain physical separation between clean and contaminated equipment and supplies.

2. Prepare medications in areas physically separated from those with potential blood/body fluid contamination.

3. Use barriers such as plastic cover to protect surfaces from blood contamination during blood sampling, etc.

4. Routinely clean and decontaminate all equipment and environmental surfaces (counter tops, etc.) as soon as possible after contact with blood or other potentially infectious materials, using 0.5% sodium hypochlorite. Small areas can be wiped with alcohol as a surface disinfectant.

5. All specimen containers are to be placed in leak-proof plastic bags marked with a biohazard label and transported in a covered secondary container also marked with a biohazard label.

6. Laboratory specimens in syringes should be capped off (needle removed) before transporting to the laboratory. The exception to this is a fine-needle aspirate.

*Exception: Blood specimens in vacutainer tubes may be transported in the phlebotomist’s tray without a secondary container, provided that the exterior of the tube is NOT visibly contaminated with blood. If the exterior is visibly soiled, then it is to be wiped clean using alcohol swab.*

V. Accommodation

Policy Statements

1. Single rooms shall not be used for children in diapers unless they have uncontained diarrhoea and cannot be confined to their designated bed space.

2. Infectious patients shall be managed using barrier nursing.

3. Appropriate placement for patients who visibly contaminate the environment, or whom appropriate hygiene cannot be maintained shall be provided. This includes mobile patients with faecal incontinence if stools cannot be contained in diapers, and patients with draining wounds who do not keep their dressings in place.
VI. Urine and Faeces

Policy Statements

1. Urine and faeces shall be flushed carefully down the toilet.

2. Commodes and bedpans shall be disinfected after each use. (See Table 14).

VII. Environment Control

Policy Statements

1. Procedures shall be established for routine care, decontamination, cleaning, disinfection and sterilization of patient care equipment, housekeeping, laundry and waste management.

2. Environmental cleaning shall be done by workers wearing personal protective equipment in accordance with the policies and procedures of the housekeeping department.

3. Surfaces soiled with blood, body substances, or other potentially infectious material shall be cleaned immediately and require special handling.

4. Training programme for sub-contracted workers on infection prevention and control, with a focus on disinfection shall be developed, implemented and evaluated.

VIII. Patient Transport

Policy Statements

1. Health workers who are likely to have contact with either blood or other potentially infectious material shall wear personal protection equipment.

2. When transporting patient/dead body to various areas/mortuary, health care workers shall adhere to infection prevention and control measures.

IX. Visitors

Policy Statements

Visitors shall take special precautions, depending on the area being visited (see Section V: Isolation).
X. Laboratory Specimens

Policy Statements

1. The validity of test results is as much a function of the laboratory analysis as of the proper collection and handling of specimens.

2. Specimens from all patients shall be treated as potentially infectious.

3. All specimens for laboratory examination shall be carefully collected using Standard Precautions in their collection, and transported to the laboratory in such a manner to prevent breakage or spillage. The caps of all containers shall be tightly sealed and the requisition forms placed in a separate envelope rather than wrapped around the specimen container. This separation will prevent the forms getting contaminated.

4. Specimens shall be collected in well constructed containers with a secure lid to prevent leakage during transport.

5. All specimens submitted to the laboratory shall be accompanied by a requisition form issued by the department for which testing will be done. Requisition forms shall be properly labelled so that all data required by the headings on the forms are provided.

6. Additional information relevant to the nature of the specimen, time of collection, treatment regimen of the patient, which may impact on the testing and reporting shall be supplied.

7. Requisition sheets shall be affixed to, but not stapled to the outside of the plastic bag.

8. Transportation of specimens to the laboratory shall be under the conditions required for preservation of the specimen’s integrity and protection of the health care worker.

9. Gloves shall be worn when handling and processing specimens.

10. Laboratory procedures shall minimize splashing, spattering and generation of droplets.

11. Laboratory workers shall follow mechanical pipetting procedures.

12. Work areas shall be decontaminated after spills of blood, body fluids, or other potentially infectious material and after completion of work.

13. Contaminated equipment needing servicing or repair shall be decontaminated externally and internally (see Section VII: Disinfection and Sterilization).

14. Disposable specimen containers shall be encouraged.
XI. Wastes

Policy Statements

1. Wastes from the following locations shall be considered potentially infectious and shall be handled accordingly:
   - Clinical laboratories
   - Diagnostic laboratories
   - Transfusion area
   - Anatomic pathology
   - Patient care areas
   - Post mortem areas.

2. Disposable sharps shall be placed in puncture-resistant disposable containers and handled as medical pathological waste, placed in the appropriate containers and labelled with a biohazard symbol designed specifically for this purpose.

3. Biohazard liquid waste (blood, body substances, or other potentially infectious material) shall be carefully disposed of to avoid accidental spills and be autoclaved/incinerated/burned.

4. All biohazard liquids and trash shall be handled with gloves and transported carefully (see Section IX: Health Care Facility Waste Management).

XII. Handling a Post-mortem

Policy Statements

1. Appropriate barriers (masks, gowns, gloves, protective eye wear, golashes or shoe covers shall be worn during the post-mortem procedure.

2. Selection of the type of barriers to be worn shall be guided by the patient’s diagnosis and cause of death.

XIII. Laundry

Policy Statements

(a) Collection and handling

1. Soiled linen shall be sluiced.

2. Soiled linen with blood, body fluids, secretions, or excretions shall be handled in a manner that prevents skin or mucous membrane exposure, contamination of clothing, and transfer of micro-organisms to other patients and the environment.

3. Soiled linen is considered to be contaminated and shall be bagged at the point of origin and placed in the soiled linen container.

4. Wet linen shall be placed in a fluid impervious bag for soiled linen or a regular plastic trash bag before deposited in a cloth bag for soiled linen.

5. Never place soiled linen on the floor or any clean surfaces.

6. Linen from persons with a diagnosis of viral hemorrhagic fevers (e.g. Lassa, Ebola, Marburg) requires special handling (see WHO, USDHHS, CDC reference, p. 91).

7. Linen shall be handled with a minimum of agitation and shaking.

8. Sorting and rinsing of linen shall not occur in patient care areas, except in facilities that use colour coded, compartment soiled linen bag carts into which different types of linen are sorted, e.g., personal clothing, towels, reusable incontinence products, bedding.

9. In community or home settings where clothes and linens are not often soiled with blood or body fluids, sorting of linen may take place in care areas.

10. Heavily soiled linen shall be rolled or folded to contain the heaviest soil in the centre of the bundle. Large amounts of solid soil, faeces or blood clots shall be removed from linen with a gloved hand and toilet tissue and placed into a bedpan or toilet for flushing. Excrement shall not be removed by spraying with water, (e.g., from clothing, reusable incontinence pads).

11. Commercial laundries used for laundering health care facilities linen shall comply with the infection prevention and control policies and guidelines.

12. Tender procedures shall indicate special requirements for hospital laundry including the need to provide immunization against Hepatitis B (paid for by the employer).
(b) Bagging and containment

1. Soiled wet linen shall be placed in strong impervious plastic bags to prevent leakage.

2. Dry linen shall be transported in sealed plastic bags to the laundry.

3. Laundry carts or hampers used to collect or transport soiled linen shall be covered. The practice of placing lids on soiled linen carts is not necessary from an infection prevention and control perspective.

4. Bags shall be tied securely when three-quarters full and transported to the laundry area.

5. When linens are commercially laundered, adequate separation of clean and dirty laundry in the truck is essential to ensure that there is no opportunity for mixing clean and dirty linens.

6. Separate carts shall be used for dirty and clean linens. Carts used to transport soiled linens shall be cleaned with the recommended cleaning product used in the health care facility after each use.

7. Linen transported by cart shall be moved in such a way that the risk of cross-contamination is minimized.

8. Clean linen shall be transported and stored in a manner that prevents its contamination and ensures its cleanliness.

(c) Washing and drying

1. If low temperature water is used for laundry cycles, chemicals suitable for low temperature washing at the appropriate concentration shall be used.

2. High temperature washes (>71.1°C) are necessary if cold water detergents are not used.

3. Use of a commercial laundry detergent with household bleach (according to product instructions and where suitable for fabrics) and a normal machine wash and machine dry are sufficient to clean soiled linen in a community living or home care setting.

4. Machine drying or hanging clothing and linens on a clothesline at the home care site is also a suitable method for drying.

(d) Sterile linen

Surgical gowns and linens used in sterile procedures shall be sterilized by steam after the normal washing and drying cycle to destroy any residual spores. Disposable items for use in
sterile procedures may be more cost-effective in some situations. The need for sterilizing linens for nurseries and other areas has not been substantiated.

(e) Colour Coding System

- **Red** for linen from patients with infectious conditions. Linen shall be disinfected first before placed in bags. Linen shall be placed in a strong impervious plastic bag to avoid leakage on the linen bag.

- **Yellow** for soiled linen. Sluice first before placing in plastic bag then in the linen bag.

- **White** for used dirty linen from wards and departments and for clean linen from the laundry.

- **Green** for linen from special departments such as operating theatre, labour and delivery ward, to be transported to the laundry.

(f) Protection of laundry workers

1. Workers shall protect themselves from potential cross-infection from soiled linen by wearing appropriate personal protective equipment, such as gloves and gowns or aprons, when handling soiled linens. Reusable gloves shall be washed after use, allowed to hand dry, and discarded if punctured or torn.

2. Handwashing facilities shall be readily available.

3. Personnel shall wash their hands whenever gloves are changed or removed.

4. Staff in care areas needs to be aware of sharps when placing soiled linen in bags. Workers are at risk from contaminated sharps, instruments or broken glass that may be contained with linen in the laundry bags.

5. All care givers and laundry workers shall be trained in procedures for handling of soiled linen.

6. Laundry workers, as other health care workers, shall be offered immunization against Hepatitis B.
SECTION V

ISOLATION
INTRODUCTION

Isolation is the creation of a barrier – mechanical or spatial – to prevent the transmission of infectious diseases to or from a patient, and to reduce the risk of transmission to other patients, health care workers, and visitors.

The purpose of isolation is to prevent the transmission of infectious diseases that are spread by both contact and airborne routes.
POLICY STATEMENTS

Responsibility

1. Health care providers shall collaborate in effecting the timely and appropriate application of isolation.

2. Nursing personnel shall:

   - Inform the patient’s physician when a patient’s condition warrants isolation. In the absence of a physician, the Nurse-In-Charge shall institute isolation.

   - Verify the physician’s order to institute isolation.

   - Explain procedure and need for isolation to the patient and family.

   - Prepare a well-ventilated room/area for isolation with all necessary equipment.

   - Notify the Infection Prevention and Control Officer of the patient(s) in isolation within 24 hours of the suspicion or confirmation of an infectious case.

   - Display a ‘NO VISITORS’ sign clearly in the patient’s isolation area.

3. The physician or Nurse-In-Charge shall report on the appropriate form, all infectious cases suspected or confirmed to the Ministry of Health/Public Health Department.

Patient’s Records

4. The patient’s charts and records shall be kept outside the patient’s room.

Transporting Infected Patients

5. Patients shall leave the isolation area only for essential purposes. When patient transportation is necessary, it is important that:

   - Appropriate barriers (e.g., masks, barrier-proof dressings) are worn or used by the patient to reduce the transmission of pertinent micro-organisms to other patients, staff and visitors, and to reduce contamination of the area

   - Personnel in the area to which the patient is to be taken are notified of the impending arrival of the patient and of the precautions to be taken
Patients are informed of ways by which they can assist in preventing the transmission of their infectious micro-organisms to others.

The vehicle used for transporting the patient shall be decontaminated, cleaned and disinfected.

**Visitors**

6. Shall be restricted to two persons at a time during visiting hours.

7. Shall observe the ‘**NO VISITORS**’ sign and report to the Nurse-In-Charge prior to entering the isolation area.

8. Shall be requested not to bring items, which may harbour potentially harmful micro-organisms.

9. Shall be educated on the necessary precautions to be taken to prevent the spread of infection to the family, friends and community.

10. If requested, shall wear personal protective equipment (e.g., gloves, masks, gowns).

**Patient’s Personal Effects**

11. Patients in isolation shall not share items, which may serve as a vehicle for transmission of micro-organisms.

12. Stuffed toys for children shall be discouraged. Soft plastic toys shall be suggested as an alternative. These plastic toys shall be disinfected before discharge.

13. No special precautions are required for utensils. Follow standard procedures for the handling and care of utensils, i.e., soap and hot water or 0.5% (1:10) sodium hypochlorite solution (5000 ppm). Soak in solution for 10 minutes, then rinse.

**Standard Precautions**

14. All persons accessing the isolation area shall observe **Standard Precautions** guidelines.
**Patient Care Equipment and Articles**

15. Contaminated, reusable critical medical devices or patient care equipment (i.e., equipment that enters normally sterile tissues or through which blood flows) shall be sterilized. Semi-critical medical devices or patient care equipment (i.e., equipment that touches mucous membranes) shall be sterilized or disinfected (reprocessed) after use to reduce the risk of transmission of micro-organisms to other patients. The article and its intended use, the manufacturer’s recommendations, the health care facility policy, and any applicable guidelines and regulations determine the type of reprocessing.

16. Non-critical equipment (i.e., equipment that touches the skin) contaminated with blood, body fluids, secretions or excretions shall be decontaminated, cleaned and disinfected after use, according to the health care facility policy.

17. Contaminated disposable (single-use) patient care equipment shall be handled and transported in a manner that reduces the risk of transmission of micro-organisms and environmental contamination in the health care facility. The equipment shall be disposed of according to the institution/agency policy and applicable regulations.

18. For enteric diseases refer to Section VI: Expanded Precautions for Care Settings.

**Dishes, Glasses, Cups, and Eating Utensils**

19. No special precautions are needed for dishes, glasses, cups, and eating utensils. Reusable dishes and utensils can be used for patients on isolation precautions and can be washed in hot soapy water or disinfected with 0.01% (1:500) (100 ppm) sodium hypochlorite solution.

**Linen and Laundry**

20. Soiled linen shall be handled, transported and laundered in a manner that avoids transfer of micro-organisms to patients, personnel, and environment (see Section IV: Standard Precautions).

**Routine and Terminal Cleaning**

21. Standard routine cleaning procedures shall be strictly adhered to.

22. Terminal decontamination, cleaning and disinfection shall be done when the patient no longer occupies the room.

23. The room, or area and bedside equipment of patients on **Expanded Precautions** shall be
cleaned using the same procedures used for patients on Standard Precautions unless
the infecting micro-organism(s) and the amount of environmental
contamination indicates special cleaning.

24. In addition to thorough cleaning, adequate disinfection of bedside equipment and
environmental surfaces (e.g., bedrails, bedside tables, carts, doorknobs, faucet handles,
etc.) is indicated for certain pathogens, especially enterococci, which can survive in the
inanimate environment for prolonged periods of time.

25. All waste shall be decontaminated and disinfected before disposal.
REQUIREMENTS FOR ISOLATION

1. Accommodation for the suspected or confirmed patient in a room or area designated for infectious diseases.

2. Adequate personnel assigned to the area.

3. Appropriate equipment and supplies.

4. A schedule for the daily routine cleaning and maintenance of the isolation area.

5. A system for the education of health care personnel, patients, and family members regarding the illness and the precautionary measures to be observed.
ESTABLISHING PRIORITIES FOR SINGLE ROOMS

Where single rooms are limited in number, the institution shall set priorities for their use, based on risk factors for transmission or adverse outcome inherent to the patient, microbe and institution.

Consider the severity of the outcome should transmission occur, for example, in the following (descending order of priority):

- Airborne infections
- Droplet transmission if patients cannot be kept >1 meter (3 feet) apart
- Influenza if in a high-risk unit
- Patients with infections spread by contact and who are non-compliant and cannot be confined to bed:
  - Diarrhoea in incontinent patient, not contained by diapers
  - Respiratory tract infection in a child, unable to appropriately handle respiratory secretions
  - Infected wound or skin drainage not contained by dressing
  - Large burns
  - Dysentery (salmonella infections, cholera, multi-drug resistant infections)
  - Severe Acute Respiratory Syndrome (SARS)
  - Avian Influenza (H5N1 Virus).
ISOLATION CATEGORIES

1. Contact Route
   - Gastro-intestinal
   - Respiratory
   - Skin
   - Wound infections
   - Colonization with multi-drug resistant
   - Enteric infections, e.g., *Clostridium difficile*
   - Shigella
   - Hepatitis A
   - Enteroviral infections in infants and young children
   - Respiratory syncytial virus, parainfluenza.

2. Airborne Route
   - Measles
   - Varicella (including disseminated zoster)
   - Tuberculosis
   - SARS.
SECTION VI

EXPANDED PRECAUTIONS OR ADDITIONAL PRECAUTIONS FOR CARE SETTINGS
INTRODUCTION

Expanded Precautions is to be used in addition to Standard Precautions. The type of Expanded Precautions is dependent on the mode of transmission of the micro-organism. There may be more than one mode of transmission.
GUIDELINES FOR ALL HEALTH CARE FACILITIES

Figures 22–25 illustrate the required barrier protection for the different modes of transmission.

Table 7 provides a listing of infections requiring precautions, and the types of precautions to be effected. These precautions are to be used in all health care facilities including:

- Acute care
- Long-term care
- Ambulatory care.

These guidelines are also relevant to home-based care.

The section also highlights the precautions required for tuberculosis, viral haemorrhagic fevers (Ebola), Avian Influenza (H5N1 Virus), and dentistry.
SYNOPSIS OF TYPES OF PRECAUTIONS AND PATIENTS REQUIRING THE PRECAUTIONS

Standard Precautions

- Use Standard Precautions for the care of all patients.

Airborne Infection Isolation

In addition to Standard Precautions, use Airborne Infection Isolation (Figure 22) for patients known or suspected to have serious illnesses transmitted by airborne droplet nuclei.

Examples of such illness include:

- Measles
- Varicella (including disseminated zoster)
- Tuberculosis
- SARS.

Droplet Precautions

In addition to Standard Precautions, use Droplet Precautions (Figure 23) for patients known or suspected to have serious illnesses transmitted by large particle droplets.

Examples of such illnesses include:

- Invasive *Haemophilus influenzae* type disease, including meningitis, pneumonia and epiglottitis.
- Invasive *Neisseria meningitidis* disease, including meningitis, pneumonia, and sepsis.

Other serious bacterial respiratory infectious spread by droplet transmission, including:

- Diphtheria (pharyngeal)
- Mycoplasma pneumonia
Section VI: Expanded or Additional Precautions for Care Settings

- Pertussis
- Streptococcal (group A) pharyngitis, pneumonia, or scarlet fever in infants and young children.

Serious viral infections spread by droplet transmission, including:

- Adenovirus (may require more than one type of precautions)
- Influenza
- Mumps
- Parvovirus B19
- Rubella.

Contact Precautions

In addition to Standard Precautions, use Contact Precautions (Figure 24) for patients known or suspected to have serious illnesses easily transmitted by direct patient contact or by contact with items in the patient’s environment. Examples of such illnesses include:

- Gastrointestinal, respiratory, skin, or wound infections or colonization with multi drug-resistant bacteria judged by the Infection Prevention and Control Committee, based on current state, regional, or national recommendations, to be of special clinical and epidemiological significance.

- Enteric infections with a low infectious dose or prolonged environmental survival, including:
  - *Clostridium difficile*
  - For diapered or incontinent patients: entero-haemorrhagic *Escherichia coli* 0157:H7, *Shigella*, Hepatitis A, or rotavirus
• Respiratory syncytial virus, para-influenza virus, or enteroviral infections in infants and young children

♦ Skin infections that are highly contagious or that may occur on dry skin, including:
  • Diphtheria (cutaneous)
  • Herpes simplex virus (neonatal or mucocutaneous)
  • Impetigo
  • Major (noncontained) abscesses, cellulites, or decubiti
  • Pediculosis
  • Scabies
  • Staphylococcal furunculosis in infants and young children
  • Herpes Zoster (disseminated or in the immunocompromised host)
  • Viral/haemorrhagic conjunctivitis
  • Viral haemorrhagic fevers (Ebola, Lassa, Marburg).

See Table 7 for a listing of infections requiring additional precautions.
Table 7: Clinical Conditions and Transmission Characteristics

<table>
<thead>
<tr>
<th>Clinical Conditions</th>
<th>Route of Transmission</th>
<th>Infective Material</th>
<th>Potential Pathogens</th>
<th>Duration of Precautions</th>
<th>Isolation Precautions</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Abscess</td>
<td>Direct and indirect contact</td>
<td>Pus</td>
<td><em>Staphylococcus aureus</em>, <em>S. epidermidis</em></td>
<td>Duration of drainage</td>
<td>Contact (major) Standard (minor)</td>
</tr>
<tr>
<td><em>Draining – major</em></td>
<td></td>
<td></td>
<td>Many other bacteria</td>
<td></td>
<td>Standard</td>
</tr>
<tr>
<td><em>Draining – minor</em></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Standard</td>
</tr>
<tr>
<td>Acute Poliomyelitis (or infantile paralysis)</td>
<td>Direct and indirect contact</td>
<td>Faeces, respiratory secretions</td>
<td><em>Enterovirus, poliovirus</em>, Human Immunodeficiency Virus (HIV)</td>
<td>Duration of illness</td>
<td>Contact</td>
</tr>
<tr>
<td>Acquired Immunodeficiency Syndrome (AIDS)</td>
<td>Direct and indirect contact</td>
<td>Blood, body fluids, secretions, excretions</td>
<td><em>Respiratory strains</em></td>
<td>Duration of illness</td>
<td>Standard</td>
</tr>
<tr>
<td>Adenovirus infection in infants and young children</td>
<td>Macosal or percutaneous exposure to infective blood, body fluids</td>
<td>Respiratory secretions</td>
<td><em>Enterobacter histolytica</em></td>
<td>Duration of illness</td>
<td>Droplet</td>
</tr>
<tr>
<td>Amoebiasis (dysentery, abscess)</td>
<td>Large droplets</td>
<td>Faeces, pus</td>
<td><em>Bacillus anthracis</em></td>
<td>Duration of illness</td>
<td>Contact</td>
</tr>
<tr>
<td>Anthrax</td>
<td>Direct and indirect contact (faecal/oral)</td>
<td>Lesion drainage</td>
<td>MRSA, VRE, resistant gram-negative rods, other organisms</td>
<td>Duration of illness</td>
<td>Standard</td>
</tr>
<tr>
<td><em>Cutaneous</em></td>
<td></td>
<td>Respiratory secretions</td>
<td>Depending on aetiology</td>
<td>As directed by IPCU</td>
<td>Standard</td>
</tr>
<tr>
<td><em>Intestinal</em></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Standard</td>
</tr>
<tr>
<td><em>Pulmonary</em></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Contact</td>
</tr>
<tr>
<td><em>Indirect contact</em></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Standard</td>
</tr>
<tr>
<td>Arthropod borne viral fevers (dengue, yellow fever)</td>
<td>Insect borne</td>
<td>Varies</td>
<td>Different viruses</td>
<td>Duration of illness</td>
<td>Contact</td>
</tr>
</tbody>
</table>

Potential Pathogens:
- *Staphylococcus aureus*, *S. epidermidis* (Many other bacteria)
- *Enterovirus, poliovirus*
- Human Immunodeficiency Virus (HIV)
- *Respiratory strains*
- *Enterobacter histolytica*
- *Bacillus anthracis* (MRSA, VRE, resistant gram-negative rods, other organisms)
- *Different viruses*
### Table 7: (cont’d)
#### Clinical Conditions and Transmission Characteristics

<table>
<thead>
<tr>
<th>Clinical Conditions</th>
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<th>Potential Pathogens</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>B. Botulism</strong></td>
<td>Foodborne</td>
<td>Standard</td>
<td></td>
<td>Variable</td>
<td><em>Clostridium botulinum</em></td>
</tr>
<tr>
<td>Bronchiolitis</td>
<td>Large droplets and</td>
<td>Droplet and contact</td>
<td>Respiratory</td>
<td>Duration of illness</td>
<td>Respiratory syncytial virus (RSV), parainfluenza virus, influenza, adenovirus</td>
</tr>
<tr>
<td></td>
<td>direct and indirect</td>
<td>Standard</td>
<td>secretions</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>contact</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brucellosis</td>
<td>Possibly direct</td>
<td>Contact</td>
<td>Drainage from open</td>
<td>Duration of drainage</td>
<td><em>Brucella sp.</em></td>
</tr>
<tr>
<td></td>
<td>contact Zoonotic</td>
<td>Standard</td>
<td>lesions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Burns infected</td>
<td>Contact</td>
<td>Contact</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(see abscess)</td>
<td>Standard</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>C. Cellulitis drainage</strong> (see abscess)</td>
<td>Contact</td>
<td>Contact</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Standard</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chancroid (soft chancre)</td>
<td>Contact (sexually transmitted)</td>
<td>Standard</td>
<td>Lesions drainages</td>
<td>Duration of illness</td>
<td><em>H. Ducreyi</em></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Respiratory secretions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chickenpox</td>
<td>Direct and indirect</td>
<td>Contact</td>
<td>Lesion drainage,</td>
<td>Until all lesions are</td>
<td><em>Varicella-zoster virus</em></td>
</tr>
<tr>
<td>(Varicella/Shingles)</td>
<td>contact Airborne</td>
<td>Airborne Standard</td>
<td>respiratory secretions</td>
<td>crusted and dried</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Chlamydia trachomatis</em>  • Conjunctivitis  • Genital  • Respiratory</td>
<td>Sexually transmitted, mother to newborn</td>
<td>Standard if non-viral Contact</td>
<td>Eyes and other secretions</td>
<td>Until viral aetiology ruled out. Duration of symptoms if viral</td>
<td>Adenovirus, enterovirus, chlamydia, gonococcus, other bacteria</td>
</tr>
<tr>
<td>Cholera (see diarrhoea)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td><em>Vibrio cholerae</em></td>
</tr>
<tr>
<td>Common cold</td>
<td>Large droplets, direct</td>
<td>Droplet and contact</td>
<td>Respiratory</td>
<td>Duration of illness</td>
<td>Rhinovirus, RSV, parainfluenza, influenza, adenovirus, coronavirus</td>
</tr>
<tr>
<td></td>
<td>and indirect contact</td>
<td></td>
<td>secretions</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Table 7: (cont’d)
Clinical Conditions and Transmission Characteristics

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<th>Duration of Precautions</th>
<th>Potential Pathogens</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cough, fever, acute upper respiratory tract infection</td>
<td>Large droplets, direct and indirect contact</td>
<td>Droplet and contact</td>
<td>Respiratory secretions</td>
<td>Duration of illness or until infectious aetiology ruled out</td>
<td>Rhinovirus, RSV, para-influenza, influenza, adenovirus, coronavirus, pertussis, mycoplasma</td>
</tr>
<tr>
<td>Cough, fever, pulmonary infiltrates in person at risk for tuberculosis</td>
<td>Airborne</td>
<td>Airborne</td>
<td>Respiratory secretions</td>
<td>Until TB ruled out (see section on TB)</td>
<td>Mycobacterium tuberculosis</td>
</tr>
<tr>
<td>Croup</td>
<td>Large droplets, direct and indirect contact</td>
<td>Droplet and contact</td>
<td>Respiratory secretions</td>
<td>Duration of illness or until infection cause ruled out</td>
<td>Para-influenza, influenza, RSV, adenovirus</td>
</tr>
<tr>
<td>D. Decubitus ulcer, infected (see abscess)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dengue</td>
<td>Mosquito-borne</td>
<td>Standard</td>
<td>Blood</td>
<td>3–5 days</td>
<td>Arbovirus/Aedes Aegypti</td>
</tr>
<tr>
<td>Dengue Haemorrhagic Fever</td>
<td>Mosquito-borne</td>
<td>Standard</td>
<td>Blood</td>
<td>Until symptoms subside</td>
<td>Arbovirus/Aedes Aegypti</td>
</tr>
<tr>
<td>Dermatitis (see abscess)</td>
<td>Direct and indirect contact</td>
<td>Contact</td>
<td>Skin exudates</td>
<td>Until infectious aetiology ruled out</td>
<td>Many (bacteria, virus, fungus)</td>
</tr>
<tr>
<td>Desquamation, extensive (see abscess)</td>
<td>Direct and indirect contact</td>
<td>Contact</td>
<td>Skin exudates</td>
<td>Until skin exudates contained or infection ruled out</td>
<td>Staphylococcus aureus</td>
</tr>
<tr>
<td>Diarrhoea – acute infective aetiology suspected</td>
<td>Direct and indirect contact (faecal/oral)</td>
<td>Contact</td>
<td>Faeces</td>
<td>Until normal stools or infectious aetiology ruled out</td>
<td>Enteric pathogen, Clostridium difficile</td>
</tr>
<tr>
<td>Diphtheria • Cutaneous • Pharyngeal</td>
<td>Direct and indirect contact, droplets</td>
<td>Contact and droplet</td>
<td>Skin exudates, respiratory secretions</td>
<td>Until specific aetiology established or until enterovirus ruled out</td>
<td>Coryn bacterium diphtheriae</td>
</tr>
<tr>
<td>Clinical Conditions</td>
<td>Route of Transmission</td>
<td>Isolation Precautions</td>
<td>Infective Material</td>
<td>Duration of Precautions</td>
<td>Potential Pathogens</td>
</tr>
<tr>
<td>----------------------------------------------------------</td>
<td>------------------------------------------------------------</td>
<td>-----------------------</td>
<td>---------------------------------------------------------</td>
<td>-------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>E. Encephalitis</td>
<td>Direct and indirect contact (faecal/oral)</td>
<td>Contact Standard</td>
<td>Faeces, respiratory infections</td>
<td>Until specific aetiology established or until enterovirus ruled out</td>
<td>HSV, enterovirus, arbovirus</td>
</tr>
<tr>
<td>Erysipelas</td>
<td>Contact</td>
<td>Contact Standard</td>
<td>Drainage from lesions</td>
<td>For 24 hours after start of effective therapy</td>
<td>Streptococcus gr A</td>
</tr>
<tr>
<td>F. Food Poisoning</td>
<td>Foodborne, or direct and indirect contact (faecal/oral)</td>
<td>Contact Standard</td>
<td>Faeces if <em>Salmonella</em> or <em>Escherichia coli</em> 0157</td>
<td>Duration of illness or until aetiology ruled out</td>
<td><em>Bacillus cereus</em>, <em>Salmonella</em>, <em>Vibrio parahaemolyticus</em>, <em>Clostridium perfringens</em>, <em>E. coli</em> 0157 and others</td>
</tr>
<tr>
<td>G. Gonococcal infection</td>
<td>Direct contact</td>
<td>Standard</td>
<td>Genital secretions</td>
<td>Until infection contained</td>
<td>Associated with many infections</td>
</tr>
<tr>
<td>H. Hand, foot and mouth disease</td>
<td>Direct and indirect contact (faecal/oral)</td>
<td>Contact Standard</td>
<td>Faeces, respiratory secretions</td>
<td>Duration of illness</td>
<td>Enterovirus</td>
</tr>
<tr>
<td>Haemolytic-uraemic syndrome</td>
<td>Direct and indirect contact (faecal/oral)</td>
<td>Contact Standard</td>
<td>Faeces</td>
<td>Until <em>E. coli</em> 0157 ruled out</td>
<td>May be associated with <em>E. coli</em> 0157</td>
</tr>
<tr>
<td>Haemorrhagic fever acquired in appropriate endemic area</td>
<td>Direct and indirect contact possible airborne if pneumonia</td>
<td>Contact plus droplet</td>
<td>Blood and body fluids, respiratory secretions, possible urine and stool</td>
<td>Duration of illness or until haemorrhagic virus ruled out</td>
<td><em>Ebola</em>, <em>Lassa</em>, <em>Marburg</em>, and others</td>
</tr>
<tr>
<td>Hepatitis of unknown aetiology</td>
<td>Direct and indirect contact (faecal for Hepatitis A, E)</td>
<td>Contact Standard</td>
<td>Blood, certain body fluids, faeces</td>
<td>For 7 days after onset of jaundice or until Hepatitis A ruled out</td>
<td>HAV, HBV, HVC, HEV, EVB and others</td>
</tr>
</tbody>
</table>
### Table 7: (cont’d)
Clinical Conditions and Transmission Characteristics

<table>
<thead>
<tr>
<th>Clinical Conditions</th>
<th>Route of Transmission</th>
<th>Isolation Precautions</th>
<th>Infective Material</th>
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<th>Potential Pathogens</th>
</tr>
</thead>
<tbody>
<tr>
<td>Herpes zoster</td>
<td>Airborne, direct and indirect contact</td>
<td>Contact</td>
<td>Vesicle fluid, respiratory secretions</td>
<td>Until all lesions have crusted and dried</td>
<td></td>
</tr>
<tr>
<td>Human immuno-deficiency virus (HIV)</td>
<td>Mucosal or percutaneous exposure to infective body fluids</td>
<td>Standard</td>
<td>Blood and certain other body fluids</td>
<td>See Acquired immuno-deficiency syndrome (AIDS)</td>
<td>HIV</td>
</tr>
<tr>
<td>Hookworm</td>
<td>Direct contact</td>
<td>Standard</td>
<td>Faeces</td>
<td>Until stool specimens are negative</td>
<td><em>N. americanus</em> <em>A. duodenale</em></td>
</tr>
<tr>
<td>I. Impetigo (see abscess)</td>
<td>Direct and indirect contact</td>
<td>Contact Standard</td>
<td>Skin exudates</td>
<td>Until 24 hours of effective anti-microbial therapy</td>
<td><em>Streptococcus gr A, Staphylococcus aureus</em></td>
</tr>
<tr>
<td>L. Legionaries Disease</td>
<td>Air condition units, Hot water systems, Shower heads</td>
<td>Airborne</td>
<td>Water droplets</td>
<td>–</td>
<td><em>Legionella</em></td>
</tr>
<tr>
<td>Leptospirosis</td>
<td>Direct contact</td>
<td>Contact</td>
<td>Faeces (Rodents, rats, pigs)</td>
<td>1 month or until infectious aetiology ruled out</td>
<td><em>Leptospira Interrogans</em></td>
</tr>
<tr>
<td>Leprosy</td>
<td>Direct contact</td>
<td>Standard</td>
<td>Nasal secretions</td>
<td>Within 3 months of continuous and regular treatment with dapsone</td>
<td><em>Mycobacterium leprae</em></td>
</tr>
<tr>
<td>M. Malaria</td>
<td>Vector (mosquito borne)</td>
<td>Standard</td>
<td>Blood</td>
<td>Varies with species of mosquitoes</td>
<td><em>Plasmodium sp.</em></td>
</tr>
<tr>
<td>Measles (Rubella)</td>
<td>Large droplets, direct contact</td>
<td>Droplet</td>
<td>Respiratory secretions</td>
<td>Until 7 days after onset of rash</td>
<td></td>
</tr>
</tbody>
</table>
### Table 7: (cont’d)
**Clinical Conditions and Transmission Characteristics**

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<tr>
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</tr>
</thead>
<tbody>
<tr>
<td><strong>M. (cont’d)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Meningitis (cerebro-spinal meningitis or cebro-spinal fever or spotted fever)</td>
<td>Large droplets</td>
<td>Droplet</td>
<td>Respiratory secretions</td>
<td>Until 24 hours of appropriate antibiotics therapy received or until aetiology ruled out</td>
<td>Bacterial: <em>Neisseria meningitides, Haemophilus influenzae type b, Streptococcus pneumoniae, E. coli and other Gram-negative rods.</em></td>
</tr>
<tr>
<td><strong>N.</strong></td>
<td>Direct and indirect</td>
<td>Major (Isolation)</td>
<td>Blood, body fluids, body tissues, sharps</td>
<td>Until infection contained</td>
<td><em>Enterobacter, Klebsiella, Pseudomonas, etc.</em></td>
</tr>
<tr>
<td>Nosocomial infections</td>
<td></td>
<td>Standard</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>P.</strong></td>
<td>Large droplets</td>
<td>Droplet</td>
<td>Respiratory secretions</td>
<td>Until 72 hours of appropriate antibiotic therapy received</td>
<td><em>Yersinia pestis</em></td>
</tr>
<tr>
<td>Plague</td>
<td>(Bubonic)</td>
<td>Standard</td>
<td></td>
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<tr>
<td></td>
<td>Droplets (Pneumonic)</td>
<td></td>
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<tr>
<td><strong>R.</strong></td>
<td>Mucosal or per-</td>
<td>Standard</td>
<td>Saliva</td>
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<tr>
<td>Rabies</td>
<td>cutaneous exposure to saliva</td>
<td></td>
<td></td>
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<tr>
<td><strong>S.</strong></td>
<td>Airborne</td>
<td>Airborne</td>
<td>Respiratory secretions</td>
<td>4 days after start of rash</td>
<td></td>
</tr>
<tr>
<td>Scabies</td>
<td>Contact</td>
<td>Contact</td>
<td>Bedding, clothing,</td>
<td>Until infection contained</td>
<td><em>Scabei mite</em></td>
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<tr>
<td>Severe Acute Respiratory Syndrome (SARS)</td>
<td>Direct contact</td>
<td>Respiratory hygiene/</td>
<td>Respiratory secretions</td>
<td>Ten days after fever/ Respiratory symptoms subside. Quarantine</td>
<td><em>Coronavirus (COV)</em></td>
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<td>Cough etiquette</td>
<td>Untensils</td>
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<tr>
<td></td>
<td>Airborne</td>
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*Entry in this section is not complete.*
## Table 7: (cont’d)

<table>
<thead>
<tr>
<th>Clinical Conditions</th>
<th>Infective Material</th>
<th>Potential Pathogens</th>
<th>Route of Transmission</th>
<th>Isolation Precautions</th>
<th>Duration of Precautions</th>
<th>Infection Control Characteristics</th>
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<tr>
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<td>Contact</td>
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<td>Tetanus</td>
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<td>Contact</td>
<td>Standard</td>
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<tr>
<td>Tuberculosis, pulmonary and extra-pulmonary</td>
<td></td>
<td></td>
<td>Airborne</td>
<td>Standard</td>
<td>Standard unless ARO⁴</td>
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</tr>
<tr>
<td>Typhoid or enteric fever including para-typhoid fever (see diarrhoea)</td>
<td></td>
<td></td>
<td>Contact</td>
<td></td>
<td>Vectorborne</td>
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<tr>
<td>Typhus epidemic and epidemic</td>
<td></td>
<td></td>
<td>Vectorborne</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Urinary tract infection</td>
<td></td>
<td></td>
<td>Contact</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Whooping cough (pertussis)</td>
<td></td>
<td></td>
<td>Large droplets</td>
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<td></td>
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</tr>
</tbody>
</table>

A. **INFECTION PREVENTION AND CONTROL PROCEDURES**

1. Transmission of TB is through airborne route. Persons with untreated smear positive TB are an overwhelming source of infection. The infection decreases with the initiation of treatment.

2. Any patient suspected of TB must be given an appointment for the Chest Clinic, where a Tuberculin (Mantoux) test will be done. If the result is positive >10mm, a chest X-ray will be performed. Sputum sample for Acid Fast Bacilli (AFB) for three (3) consecutive sputum specimens are required. Disposable sputum cups with lids should be used for specimen collection.

3. **Respiratory Hygiene/Cough Etiquette Precautions** must be observed in the clinic. Signs illustrating precautions for coughing or sneezing must be prominently displayed.

4. Patients who are coughing persistently and are in the outpatient clinic or in Casualty should cover mouth. They should be reminded about precautions and be encouraged to use tissues when coughing. TB suspects should be examined in a well-ventilated area.

5. Only well-fitted masks offer some degree of protection. These are usually expensive and should only be worn in high-risk situations such as performing or assisting with:
   - Bronchoscopes
   - Endotracheal intubation
   - Suctioning
   - Open abscess irrigation
   - Autopsy.

6. **Respiratory Hygiene/Cough Etiquette Precautions** must be maintained when patients are moved from one part of the hospital to another or from one hospital to another. Paper tissues can be used or masks can be worn by patients as an effective means to prevent droplet emission during transmit. Staff in the area/ward to which the patient is taken or transferred must be informed of the patient so that effective infection prevention and control measures can be implemented.
7. Patients on TB treatment undergoing surgical procedures, should be put at the end of the operating list.

8. All health care environments should be assessed to identify areas where TB transmission can occur. The amount of airflow and natural light should be determined. Where air-flow by cross-ventilation is inadequate, extractor fans should be installed. Natural light should be increased where necessary. Curtains should not be used.

9. Isolation is not necessary once a patient has commenced treatment because infectiousness diminishes rapidly after commencement of treatment. It has become less significant as the infectiousness disappears rapidly after the commencement of the intensive chemotherapy. Initial hospitalization is re-evaluated as a form of directly observed therapy (DOT) and it is well proven that it is not the admission, but the direct observation of treatment that matters for cure of the patient and control of TB.

10. All patients, especially those who are HIV+ coming from another health care facility, should be appropriately screened for TB before admission to Caura Hospital, since HIV+ patients after admission to Caura is often diagnosed as TB negative.

**B. DISINFECTANTS USED**

For general cleaning, the normal detergent used is adequate. Disinfectants should be used according to official health care facility and laboratory policy.

*Guidelines*

1. Environmental cleaning should be done with hot soapy water.

2. Spillage of blood and sputum should be treated as follows:
   - Gloves should be worn.
   - **Small spills**: Contamination should be wiped with a paper towel soaked in 1% hypochlorite (10,000 ppm available chlorine).
   - **Larger spills**: Liquid spills should be covered with NaDCC granules and left for at least two minutes before cleaning with paper towels.

   OR

   - The spill may be covered with paper towels and the area gently covered with 1% hypochlorite and left for at least 2 minutes before cleaning.
   - 2% aldehyde should be used for disinfection of equipment that cannot be sterilized.
C. LABORATORY SAFETY

In relation to handling of specimens in the laboratory, the patient is considered no longer infectious two weeks after initiation of treatment.

Preparation of ZN smears

One of the aims in handling sputum specimens safely is to reduce the formation and exposure to aerosols containing live *Mycobacterium tuberculosis*.

1. Reduction of formation of aerosols and reduction of exposure to aerosols.
   - Containers should be carefully opened. Avoid vigorous shaking of the sputum.
   - Class I safety cabinets should be used, and should be correctly positioned in the laboratory to prevent outflow of air into the laboratory. The cabinets should be serviced regularly.
   - The concentration method use of 1% hypochlorite not only increases the sensitivity of the ZN smear but also increases the safety of handling the specimen by killing the organisms.
   - Broken orange sticks should be used instead of loops or swabs for preparing smears.
   - In the absence of a centrifuge or a safety cabinet, the smears should be prepared in a well-ventilated area.

2. Disposal of specimens and containers:
   - For disposal of waste jars, use 0.25% hypochlorite (2500 ppm available chlorine) or where cultures are done; use a 2% phenol solution.
   - Decontaminate, clean and autoclave specimen containers before disposal or incineration.

D. NOTIFICATION OF TB

Every diagnosed TB patient should be notified.

It is a public health requirement under national Public Health Ordinance, that every form of TB diagnosed case should be notified to the Trinidad Public Health Laborartory using the relevant TB notification form(s).

Action to be taken after Notification

1. Contact tracing for screening.
2. Monitor and prevent spread of disease

3. Use appropriate forms for TB contact tracing.

E. **STAFF HEALTH**

1. The greater risk factor for TB disease is HIV infection. All staff must be made aware of the significant risk of developing TB if they are HIV positive. Voluntary testing and counselling should be offered to all staff in contact with TB.

2. Before entering the health service, all doctors, nurses, ward staff, radiographers, and laboratory staff should be screened using a chest X-ray in addition to a clinical history. Sputum specimens should be taken if necessary.

3. Every health care worker should report a persistent cough. Sputum specimens must then be examined. This is the only effective way of detecting TB early. Tuberculin test of >10mm, clear chest X-ray; prophylactic treatment is offered for three (3) months.

4. Rotate staff out of Medical Wards according to schedules as stipulated by national authorities.

Source: *Ministry of Health, Trinidad & Tobago, 2004.*
PRECAUTIONS FOR VIRAL HAEMORRHAGIC FEVERS

EBOLA


Isolation Precautions (Figure 25)

- Wash hands as needed
- Isolate the patient
- Wear protective clothing
- Dispose of needles and syringes safely
- Dispose of waste safely
- Use safe burial practices.

Figure 25
LIST OF REQUIREMENTS TO FACILITATE TRANSPORTATION OF EBOLA PATIENTS*

1. Scrub suits
2. Plastic aprons
3. Head gear
4. Goggles
5. Latex gloves
6. Heavy industrial gloves
7. Gum boots
8. Sharp containers
9. Sodium hypochlorite/household bleach
10. Soap dispensers
11. Waste buckets with lids
12. Large bins with lids for soaking linen.

“Personal Protective Equipment (PPE) and Hand Hygiene Checklist*

Before entering the patient room or area, put on PPE including:

1. Clean, non-sterile long-sleeved gowns.

2. If cloth gowns are used, a plastic apron should also be used if splashing of blood, body fluids, excretions, or secretions is anticipated.

3. Clean, non-sterile, ambidextrous gloves, which cover the cuffs of the gown.

4. Face shield, visor, or goggles.

5. A particulate respirator that is at least as protective as a US NIOSH-certified N95, EU FFP2, or equivalent respirator. If particulate respirators are not available, use surgical or procedure masks.

6. Put on PPE carefully before patient contact to avoid the need for adjustments and to reduce the risk of self-contamination/inoculation.

7. Remove PPE carefully to avoid self-contamination/inoculation.

8. Perform hand hygiene before and after any patient contact and after contact with contaminated items, whether or not gloves are worn.

9. Perform hand hygiene before putting on PPE, immediately after gloves removal, and after taking off all PPE items.
10. Hand hygiene includes either hand washing with soap and water, followed by drying with a clean towel or, preferably, the use of an alcohol-based hand rub.

11. Wash hands with soap and water when they are visibly soiled” (WHO).

**Vaccination of Health-Care Workers against Human Influenza**

“Health-care workers involved in the care of patients with documented or suspected avian influenza should be vaccinated with the most recent seasonal human influenza vaccine. In addition to providing protection against the predominant circulating influenza strain, this measure is intended to reduce the likelihood of a health-care worker being co-infected with human and avian strains, where genetic rearrangement could take place, leading to the emergence of potential pandemic strain” (CDC).


**CDC. Interim recommendations for infection control in health care facilities caring for patients with known or suspected Avian influenza. Available at http://www.cdc.gov/flu/avian/professional/infect-control.htm (accessed July 20 2006).
DENTISTRY

DENTAL UNITS

I. INTRODUCTION
Dental patients and health care workers may be exposed to a variety of micro-organisms via blood, oral or respiratory secretions. These micro-organisms may include cytomegalovirus, Hepatitis B Virus (HBV), Hepatitis C Virus (HCV), Herpes Simplex Virus Types 1 and 2, Human Immunodeficiency Virus (HIV), Mycobacterium Tuberculosis, Staphylococci, Streptococci, and other virus and bacteria, specially those that infect the upper respiratory tract.

Infections may be transmitted in the dental clinic and dental laboratory through several routes, namely:

- Direct contact with blood, oral fluids or other secretions
- Indirect contact with contaminated instruments, clinic equipment, or environmental surfaces
- Airborne contaminants present in either droplet spatter or aerosols of oral and respiratory fluids.

II. LIMITING CONTAMINATION
Four principal means of limiting contamination by droplets, spatter, and aerosols are:

1. The use of high-velocity air evacuation
2. Proper patient positioning
3. Appropriate use of rubber dams
4. Avoiding contact with objects such as charts, telephones, etc. during patient treatment.
III. POLICY STATEMENTS

Standard Precautions shall be observed in the dental unit and laboratory (see Section IV: Standard Precautions).

1. Hand hygiene

- For routine dental procedures, such as examinations and non-surgical procedures, handwashing with plain soap is adequate.

- For surgical procedures, an anti-microbial surgical handscrub is recommended.

2. Personal Protective Equipment

(a) Gloves

- Non-sterile gloves are appropriate for examination and non-surgical procedures.

- Gloves designed for single use shall not to be washed, decontaminated and re-used.

(b) Fluid impervious or surgical masks shall be worn:

- Anytime the dentist and staff are working in close proximity to a patient who is coughing.

(c) Protective eye wear/face shield shall be worn:

- If the dentist and/or staff has acne or dermatitis.

- When preparing a tooth with high-speed handpieces.

- When polishing a crown.

Face shields should be changed when necessary.

(d) Protective clothing: gowns, aprons, laboratory coats, clinic jackets, shall be worn for:

- Anticipated soiling of clothing with blood or other body fluids.
Protective clothing shall be worn when entering office and removed when leaving office.

Reusable protective clothing shall be washed separately when visibly soiled or penetrated by fluids, and at least daily, using a normal laundry cycle.

(e) Disposal of personal protective equipment:

Protective garments and devices (including gloves, masks, eye and face protections) shall be removed before personnel exit areas of the dental office used for laboratory or patient care activities.

Multiple-use needle/syringe unit

Between injections, the multi-use needle/syringe unit shall be re-capped using the standard single hand “scooped” method or with a mechanical device such as a forceps to stabilize the needle sheath to prevent needlestick injury.

When a multi-use needle syringe unit is used, the unsheathed needle shall be placed in a location where it will not become contaminated or contribute to unintentional needle sticks.

4. Control of Environmental Contamination

Environmental surfaces, which are difficult to decontaminate/clean, shall be covered with a disposable fluid impervious sleeve/drape (e.g., light handles, hand operated controls, X-ray unit head).

Coverings shall be changed after each patient.

Rubber dams shall be used as appropriate.

5. Linen

Disposable drapes (if not contaminated with blood and body fluids) shall be discarded in the appropriate trash container.

6. Waste disposal

Sharp items such as needles and scalpel blades shall be placed in puncture-resistant containers marked with the biohazard label for disposal.
• Human tissue may be handled in the same manner as sharp items, but shall not be placed in the same container, but autoclaved/incinerated.

• Solid waste contaminated with blood or other body fluids shall be placed in sealed, strong impervious bags to prevent leakage of the contained items.

• Blood, suctioned fluids, or other liquid waste shall be poured carefully into a drain connected to a sanitary sewer system. Caution shall be taken in emptying the containers to avoid splashes or spilling of potential infectious material.

IV. DECONTAMINATION, CLEANING AND STERILIZATION OF INSTRUMENTS AND EQUIPMENT (see Section VII: Disinfection and Sterilization)

A. Generic Guidelines

Dental instruments are classified into the following categories depending on their risk of transmitting infection and the need to sterilize them between uses:

• Critical

Surgical and other instruments (forceps, scalpels, burs, etc.) used to penetrate soft tissues or bone. These should be heat sterilized after each use.

• Semi-critical

Instruments such as mirrors and amalgam condensers, high-speed and slow-speed handpiece attachments that do not penetrate soft tissues or bone but contact oral tissues. These devices shall be sterilized after each use. If sterilization is not possible, high-level disinfection shall be done. Agents used for high-level disinfectant for those items which cannot be heat sterilized include aldehydes, hydrogen peroxide. These should be used according to manufacturer’s instructions.

• Non-critical

Instruments or medical devices such as external components of X-ray heads that come into contact only with intact skin. These shall be reprocessed between patients with intermediate-level or low-level disinfection or detergent and water washing, depending on the nature of the surface and the degree and nature of the contamination.

Principles of Instrument Decontamination

1. Decontamination is considered the most critical step in instrument processing since processes intended to kill micro-organisms (e.g., disinfection and sterilization) may not be effective if organic soil has not been removed by cleaning.
2. If instruments **cannot** be immediately decontaminated, they shall be placed in a rigid, leakproof receptacle containing a holding solution (such as an enzyme cleaner) to prevent hardening of bioburden until ready for processing.

3. The decontamination process shall be physically separated from dental treatment areas and other instrument processing functions. If instrument processing must be performed in patient treatment areas, strict separation of patient treatment, instrument decontamination, wrapping and sterilization shall be observed.

**Sterilization**

Following decontamination, all reusable critical and semi-critical dental instruments that are heat stable must be sterilized routinely between uses by autoclaving, dry heat or high-level disinfection. Manufacturers’ instructions should be followed.

**Sterile Storage**

All sterile supplies, including reusable dental items, shall be stored in a manner that will preserve their sterility until used.

**B. Specific Procedures for the Dental Unit**

1. Equipment and environmental surfaces that are contacted by health care workers during patient treatment shall be barrier protected or cleaned and disinfected between patients and at the end of the day, using a 0.5% sodium hypochlorite solution. Plastic wrap or other impervious backed paper may be used to protect surfaces against contamination by blood and/or body fluids and to cover areas that are difficult to disinfect, such as:

   - Handles for the overhead dental lamp
   - Patient’s head rest
   - High speed evacuation
   - Low speed evacuation
   - Metal instrument tray beside dentist
   - Air/water syringes on both sides of chair
   - Assistant’s instrument tray
   - X-ray head
   - Exposure button for X-ray unit.
2. Air/water syringes (if not disposable) shall be:
   - Autoclaved after each patient
   - Covered with a disposable wrap.

3. Single-use disposable instruments:
   - High speed evacuator tips
   - Low speed evacuator tips
   - Saliva ejectors
   - Air/water syringes
   - Prophylaxis angles
   - Prophylaxis cups and brushes
   - All cotton supplies.

These items shall be used for one patient only and discarded appropriately. Blood contaminated disposables shall be placed in colour-coded autoclavable trash bags for incineration.

4. Post-procedure decontamination and sterilization of instruments.
   - High-speed dental handpieces and low-speed handpieces components used intra-orally, reusable prophylaxis angles, and oral surgery instruments are decontaminated, cleaned and autoclaved between patients. Sterilization with liquid chemical agents or dry heat is **not** recommended for dental handpieces and prophylaxis angles.
   - Other reusable intra-oral instruments attached to, but removable from, the dental unit air or water lines, such as ultrasonic scaler tips and component parts and air/water syringe tips, shall be reprocessed as described previously.
   - Instruments shall be dried for 20 minutes to prevent rusting then wrapped for autoclaving.
   - Heavy duty gloves shall be used for instrument manipulation.

5. Additional disinfection/sterilization issues
   - Intra-oral X-ray films are disinfected using low-level disinfectant or barrier films prior to being transported to the developer.
Laboratory materials and other items used in the mouth, such as impressions, bite registrations, fixed and removable prostheses, and orthodontic appliances shall be decontaminated, cleaned and disinfected prior to being manipulated or transported. These items shall also be decontaminated, cleaned and disinfected before placement in the patients’ mouth.

Steam sterilization cycles shall run for 30 minutes at 250° degrees F. However, a 40-minute cycle shall be used for the first run of the day.

Biological monitoring (spore testing) shall be conducted daily.

6. Maintenance of air and water lines

- Anti-retraction valves shall be installed and maintained to reduce the risk of possible aspiration of patient material into the handpieces and the water lines.
- High-speed handpieces shall be run to discharge water and air for a minimum of 20–30 seconds after use on each patient.
- At the beginning of each day, the water shall be allowed to run for several minutes to flush the water lines that connect to the dental instruments.
- Sterile water or sterile saline shall be used during procedure involving the cutting of bone.
- Devices that do not penetrate the skin or come in contact with sterile areas of the body, such as several types of endoscopes shall be decontaminated, cleaned and disinfected by emersion in a 2% aldehyde solution for 20 minutes.

7. Biopsy Specimens
   (see Section IV: Standard Precautions).

DENTAL LABORATORY

(a) Methods of Transmission

1. Pumice – Polishing
2. Acrylic – Dust
3. Impressions – Blood, saliva, mucus
(b) Guidelines

1. Polishing
   - Pumice used in the polishing unit should be mixed with water. A detergent may be added to the water.
   - Change pumice in the polishing trough after the polishing of an old denture. This is so that any infection from the old denture will not be transmitted to the new denture during its subsequent polish.

2. Acrylic Dust
   - The operator during working off of acrylic dentures can inhale acrylic dust. Such dust can cause respiratory problems if inhaled in large quantities. The use of an appropriate facemask during these procedures will reduce or eliminate the inhalation of the infectious acrylic dust.

3. Impressions
   - Impressions are taken out of the patient’s mouth and taken to the laboratory for the manufacture of the appropriate prosthesis. These impressions contain oral fluids such as saliva, blood and mucus. Blood may also be found in the impression and this can cause infections to the operator. It is therefore important that these fluids are removed from the impressions in order to reduce the transmission level. Mucus, saliva and blood can be washed away under running water and the impressions dipped in disinfectant according to manufacturer’s instructions. The dental technician shall take precautionary measures and undertake these cleaning and disinfection procedures, while wearing gloves and goggles.

   - The impressions shall be immersed in an appropriate high-level disinfectant for recommended contact time. The solution is discarded after use.

   - Re-usable impression trays shall be decontaminated, cleaned and heat sterilized between patients.

   - Rinse alginate impressions under running water; remove mucus, saliva, blood. Spray impressions with an aerosol.

(c) Treatment of Prostheses Entering the Laboratory

A combination of factors, including time considerations and the lack of heat stability of many items, makes heat sterilization of all prostheses entering the laboratory impractical. For most prostheses, cleaning and chemical disinfection will remain the principal mechanism of reducing contamination. The following general procedures are recommended:
1. Initially scrub all prosthetic devices with a brush and antimicrobial soap to remove gross debris and contamination.

2. Heat sterilize brushes or store them in a container filled with an approved disinfectant.

3. Immerse prostheses in a solution of 0.5% sodium hypochlorite or other intermediate to high-level disinfectant for the recommended contact time.

4. After disinfection, rinse the prostheses under running tap water, dry and complete required work.

(d) *Practices for the Dental Laboratory*

- **Receiving area** – A receiving area should be established separate from the production area. Countertops and work surfaces shall be cleaned and then disinfected daily with an appropriate surface disinfectant used according to the manufacturer’s directions.

- **Incoming cases** – All cases shall be disinfected as they are received. Containers shall be sterilized or disinfected after each use. Packing materials shall be discarded to avoid cross contamination.

- **Disposal of waste materials** – Solid waste that is soaked or saturated with blood or body fluids shall be placed in sealed, sturdy impervious bags. The bags shall be incinerated/autoclaved/burned.

- **Production area** – Persons working in the production area shall wear a clean uniform or laboratory coat, a face mask, protective eyewear and disposable gloves. Work surfaces and equipment shall be kept free of debris and disinfected daily. Any instruments, attachments and materials to be used with new prostheses or appliances shall be maintained separately from those to be used with prostheses or appliances that have already been inserted in the mouth. Brushes and other equipment shall be disinfected at least daily.

- **Outgoing cases** – Each case shall be disinfected before it is returned to the dental clinic. Dentists shall be informed about infection control procedures that are used in the dental laboratory.

**EDUCATION**

All dental staff shall have staff development on infection prevention and control (orientation and initial in-service education). In-service education updates shall be at least annually and more often as the need arises.
SECTION VII

DISINFECTION
AND
STERILIZATION
ANTISEPTICS AND DISINFECTANTS

ANTISEPTICS

Antiseptics are designed to be used for reducing or destroying micro-organisms on the skin or mucous membranes without damaging these tissues.

Uses of Antiseptics

Antiseptics are used for:

- Skin, cervical, or vaginal preparation before a clinical procedure
- Surgical scrub
- Handwashing in high-risk situations, such as before an invasive procedure or contact with a patient at high-risk of infection, (e.g., a newborn or immuno-suppressed patient) (See Table 8).

Antiseptics are not meant to be used on inanimate objects, such as instruments and surfaces. They usually do not have the same killing power as chemicals used for disinfection of inanimate objects.
Table 8: Common Antiseptics and Their Use in Patient Preparation

<table>
<thead>
<tr>
<th>Antiseptic</th>
<th>Usage</th>
<th>Advantages</th>
<th>Disadvantages</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iodophors (e.g. Betadine)</td>
<td>• Surgical scrub.</td>
<td>• Less irritating to the skin than iodine.</td>
<td>• Effectiveness is moderately reduced by blood or other organic material.</td>
<td>• Effective against a broad range of microorganisms.</td>
</tr>
<tr>
<td>Povidone-iodine solution</td>
<td>• Patient preparation.</td>
<td>• Can be used on mucous membranes.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Strengths: 10%, 7.5%, 2%, 0.5%</td>
<td>• Use in genital area, vagina, cervix.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chlorhexidine gluconate 2% or 4% scrub (e.g. Hibitane, Hibiscrub, Hibiclens) or 0.5% tincture</td>
<td>• Surgical scrub and skin preparation.</td>
<td>• Good persistent effect. Remains effective for at least 6 hours after application.</td>
<td>• May cause irritation.</td>
<td>• Effective against a broad range of microorganisms, but has a minimal effect on tuberculosis and fungi.</td>
</tr>
<tr>
<td>Iodine 1% Tincture of iodine 2%</td>
<td>• Used for skin preparation, but must be allowed to dry and then removed from the skin with alcohol.</td>
<td>• Fast acting.</td>
<td>• Can cause skin irritation.</td>
<td>• May irritate the genital area, vagina, cervix.</td>
</tr>
<tr>
<td>Alcohol 70% – 90% (isopropyl)</td>
<td>• Cannot be used on dirty skin.</td>
<td>• Rapid kill.</td>
<td>• Drying effect on skin.</td>
<td>• Effective against a broad range of microorganisms.</td>
</tr>
<tr>
<td></td>
<td>• Wash area before applying.</td>
<td>• Effectiveness moderately reduced by blood or other organic material.</td>
<td>• Cannot be used on mucous membranes.</td>
<td>• Alcohol containers should be stored in areas approved for flammable materials.</td>
</tr>
<tr>
<td>Triclosan (Irgasan)</td>
<td>• Skin preparation.</td>
<td>• Excellent</td>
<td>• Poor fungicide.</td>
<td>• Good activity against gram-positive organisms.</td>
</tr>
<tr>
<td>Strengths: 0.3%–2%</td>
<td>• Hand hygiene</td>
<td>• Persistent effect over several hours.</td>
<td></td>
<td>• Its speed is intermediate.</td>
</tr>
</tbody>
</table>
DISINFECTANTS

Purpose of Disinfectants

Disinfectants are chemicals used to kill micro-organisms on infected instruments. Disinfectants are not meant to be used on the skin or mucous membranes.

Types of Disinfectants

There are three types of disinfectants (see Table 9):

1. **High-level disinfectants**
   - Kill bacteria, viruses, fungi, *Mycobacterium tuberculosis* and some, but not necessarily all bacterial endospores. Some high-level disinfectants are also chemical sterilants and, given sufficient time, will destroy bacterial endospores.
   - Are used for processing instruments and other items that are semi-critical.

2. **Intermediate-level disinfectants**
   - Kill mycobacteria, most viruses, and bacteria.
   - Recommended for use on blood and other potentially infectious materials.
   - Small, non-lipid viruses, (e.g., enteroviruses) may be resistant.
   - Used for some non-critical items, or devices, or environmental surfaces.

3. **Low-level disinfectants**
   - Kill some bacteria and some viruses and fungi, but **do not** kill tuberculosis-causing micro-organisms and bacterial endospores.
   - Are used for cleaning surfaces, such as floors and counter tops.
   - They should **not** be used for processing instruments and other items.
# Table 9: Major Classes of Chemical Disinfectants and Their Relative Advantages and Disadvantages

<table>
<thead>
<tr>
<th>Disinfectant</th>
<th>Uses</th>
<th>Advantages</th>
<th>Disadvantages</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Alcohols:</strong> Isopropyl 60–70%</td>
<td><strong>Intermediate-level disinfectant:</strong> Disinfect thermometers, external surfaces of some equipment (e.g. stethoscopes). Equipment used for home health care. Used as a skin antiseptic.</td>
<td>• Fast acting • No residue • Non-staining.</td>
<td>• Volatile • Evaporation may diminish concentration • Inactivated by organic material • May harden rubber or cause deterioration of glues • Use in the operating theatre.</td>
<td>• Isopropyl alcohol slightly more effective than ethyl alcohol. • 70% alcohol more effective than 90%.</td>
</tr>
<tr>
<td>Ethanol 70–90% includes methylated spirit (70%)</td>
<td>Sodium Hypochlorite (chlorax) <strong>Intermediate-level disinfectant:</strong> Disinfect hydrotherapy tanks, dialysis equipment, cardiopulmonary training manikins, environmental surfaces. Effective disinfectant following blood spills; aqueous solutions (5,000 parts per million) used to decontaminate area after blood has been removed; sodium dichloroisocyanurate powder sprinkled directly on blood spills for decontamination and subsequent cleanup. Equipment used for home health care.</td>
<td>• Low cost • Fast acting • Readily available in non-hospital settings and easy to use. • Unaffected by water hardness. • Effective deodorizer and disinfectant. • Does not leave toxic residues. • Bactericidal activity increases with temperature.</td>
<td>• Corrosive to metals. • Inactivated by organic matter (dirt, blood, excrements). • Irritant to skin and mucous membranes. • Unstable when diluted to usable state (1:10 dilution). • Use in well-ventilated areas. • Shelf life shortens when diluted. • Discolouring or bleaching of fabrics can occur. • Requires precleaning of surface prior to disinfection. • Highly toxic when mixed with ammonia.</td>
<td>• Suitable for low-and high-level decontamination of surfaces only. • For mycobacteria use at high concentrations 1% (10,000 ppm). • Use with extreme care if used for instrument disinfection because of corrosive activity. • Wide range of in-use dilutions recommended for different situations therefore ensures dilution is correct for particular use and that it is made up correctly.</td>
</tr>
<tr>
<td>Ethylene oxide</td>
<td>• Used as gas for the sterilization of heat sensitive medical devices.</td>
<td>• Sterilant for heat or pressure sensitive equipment.</td>
<td>• Slow acting and requires several hours of aeration to remove residue.</td>
<td></td>
</tr>
<tr>
<td>Disinfectant</td>
<td>Uses</td>
<td>Advantages</td>
<td>Disadvantages</td>
<td>Comments</td>
</tr>
<tr>
<td>---------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>-----------------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------</td>
</tr>
</tbody>
</table>
| Formaldehyde        | • Very limited use as chemisterilant.  
• Sometimes used to reprocess haemodialyzers.  
• Gaseous form used to decontaminate laboratory safety cabinets. | • Active in presence of organic materials.                                | • Carcinogenic  
• Toxic  
• Strong irritant  
• Pungent odour.                           | • Limited use because of toxicity.  
• Use only gaseous form under strict supervision of senior staff. |
| Oth Aldehyde. e.g., Orthophtaldehyde | 5% formulations high-level disinfection for heat sensitive equipment.  
• Most commonly used for endoscopes, respiratory therapy equipment and anaesthesia equipment.  
• Effective against viruses, fungi and bacteria including Mycobacterium tuberculosis. | • Non-corrosive to metal.  
• Active in presence of organic material.  
• Compatible with lensed instruments.  
• Sterilization may be accomplished in 6–10 hours. | • Extremely irritating to skin and mucous membranes.  
• Shelf life shortens when diluted (effective for 14–30 days depending on formulation).  
• High cost.  
• Monitor concentration in reusable solutions.  
• Fixative. | • Acts as a fixative, so prior cleaning is essential.  
• Toxic, therefore use under conditions that minimize exposure. |
| Hydrogen peroxide   | 3% – low level disinfectant:  
• Equipment used for home health care  
• Cleans floors, walls and furnishings  
6%– high-level disinfectant:  
• Effective for high level disinfection of flexible endoscopes  
• Foot care equipment  
• Disinfection of soft contact lenses  
• High concentrations used as chemisterilants in specially designed machines for decontamination of heat sensitive medical devices. | • Strong oxidant  
• Fast acting  
• Breaks down into water and oxygen. | • Can be corrosive to aluminium, copper, brass and zinc. |                                                                                     |
Table 9: (cont’d)
Major Classes of Chemical Disinfectants and Their Relative Advantages and Disadvantages

<table>
<thead>
<tr>
<th>Disinfectant</th>
<th>Uses</th>
<th>Advantages</th>
<th>Disadvantages</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iodophors</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| Iodine-based complexes, e.g. Povidone-iodine | • **Intermediate-level disinfectant** for some equipment (hydrotherapy tanks, thermometers)  
  • **Low-level disinfectant** for hard surfaces and equipment that does not touch mucous membranes (e.g. IV poles, wheelchairs, beds, call bells). | • Rapid action  
  • Relatively free of toxicity and irritancy.  
  • Innocuous decomposition (water, oxygen, acetic acid, hydrogen peroxide)  
  • Rapid action at low temperature  
  • Active in presence of organic materials. | • Antiseptic iodophors are not suitable for use as hard surface disinfectant.  
  • Corrosive to metal unless combined with inhibitors.  
  • Disinfectant may burn tissue.  
  • Inactivated by organic materials.  
  • May stain fabrics and synthetic materials. | • Povidone-iodine complex is used as a skin antiseptic and pre-operation scrub. |
| Peracetic acid | • **High-level disinfectant** or sterilant for heat sensitive equipment.  
  • Higher concentrations used as chemisterilants in specially designed machines for decontamination of heat sensitive medical devices. | • Innocuous decomposition (water, oxygen, acetic acid, hydrogen peroxide)  
  • Rapid action at low temperature  
  • Active in presence of organic materials. | • Can be corrosive  
  • Unstable when diluted. |          |
| Phenolics    | • **Low-/intermediate-level disinfectant:**  
  • Clean floors, walls and furnishings.  
  • Clean hard surfaces and equipment that does not touch mucous membranes (e.g. IV poles, wheelchairs, beds, call bells). | • Leaves residual film on environmental surfaces.  
  • Commercially available with added detergents to provide one-step cleaning and disinfecting. | • **DO NOT** use in nurseries.  
  • Not recommended for use on food contact surfaces.  
  • May be absorbed through skin or by rubber.  
  • Some synthetic flooring may become sticky with repetitive use. | • Relatively broad spectrum.  
  • Suitable for low-level environmental disinfection only.  
  • Useful against mycobacteria but cannot be used if HIV or HBV are present. |
| Quaternary ammonium compounds | • **Low-level disinfectant:**  
  • Clean floors, wall and furnishings  
  • Clean blood spills. | • Generally non-irritating to hands.  
  • Usually have detergent properties. | • **DO NOT** use to disinfect instruments.  
  • Non-corrosive.  
  • Limited use as disinfectant because of narrow microbicidal spectrum. | • Contamination of weak solution with Gram-negative bacteria can be a hazard. |

The Effectiveness of Disinfectants

To be effective, the chosen disinfectant must:

1. Kill or inhibit the growth of the undesirable micro-organisms.

2. **Not** be harmful to the instrument/equipment on which it is used.

3. Be used only on clean, rinsed and dried instruments/equipment. Protein material, detergent and soap will inhibit some disinfectants.

4. Be used in the proper concentration.

5. Be used within the stipulated lifetime after dilution.

Factors Affecting Disinfection

1. **Nature of the item to be disinfected**
   - The rougher the surface, the longer the contact time required for disinfection (crevices, hinges, lumen).

2. **Number of micro-organisms present**
   - The number of micro-organisms present will lengthen the time for effective disinfection to take place. In general, higher bioburden requires more time for disinfection.

3. **Resistance of micro-organisms**
   - Some micro-organisms are more resistant to disinfection than others. The generally accepted order from the most resistant to the least resistant is: bacterial spores, mycobacteria, hydrophilic viruses, fungi, vegetative bacteria, lipid viruses.
   - Disinfecting a spill with a small concentration of bacterial spores will require longer disinfection time than a large concentration of lipid viruses.
   - Certain organisms, which flourish in a health care facility environment (such as *Pseudomonas aeruginosa* and other antibiotic-resistant micro-organisms), have an inherent resistance to certain disinfectants, while other organisms may develop resistance as a result of environmental selection.
4. Type and concentration of disinfectant used

- Resistance of micro-organisms depends on the type of disinfectant used. A particular micro-organism may be more resistant to one type of disinfectant than another. For instance, alcohol (isopropyl or ethyl) is effective against vegetative bacteria and most lipophilic viruses, but is not effective against bacterial spores or most hydrophilic viruses.

- Many disinfectants are broad spectrum; that is, effective against all or most forms of microbial life.

- Some broad spectrum disinfectants include aldehyde, sodium hypochlorite (bleach), and hydrogen peroxide.

- Non-broad spectrum disinfectants include phenolics and quaternary ammonium compounds.

- Alcohols lie somewhere in between these two.

5. Presence of organic material

- The presence of organic soiling matter will compromise disinfection.

- Blood, blood products, body fluids, and faeces contain significant amounts of proteins, and protein will bind and inactivate some disinfectants or slow their action. Therefore, in the presence of large amounts of protein, a higher concentration of disinfectant and longer contact time will be necessary to achieve maximal disinfection.

6. Duration of exposure and temperature

- Duration of exposure and temperature influences the disinfection process. The longer the duration of exposure, the higher the degree of disinfection achieved.

- Some disinfectants require a longer contact time to achieve killing, and some micro-organisms need longer exposures to be killed.

- Higher temperatures increase the killing power of most disinfectants, whereas lower temperatures may slow the killing power of most disinfectants.
Choice of Disinfection Methods

1. When compatible with other requirements, disinfectants used should be bacteriocidal rather than bacteriostatic; active against a wide range of micro-organisms and should not be readily inactivated.

2. Disinfectants are used under a variety of conditions, therefore the one chosen should be considered in terms of acceptability, availability, cost, as well as antibacterial activity. Stability, toxicity, corrosiveness and cleaning properties should be assessed before use. It is essential to monitor their effectiveness, i.e., by regular “in-use” tests under actual conditions of use on the wards/units.

3. The main problem in choosing the wrong disinfectant or using them incorrectly is that they may allow the survival and multiplication of bacteria. These bacteria then spread by spillage, as aerosols, or by being carried over on mops or other equipment that is being supposedly disinfected.

Guide to the Use of Disinfectants*

The following should be adhered to:

1. Follow manufacturer’s instructions AND ensure that the correct (optimum) dilution is used.

2. Check expiry date of the solution. The date should be clearly marked on the container.

3. Disinfectant containers must be thoroughly cleaned or sterilized before refill between uses. NEVER TOP UP!!.

4. Disinfectants must not be used to sterilize instruments or equipment (unless specified in the disinfectant policy, e.g., endoscopes).

5. Disinfectants should be supplied, preferably ready for use from the pharmacy (new stocks to be supplied on receipt of empty containers). Do not discard empty containers or use them to store other solutions. Chemicals can be harmful when used in the wrong situations.

6. Open containers of disinfectant should not be tolerated in any health care facility environment. There is a serious risk of contamination with multiple antibiotic-resistant bacteria such as Pseudomonas spp and spores.

7. Where disinfectants are indicated for use on surfaces, WIPE! DO NOT wash, bathe or flood-wash.

8. Always thoroughly decontaminate, then clean articles before disinfection, i.e., remove any substance such as dirt and biological materials.
9. The health care facility pharmacy should ensure that:

- The containers are thoroughly cleaned, washed and dried.
- The containers are clearly labelled with the type of contents, the in-use dilution and the expiry date.
- None of the disinfectants are exposed to inactivating substances, i.e. cork, rubber caps or incompatible detergents.

10. The disinfectants are diluted by knowledgeable personnel in manageable quantities, e.g., 5 litres or less. This will reduce waste and that partially filled containers will not be left on the wards (prevent hoarding)*.

**Calculation of Concentrations**

- Many active chlorine compounds are available at various strengths; however, the most widely used for chemical disinfection is sodium hypochlorite. Household bleach or laundry bleach is a solution of 5.25% or 52,500 parts per million (ppm) of sodium hypochlorite.
- Note that a 10% or 1:10 dilution of bleach will result in a 0.525% or 5250 ppm solution of chlorine. Rounded off, 0.5% is 5,000 ppm solution of chlorine.
- Thus, 100 ppm available chlorine means 100 out of every million parts of chlorine in the solution are available to produce a disinfectant effect.
- The following calculations are included to assist in the preparation of chlorine solutions (see Tables 10–11A).

---

1. **Preparing a Dilute Chlorine Solution**

**Using Liquid Bleach**

*Example I*

Chlorine in liquid bleach comes in different concentrations. Any concentration can be used to make a dilute chlorine solution by applying the following formula:

\[
\frac{\text{% chlorine in liquid bleach}}{\text{% chlorine desired}} - 1 = \text{Total parts of water for each part bleach}\]

*Example:* To make a 0.5% chlorine solution from 3.5%‡ bleach:

\[
\frac{3.5\%}{0.5\%} - 1 = [7] - = 6 \text{ parts water for each part bleach}
\]

Therefore, you must add 1 part bleach to 6 parts water to make a 0.5% chlorine solution.

† “Parts” can be used for any unit of measure (e.g. ounce, litre or gallon) or any container used for measuring, such as a pitcher.

‡ In countries where French products are available, the amount of active chlorine is usually expressed in degrees chlorum. One degree chlorum is equivalent to 0.3% active chlorine.

**Using Bleach Powder**

If using bleach powder, † calculate the ratio of bleach to water by using the following formula:

\[
\frac{\text{% chlorine desired}}{\text{% chlorine in bleach powder}} \times 1,000 = \text{Number of grams of powder for each litre of water}
\]

*Example:* To make a 0.5% chlorine solution from calcium hypochlorite powder containing 35% active chlorine:

\[
\frac{0.5\%}{35\%} \times 1,000 = 0.0143 \times 1,000 = 14.3
\]

Therefore, you must dissolve 14.3 grams of calcium hypochlorite powder in each litre of water used to make a 0.5% chlorine solution.

† When bleach powder is used; the resulting chlorine solution is likely to be cloudy (milky).

Example II

Formula for Making a Dilute Solution from a Concentrated Solution*

\[ \text{Total Parts (TP) (H}_2\text{O)} = \left( \frac{\% \text{ Concentrate}}{\% \text{ Dilute}} \right) - 1 \]

Example: To make a dilute solution (0.1%) from 5% concentrated solution.

1. Calculate TP (H}_2\text{O) = \left( \frac{5.0\%}{0.1\%} \right) - 1 = 50-1 = 49
2. Take 1 part concentrated solution and add to 49 parts boiled (filtered if necessary) water.

Formula for Making a Chlorine-Releasing Solution from a Dry Powder

\[ \text{Grams/Liter} = \left( \frac{\% \text{ Dilute}}{\% \text{ Concentrate}} \right) \times 1000 \]

Example: To make a dilute chlorine-releasing solution (0.5%) from a concentrated powder (35%).

1. Calculate Grams/litre = \left( \frac{0.5\%}{35\%} \right) \times 1000 = 14.2 \text{ g/l}
2. Add 14.2 grams (approximately 14 g) to 1 litre of water.

Example III

Undissociated hypochlorite is antibacterial. Amounts or concentration of hypochlorite = free or active or available chlorine*

To calculate parts per million (ppm) using CLOROX as an example:

CLOROX has 5.2% available sodium hypochlorite (find on label of chlorine solution to be used)

5.25% available hypochlorite =

= 5.25 grams hypochlorite per 100 millilitres

= 52.5 grams hypochlorite per litre

= 52500 milligrams hypochlorite per litre

= 52500 ppm of hypochlorite.

One gallon CLOROX = 52500 ppm of hypochlorite

for 100 ppm chlorine solution = 52500 ÷ 100 = dilution factor of 1:525

i.e. 1 gallon of CLOROX in 525 gallons of water = 100 ppm chlorine solution.

for 200 ppm chlorine solution = 52500 ÷ 200 = dilution factor of 1:262.5

i.e. 1 gallon of CLOROX in 262.5 gallons of water = 200 ppm chlorine solution.

1 gallon CLOROX in 525 gallons of water = 100 ppm chlorine solution.

1 gallon CLOROX in 1050 gallons of water = 50 ppm chlorine solution.

1 gallon CLOROX: 1050 gal water = x gal CLOROX: 10 gallon water

1050x = 10

x = 0.0095 gallons of CLOROX in 10 gallons of water = 50 ppm chlorine solution.

3750 millilitres = 1 gallon

3750 millilitres x 0.0095 gallons of CLOROX = 35.7 millilitres in 10 gallons of water = 50 ppm chlorine solution.

30 millilitres = 1 fluid ounce.

35.7 millilitres ÷ 30 millilitres = 1.19 fluid ounce

1.2 fl oz of CLOROX in 10 gallons of water = 50 ppm chlorine solution.

2.4 fl oz of CLOROX in 10 gallons of water = 100 ppm chlorine solution.

5.0 fl oz of CLOROX in 10 gallons of water = 200 ppm chlorine solution.

2 tablespoons = 1 fl oz.

5.0 fl oz of CLOROX in 10 gallons of water = 200 ppm chlorine solution.

0.5 fl oz of CLOROX in 1 gallon of water = 200 ppm chlorine solution.

= 1 tablespoon per 1 gallon of water = CLOROX recommendation.

To change ppm to a percent

(\text{ppm desired} \div 1,000,000) \times 100 = \% \]  

To change % to ppm

(\% \div 100) \times 1,000,000 = \text{ppm}

Source: * Standard operating procedures
http://aruba.nysaes.cornell.edu/fst/faculty/mclehan/apple/sopsansoln.html
2. Using Chlorine-Releasing Tablets

Follow the manufacturer’s instructions, since the percentage of active chlorine in these products varies. If the instructions are not available with the tablets received from central supply, ask for the product’s instruction sheet.

<table>
<thead>
<tr>
<th>Brand of bleach</th>
<th>% active chlorine</th>
<th>Amount of bleach and water needed to make a 0.5% chlorine solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Household bleach</td>
<td>5%</td>
<td>1 part bleach, 9 parts water</td>
</tr>
</tbody>
</table>

**Table 10: Calculations**

<table>
<thead>
<tr>
<th>Type of bleach</th>
<th>% active chlorine</th>
<th>Amount of bleach needed per litre of water to make a 0.5% chlorine solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calcium hypochlorite</td>
<td>70%</td>
<td>7 grams</td>
</tr>
<tr>
<td>Calcium hypochlorite</td>
<td>35%</td>
<td>14 grams</td>
</tr>
</tbody>
</table>

*In some cases, the numbers have been rounded up or down to the nearest whole number. This does not affect the effectiveness of the decontamination solution.*

3. Dilutions of household bleach

The following calculations of sodium hypochlorite are based upon scientific studies.

Table 11: Dilution Efficacy Levels

<table>
<thead>
<tr>
<th>Desired Concentration</th>
<th>Effective Disinfection Level</th>
<th>Dilution of Household Bleach (5.25%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>100 ppm</td>
<td>Gram positive &amp; gram negative bacteria</td>
<td>1:500</td>
</tr>
<tr>
<td>500 ppm</td>
<td>Bacillus subtilis spores</td>
<td>1:100</td>
</tr>
<tr>
<td>1000 ppm</td>
<td>Mycobacterium minimum</td>
<td>1:50</td>
</tr>
<tr>
<td>2400 ppm</td>
<td>Virucidal</td>
<td>1:20</td>
</tr>
<tr>
<td>5000 ppm</td>
<td>Mycobacterium tuberculocide</td>
<td>1:10</td>
</tr>
<tr>
<td>52,500 ppm (household bleach)</td>
<td>High-level disinfectant Not bacterial spores</td>
<td>1:1</td>
</tr>
</tbody>
</table>

Adapted from Rutala, 1996 (4).

Source: Sodium hypochlorite http://www.ace.orst.edu/info/nain/chemical/naoclmed.htm

Table 11A: Dilutions of Household Bleach

<table>
<thead>
<tr>
<th>Volume of Bleach</th>
<th>Volume of Water</th>
<th>Dilution Ratio</th>
<th>Sodium Hypochlorite (%)</th>
<th>Available Chlorine (mg/L)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Undiluted</td>
<td>0</td>
<td>1:1</td>
<td>5.25</td>
<td>52,500 ppm</td>
</tr>
<tr>
<td>1</td>
<td>9</td>
<td>1:10</td>
<td>0.5</td>
<td>5,000</td>
</tr>
<tr>
<td>1</td>
<td>99</td>
<td>1:100</td>
<td>0.05</td>
<td>500</td>
</tr>
</tbody>
</table>

PROCESSING

INTRODUCTION

Appropriate decontamination, cleaning, disinfection and sterilization of patient care equipment are important in limiting and/or preventing the transmission of micro-organisms related to reusable patient care equipment.

The reprocessing method required for a specific item will depend on the item’s intended use, risk of infection to the patient, and the amount of soiling.

Decontamination and cleaning are always essential prior to disinfection or sterilization. An item that has not been decontaminated and cleaned cannot be assuredly disinfected or sterilized.

The rationale for the methods of decontamination, cleaning, disinfection and/or sterilization process used for surgical instruments and equipment depends on many factors including the level of potential risk of infection to the patient.

The level of risks determines the reprocessing of surgical instruments and equipment. See Table 12.
### Table 12: Classification of Risks

<table>
<thead>
<tr>
<th>Class</th>
<th>Use</th>
<th>Instruments/Equipment</th>
<th>Reprocessing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Critical/High-risk</td>
<td>• Enters body cavities, tissues and vascular system, in contact with break in the skin or mucous membranes.</td>
<td>• Surgical instruments, needles, catheters (cardiac and urinary) and prosthetic implants, intra-uterine devices.</td>
<td>• Decontamination, cleaning followed by <strong>sterilization</strong>.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Equipment used on highly infectious patients.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Items contaminated with highly virulent microorganisms, e.g. haemorrhagic viruses, rabies virus.</td>
<td></td>
</tr>
<tr>
<td>Semi-Critical/Intermediate-risk</td>
<td>• In contact with intact mucous membranes or non-intact skin.</td>
<td>• Endoscopes, respiratory equipment including laryngoscope and blade, endotracheal and tracheotomy tubes, oropharyngeal and nasal airways, thermometers.</td>
<td>• Decontamination, cleaning followed by <strong>sterilization/high-level disinfection</strong>.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Equipment used on patients susceptible to infection.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Linen, utensils used on patients infected with highly virulent and infectious pathogens, e.g. Hepatitis B, <em>Mycobacterium tuberculosis</em>, <em>Shigella</em>.</td>
<td></td>
</tr>
<tr>
<td>Non-Critical/Low-risk</td>
<td>• In contact with intact skin.</td>
<td>• Stethoscopes, blood pressure apparatus, bedpans, urinals, washing bowls, utensils, toilets, linen.</td>
<td>• Decontamination, cleaning followed by <strong>low or intermediate-level disinfection</strong>.</td>
</tr>
<tr>
<td>Minimal risk</td>
<td>• Not in close contact with patient, or in close proximity but with low contamination risk.</td>
<td>• Walls, floors, sinks, bedframes, lockers.</td>
<td>• Cleaning with detergent and drying.</td>
</tr>
</tbody>
</table>
Risk Categories in the Environment

Units or areas within a unit should be classified into risk categories and catered for accordingly (see Section VIII: Housekeeping).

**High Risk Areas**
- Operating Theatre
- Labour and Delivery Rooms
- ICU
- Dressing Room
- Laboratories
- Dental Unit
- Neonatal Unit
- Isolation Room

**Low Risk Areas**
- Pharmacy
- Physiotherapy
- X-ray Department
- Offices
- Kitchen

THE STEPS OF PROCESSING

Proper processing involves several steps that reduce the risk of transmitting infections from used instruments and other items to health care workers and patients. For proper processing, it is essential to perform the steps in the correct order. **Figure 26** outlines the steps in processing.

**Figure 26: Processing**

Step 1. Decontamination

Decontamination is the first step in reprocessing instruments and other items for reuse. It makes soiled instruments and other items safe to handle by health care workers before cleaning.

Decontamination Procedure

- Decontamination is done before leaving the treatment or procedure room.

- **Immediately after** a procedure and **before** the removal of gloves, place items in 0.5% chlorine solution.

- Allow to soak for 10 minutes. This step rapidly inactivates HBV and HIV.

- Dip gloved hands in the chlorine solution before removing the gloves. Remove gloves by inverting them.

- Deposit gloves into the hazardous waste container for disposal.

- Perform hand hygiene after removal and disposal of gloves.

- After 10 minutes of soaking in 0.5% chlorine solution remove instruments. **Do not** soak more than 10 minutes.

- Rinse immediately or place instruments immediately in soapy water for cleaning.
Step 2. Cleaning of Instruments and Equipment

Cleaning instruments and equipment is the next important step in processing and refers to scrubbing items with a brush, detergent, and water to remove blood, other body fluids, organic material, tissue and dirt. In addition, cleaning greatly reduces the number of micro-organisms (including bacterial endospores) on items and is a crucial step in processing. If items have not first been cleaned, further processing might not be effective because:

- Micro-organisms trapped in organic material may be protected and survive further processing.
- Organic material and dirt can make the chemicals used in some processing techniques less effective.

Cleaning Procedure

- Use heavy-duty gloves for cleaning instruments.
- Cleaning that follows decontamination can remove up to 90% of micro-organisms (bacteria, viruses, fungi and parasites) and is the best way to reduce the number of endospores, which cause tetanus and gangrene.
- Neither sterilization nor high-level disinfection procedures are effective without prior decontamination and cleaning using detergent, water and brushes.
- Cleaning should be done under the surface of the water, using liquid soap and friction to remove all organic material from instruments.
- After cleaning, rinse items in clean water until no detergent remains.
- Air-dry items whenever possible.
- Remove and dispose of gloves.
- Perform hand hygiene after removing gloves.
Care of All Instruments

- Those with moving parts should be lubricated after drying.
- Avoid oils that may protect bacteria during autoclaving; a water soluble lubricant is recommended.
- **Never** use steel wool or abrasive powders on stainless steel instruments. Their use may seriously damage the corrosion resistant film of the instrument.
- **Never** label surgical instruments by impact marking. Striking any hardened instruments can cause stress and severe damage may result at a later date.
- Staining and spotting can be caused by condensation of water droplets on the surface, leaving slight mineral deposits.
- General dullness of the surface finish may arise from water softening systems.
- When instruments do stain in spite of all good care taken they can be cleaned by using a commercially available rust and stain remover.

New Instruments

- All new instruments are supplied without lubrication. It is recommended that all be carefully washed and dried and any moving part lubricated.
- Whenever cleaning, regardless of method, keep ratchets unlocked and box joints open.
- When instruments are no longer new, avoid as far a possible contact between stainless steel instruments and any of the following substances: barium chloride, aluminium chloride, bromide and iodine containing compounds.

Manual Cleaning of Soiled Instruments and Equipment

- Routine cleaning of soiled instruments is done immediately after the procedure.
- When an operation is in progress do not drop instruments into a holding solution of disinfectant. If the instruments are not cleaned first, disinfectants such as aldehyde or alcohol act as fixatives of any organic material present, making it difficult to remove.
- Instruments should not be soaked in saline, as they will become pitted.
- Dilute detergent properly as per supplier’s direction.
- Completely dismantle all items and leave instruments open.
- Use warm water, detergent and hard brush to completely remove the blood, tissue, food and other residue, paying special attention to small teeth of instruments and joints.

- Finally rinse with clean water to remove traces of detergent.

- Dry properly. Failure to remove water from trapped areas will cause corrosion.

- For sterilization wrap the instruments properly to prevent contact corrosion.

1. There is NO substitute for proper cleaning. Whether steam sterilization, ethylene oxide or disinfectants are used they CANNOT penetrate debris. These processes will NOT work when instruments are NOT cleaned properly.

2. ALWAYS keep soiled items separated from clean and disinfected/sterile areas to prevent cross contamination.

3. Consider the item contaminated when packaging is torn, damaged, wet, dropped on the floor and when the expiry date has passed.

4. NEVER let a clean item stand in liquid. DRY! Keep all instruments open.
Step 3. **High-level Disinfection (HLD)**

HLD is the process that eliminates all microorganisms (including bacteria, viruses, fungi and parasites), but does not reliably kill all bacterial endospores, which cause diseases such as tetanus and gas gangrene. HLD is suitable for instruments and items that come in contact with broken skin or intact mucous membranes.

Because sterilization kills all microorganisms, including bacterial endospores, it is preferable to HLD for instruments and other items that will come in contact with the bloodstream or tissues under the skin. If sterilization is not available, HLD is the only acceptable alternative.

HLD can be performed by: Boiling; Soaking in Chemicals, Steaming.

**A. HLD by Boiling**

**Step 1**

- Decontaminate and clean all items to be boiled.
- Open all hinged items and disassemble those with sliding or multiple parts.
- Completely submerge all items in the water in the pot or boiler.
- Place any bowls and containers upright, not upside-down, and fill with water.

**Step 2**

- Cover the pot or close the lid on the boiler and bring the water to a gentle, rolling boil.

**Step 3**

- When the water comes to a rolling boil, start timing for 20 minutes. Use a timer to make sure to record the time that boiling begins. From this point on, DO NOT add or remove any water and DO NOT add any items to the pot or boiler.

**Step 4**

- Lower the heat to keep the water at a gentle, rolling boil.
If the water boils too vigorously, it will evaporate, and the items may become damaged if they bounce around the container and hit the sidewalls and other items being boiled. Lower heat also saves fuel or electricity.

Step 5

- After 20 minutes, remove the items using dry, HLD pickups (lifters, cheatle forceps). Place the items on an HLD tray or in an HLD container away from insects and dust.

An HLD tray or container can be prepared by boiling it for 20 minutes or by filling it with a 0.5% chlorine solution and letting it soak for 20 minutes, then draining the chlorine solution and rinsing thoroughly with sterile water.

Step 6

- Allow to air-dry before use or storage.

Step 7

- Use items immediately or keep them in a covered, sterile or HLD container for up to one week.

NEVER leave boiled items in water that has stopped boiling; they can become contaminated as the water cools down.

Tips for HLD by Boiling

- Items must be completely covered with water. Open all hinged instruments and disassemble items with sliding or multiple parts.
- Always boil for 20 minutes. Start timing when the water reaches a rolling boil. If you forget to start timing the procedure, start timing at the point at which you realize this.
- Do not add anything to or remove anything from the boiler once boiling begins.
B. HLD by Chemicals

Step 1

- Decontaminate, clean, and thoroughly dry all instruments and other items to be processed. Water from wet items will dilute the chemical solution, thereby reducing its effectiveness.

Step 2

- **When using an aldehyde solution:** Prepare the solution according to the manufacturer’s instructions. Ideally, an indicator strip should be used each time the solution is used to determine if the solution is still effective. After preparing the solution, place in a clean container with a lid. Mark the container with the date the solution was prepared and the date it expires.

- **When using a chlorine solution:** Prepare the 0.5% chlorine solution as described. Fresh solution should be made each day, or more often if the solution becomes cloudy. Put the solution in a clean container with a lid.

Step 3

- Open all hinged items and disassemble those with sliding or multiple parts. The solution must contact all surfaces in order for HLD to be achieved. Completely submerge all items in the solution. All parts of the items should be under the surface of the solution. Place any bowls and containers upright, not upside-down, and fill with the solution.

Step 4

- Cover the container, and allow the items to soak for 20 minutes. Do not add or remove any instruments or other items once timing has begun.

Step 5

- Remove the items from the solution using dry, HLD pickups (lifters, cheatle forceps).

Step 6

- Rinse thoroughly with sterile water to remove the residue that chemical sterilants leave on items. This residue is toxic to skin and tissue.
Step 7

- Place the items on an HLD tray or in an HLD container and allow to air-dry before use or storage. Use items immediately or keep in a covered, dry HLD container and use within one week.

An HLD tray or container can be prepared by boiling it for 20 minutes or by filling it with a 0.5% chlorine solution and letting it soak for 20 minutes, then draining the chlorine solution and rinsing thoroughly with boiled water.

Tips for Chemical HLD

- Items must be completely covered with solution.
- Open all hinged instruments and disassemble items with sliding or multiple parts.
- Soak for 20 minutes. If you forget to start timing, start at the point at which you remember.
- Do not add or remove anything once timing begins.
- Rinse items thoroughly with boiled water.

Antiseptics should never be used for HLD.
Desirable Properties of Chemical Disinfectants

- Broad spectrum of activity
- Rapid activity
- Stable when in contact with organic matter, soaps, detergents, hard water, plastic, etc.
- Non-toxic
- Non-corrosive
- Non-damaging to equipment/substances treated
- Cost-effective and available.

Step 4: Sterilization

Sterilization protects patients by eliminating all micro-organisms (bacteria, viruses, fungi, and parasites), including bacterial endospores, from instruments and other items. Sterilization is recommended for instruments and other items that will come in contact with the bloodstream or tissues under the skin, as well as on draped and some surgical attire.

Sterilization can be performed using:

- High pressure steam (autoclaving)
- Dry heat (oven)
- Soaking in chemicals (cold sterilization)

Heat (autoclaving/steam and dry heat) is the most effective method of sterilization and reliable if monitored carefully. It is also cheaper than chemical methods. It should be considered first for all medical equipment that can withstand heat. Conduct biological monitoring (spore testing once per month). Ensure suitable packaging for transport.
Chemical is the alternative where heat cannot be used, e.g., ethylene oxide and aldehyde.

Sterilization by Heat

A. Dry Heat

Time/Temperature:
- 1 hour at 170 degrees C (340 degrees F)
- 2 hours at 160 degrees C (320 degrees F)
- 2½ hours at 150 degrees C (300 degrees F)
- 3 hours at 140 degrees C (285 degrees F)

B. Steam Heat

Time: 20 minutes (or 30 minutes if wrapped)
Temperature: 121 degrees C (250 degrees F)
Pressure: 106 KPA (15 lbs/sq inch)

The units of pressure marked on an autoclave’s pressure gauge may vary from one autoclave to another.

C. Sterilization by Chemicals

Chemical sterilization method is used for instruments and other items that are heat-sensitive or when heat sterilization is not available.

Step 1

- Decontaminate, clean, and thoroughly dry all instruments and other items to be sterilized. Water from wet instruments and other items dilutes the chemical solution, thereby reducing its effectiveness.

Step 2

- Prepare the aldehyde or other chemical solution by following the manufacturer’s instructions or use a solution that was prepared previously, as long as it is clear (not cloudy) and has not expired. After preparing the solution, put it in a clean container with a lid. Always mark the container with the date the solution was prepared and the date it expires.
Section VII: Disinfection and Sterilization

Step 3

- Open all hinged instruments and other items and disassemble those with sliding or multiple parts; the solution must contact all surfaces in order for sterilization to be achieved. Completely submerge all instruments and other items in the solution; all parts of the instruments and other items should be under the surface of the solution. Place any bowls and containers upright, not upside-down, and fill with the solution.

Step 4

- Follow the manufacturer’s instructions regarding the time necessary for sterilization to be achieved. **DO NOT** add or remove any instruments or other items once time has begun.

Step 5

- Remove the instruments and other items from the solution using large, sterile pickups (lifters, Cheatle forceps).

Step 6

- Rinse thoroughly with **sterile** water to remove the residue that chemical sterilants leave on instruments and other items; this residue is toxic to skin and tissues.

- Boiled water is **not** sterile; because boiling **does not** guarantee that bacterial endospores have been killed. Therefore, rinsing with boiled water can contaminate sterilized instruments and other items.

Step 7

- Storage: Place the instruments and other items on a sterile tray or in a sterile container and allow to air-dry before use or storage. Use the instruments and other items immediately or keep in a covered, dry, sterile container and use within one week.
Step 5: Use or Storage

After processing, items should be used immediately or stored in such a way so that they do not become contaminated. Proper storage is as important as proper processing.

SUMMARY

It is important to perform the steps in the appropriate order for several reasons:

1. Decontamination should always be done first to make items safer to handle.
2. Cleaning should always be done before sterilization or HLD to remove material that can interfere with these processes.
3. Sterilization or HLD should be done before use or storage to minimize the risk of infections to patients during procedures. Table 13 summarizes the processing of instruments and equipment.
4. Items should be used or properly stored immediately after sterilization or HLD so that they do not become contaminated.

Sterilization is preferred over HLD for items that will come in contact with the bloodstream or tissues under the skin. In settings where tetanus is common, all attempts should be made to sterilize these items.

Sterilization or Disinfection – When to Choose

- The choice depends on the use of equipment or instruments (see Table 12 for classification of risk categories).
- Remember that heat is the preferred method of sterilization. Disinfectants are used only when the instruments or equipment cannot tolerate heat treatment, or disinfection only is required.
- Boiling “sterilizers” as used in the past do not sterilize and should be removed from health care facilities where “pressure type steam sterilizers” are available. If no sterilizer is present, disinfection is the procedure to use.
### Table 13:
**Processing of Instruments and Equipment**

<table>
<thead>
<tr>
<th>Equipment/Items</th>
<th>Agent(s) and Preferred Methods</th>
<th>Alternative Methods/Other Recommendations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Airways and endotracheal tubes</td>
<td>• Single-use disposable.</td>
<td>• Single-use disposable for all patients.</td>
</tr>
<tr>
<td>Ampoules (outside)</td>
<td>• Wipe neck of ampoule with 70% alcohol. Allow to dry before opening.</td>
<td>• Use pop-open ampoules.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• If sterile exterior is required, this should be processed by CSSD (agreed by Medical and Pharmacy staff).</td>
</tr>
<tr>
<td>Anaesthetic equipment</td>
<td>Where possible:</td>
<td></td>
</tr>
<tr>
<td>Ventilator tubings</td>
<td>• Steam sterilize or use Ethylene Oxide.</td>
<td></td>
</tr>
<tr>
<td>Face masks</td>
<td>• Check manufacturer’s instructions for each instrument.</td>
<td></td>
</tr>
<tr>
<td>Endotracheal tubes</td>
<td>Chemical disinfection between patients:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Sodium hypochlorite 0.5%.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• POASB 1%.</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>After use with TB patients and at end of the day use:</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• 2% aldehyde.</td>
<td></td>
</tr>
<tr>
<td>Nebulisers</td>
<td>• Container and mask: clean and dry after each use (wipe with paper). Store dry and cover to protect from dust.</td>
<td>• Replace mask on weekly basis or sooner if visibly soiled.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Use mask and nebulisers as per manufacturer’s instructions.</td>
</tr>
<tr>
<td>Babies feeding bottles and teats</td>
<td>• Pre-sterilized. If non-disposable, wash thoroughly with brush, detergent and water.</td>
<td>• Chemical disinfectant should be used only when methods are unavailable</td>
</tr>
<tr>
<td></td>
<td>• Rinse and immerse in fresh sodium hypochlorite 0.0125% (125 ppm) solution for 30 minutes or use other sterilization methods.</td>
<td>OR</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Use cups and spoons.</td>
</tr>
<tr>
<td>Equipment/Items</td>
<td>Agent(s) and Preferred Methods</td>
<td>Alternative Methods/Other Recommendations</td>
</tr>
<tr>
<td>---------------------------------------</td>
<td>-----------------------------------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Oral airways Oxygen masks</td>
<td>• Sodium hypochlorite 0.5%.&lt;br&gt;• POASB 1%.</td>
<td>• Wash in warm soapy water. &lt;br&gt;• Soak in sodium hypochlorite for 20 minutes. OR&lt;br&gt;• In 1% POASB for 10 minutes. &lt;br&gt;• Rinse with sterile water and dry.</td>
</tr>
<tr>
<td>Infants incubators</td>
<td>• Read manufacturer’s instructions, follow cleaning/disinfection procedure.</td>
<td>• Do not use alcohol (methylated spirit) on perspex plastic parts, it will discolour. &lt;br&gt;• Wash with clean water and dry. &lt;br&gt;• For infected patients after cleaning wipe with alcohol 70% or hypochlorite 0.0125%. Aerate before use. &lt;br&gt;• Rinse with clean water and dry.</td>
</tr>
<tr>
<td>Cheatle forceps</td>
<td>• Boil or autoclave daily. Store in freshly made 1% Phenolic disinfectant, which must be changed daily.</td>
<td></td>
</tr>
<tr>
<td>Flexible and fixed:</td>
<td>• <em>Most rigid endoscopes, which are now on the market, can be heat sterilized.</em>&lt;br&gt;• Check suppliers’ instruction as to whether heat sterilization is possible or chemical sterilization is necessary.&lt;br&gt;• Chemical disinfectant with 2% aldehyde.</td>
<td>• Pre-clean brush with detergent solution.&lt;br&gt;• Immerse in 2% aldehyde solution for 10 minutes. At least 20 minutes if contaminated with <em>Mycobacterium tuberculosis</em>. &lt;br&gt;• Rinse in sterile water and dry. &lt;br&gt;• Rinse water should be sent for culture at least once during a session to check process. If an organism is isolated check the effectiveness of the disinfection process. If an infection is isolated check for procedural problems, e.g. inadequate cleaning or air bubbles in tubing. If organism still persists, it is probably resistant, so change disinfectant. Use of an enzymatic cleaner should help.</td>
</tr>
<tr>
<td>Glass chest drainage bottles</td>
<td>• Steam sterilize.&lt;br&gt;OR&lt;br&gt;• Sodium hypochlorite 0.5%.&lt;br&gt;• POASB 1%.</td>
<td>• Pack in paper packet or towels then steam sterilize.&lt;br&gt;OR&lt;br&gt;• Soak in disinfectant for 10 mins. &lt;br&gt;• Rinse in sterile water and dry.</td>
</tr>
<tr>
<td>Equipment/Items</td>
<td>Agent(s) and Preferred Methods</td>
<td>Alternative Methods/Other Recommendations</td>
</tr>
<tr>
<td>-------------------------------------</td>
<td>-----------------------------------------------------</td>
<td>-----------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Humidifiers</td>
<td>• As for suction bottles.</td>
<td>• As for suction bottles.</td>
</tr>
<tr>
<td></td>
<td>• Heat disinfect in CSSD OR</td>
<td>• When re-using fill with sterile water and connect in-line.</td>
</tr>
<tr>
<td></td>
<td>• Wash with hot water and detergent, rinse and store dry.</td>
<td>• Water must be changed every 24 hours or sooner if necessary.</td>
</tr>
<tr>
<td>Infant incubators</td>
<td><strong>Read manufacturer’s instructions. Follow cleaning/disinfection procedure.</strong></td>
<td><strong>Do not use alcohol (methylated spirit) on perspex plastic parts, it will discolour.</strong></td>
</tr>
<tr>
<td></td>
<td>• Generally wipe with methylated spirit.</td>
<td>• Wash-wipe with warm soapy water.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Wipe with alcohol.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Rinse with clean water and dry.</td>
</tr>
<tr>
<td>Laryngoscope blades</td>
<td>• 2% aldehyde.</td>
<td>• Wash in warm soapy water.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Rinse and dry.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Soak in 2% aldehyde for 12 minutes.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Rinse in sterile water.</td>
</tr>
<tr>
<td>Oroscope pieces</td>
<td>• 2% aldehyde.</td>
<td>• Repeat above procedures.</td>
</tr>
<tr>
<td>Instruments:</td>
<td>• Heat sterilization.</td>
<td>• Decontaminate, brush with detergent solution, rinse.</td>
</tr>
<tr>
<td>• General</td>
<td>OR</td>
<td>• Then soak in 2% aldehyde for 20 minutes.</td>
</tr>
<tr>
<td>• Surgical</td>
<td>• Chemical disinfection with 2% aldehyde solution only for those instruments that cannot be heat sterilized.</td>
<td>• Rinse in sterile water and dry.</td>
</tr>
<tr>
<td>• Dental</td>
<td>• Return to CSSD in a closed container.</td>
<td>• Contaminated instruments to be cleaned by trained staff in CSSD.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Decontaminate</td>
</tr>
<tr>
<td></td>
<td>• 2% aldehyde.</td>
<td>• Clean with detergent, rinse thoroughly and dry.</td>
</tr>
<tr>
<td></td>
<td><strong>Do not heat sterilize.</strong></td>
<td>• Soak in aldehyde 2% for 20 minutes.</td>
</tr>
<tr>
<td>Ophthalmic</td>
<td></td>
<td>• Rinse in sterile water and dry.</td>
</tr>
<tr>
<td></td>
<td><strong>In some cases, use ethylene oxide if available. Check manufacturer’s instructions.</strong></td>
<td><strong>The practice of scrubbing hands and arms in the operating theatre with nailbrush is discontinued.</strong></td>
</tr>
<tr>
<td>Nailbrush (surgeons’ and nurses’ use)</td>
<td>• Use is discontinued.</td>
<td>• The practice of scrubbing hands and arms in the operating theatre with nailbrush is discontinued.</td>
</tr>
<tr>
<td>Oxygen tent</td>
<td>• Wash with hot water and detergent, rinse well, and dry thoroughly.</td>
<td>• Store covered with clean plastic sheeting in a clean area.</td>
</tr>
</tbody>
</table>
### Table 13: (cont’d)
**Processing of Instruments and Equipment**

<table>
<thead>
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</tr>
</thead>
<tbody>
<tr>
<td>Razors</td>
<td>• Ideally individual shaving equipment is disposable.</td>
<td>• Discard disposables after each use in puncture-resistant containers.</td>
</tr>
<tr>
<td>• Safety</td>
<td>• Detach head, clean thoroughly and immerse in 70% alcohol for 10 minutes.</td>
<td></td>
</tr>
<tr>
<td>• Open</td>
<td>• Allow to dry between each patient.</td>
<td></td>
</tr>
<tr>
<td>• Electric</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Renal dialysis machines</td>
<td>• Methylated spirit.</td>
<td>• Damp dust exterior of equipment with methylated spirit.</td>
</tr>
<tr>
<td></td>
<td>• Sterile distilled water.</td>
<td>• Flush lines thoroughly with sterile distilled water.</td>
</tr>
<tr>
<td></td>
<td>• POASB 1%.</td>
<td>• Distilled water should be used in 1% POASB or 0.5% sodium hypochlorite.</td>
</tr>
<tr>
<td></td>
<td>• Sodium hypochlorite 0.5%.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>✋ <em>Do not heat sterilize.</em></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• In some cases, ethylene oxide sterilization might be the correct treatment. Check manufacturer’s instructions.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Detergent and water.</td>
<td></td>
</tr>
<tr>
<td>Suction bottles, chest drainage</td>
<td>Pre-disinfect to render safe:</td>
<td>Regardless of patient’s status of infection:</td>
</tr>
<tr>
<td>bottles</td>
<td>• POASB 1% OR NaDCC powder OR</td>
<td>• Empty suction bottle, wash with soapy water.</td>
</tr>
<tr>
<td></td>
<td>• Sodium hypochlorite 0.25% (2500 ppm)</td>
<td>• Add disinfectant power (POASB/NDCC) OR 0.25% sodium hypochlorite solution into bottle, mix, leave for 5 minutes, empty.</td>
</tr>
<tr>
<td></td>
<td>Disinfect with:</td>
<td>• Fill with prepared disinfectant solution, leave for 20 minutes.</td>
</tr>
<tr>
<td></td>
<td>• Sodium hypochlorite.</td>
<td>• Rinse with clean water and dry.</td>
</tr>
<tr>
<td></td>
<td>• POASB 1%.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Pour bottled contents carefully into sluice, then flush.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Rinse jar, then wash with hot water and detergent.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Methylated spirit.</td>
<td></td>
</tr>
<tr>
<td>Thermometers</td>
<td>• Each ward should have enough thermometers available to serve individual patient.</td>
<td><em>Before and after use:</em></td>
</tr>
<tr>
<td>Armpit</td>
<td><strong>Before and after use:</strong></td>
<td>• Wash with cold soapy water.</td>
</tr>
<tr>
<td>Oral</td>
<td>• Wash with cold soapy water.</td>
<td>• Wipe with cotton wool soaked in methylated spirit.</td>
</tr>
<tr>
<td>Rectal (generally discouraged)</td>
<td>• Store thermometers dry.</td>
<td>• Store thermometers dry.</td>
</tr>
</tbody>
</table>
Table 13: (cont’d)
Processing of Instruments and Equipment

<table>
<thead>
<tr>
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<th>Agent(s) and Preferred Methods</th>
<th>Alternative Methods/Other Recommendations</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Disposables:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Endotracheal tubes</td>
<td>• Discard.</td>
<td>• The very nature of disposables is that they are to be disposed of after use.</td>
</tr>
<tr>
<td>- Foleys catheters</td>
<td></td>
<td>• Handle with care!</td>
</tr>
<tr>
<td>- Feeding tubes</td>
<td><strong>Only in the case that disposables expire before use, repeat sterilization with ethylene oxide, if available can be considered.</strong></td>
<td>• All sharps should go in the sharps containers.</td>
</tr>
<tr>
<td>- Suction tubes</td>
<td></td>
<td>• Other materials collect in the refuse bag recommended.</td>
</tr>
<tr>
<td>- Stomach tubes</td>
<td></td>
<td>• Full sharps puncture-resistant containers and plastic bags should be incinerated (see Section IV: Standard Precautions).</td>
</tr>
<tr>
<td>- Laboratory waste</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Syringes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Scalpel blades</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Dressings, etc.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Gloves</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Masks</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
SUMMARY

Decontaminating, cleaning, disinfecting, and sterilizing patient care equipment.

- **ALL** objects to be high-level disinfected or sterilized should first be thoroughly decontaminated and cleaned to remove all organic matter (e.g., blood, tissue) and other residue.

**A. STERILIZATION***

Critical items that will enter tissue or vascular system or blood will flow through them.

*Method:*

- Heat sterilization

- Chemisterilant
  - 2% aldehyde
  - 6% hydrogen peroxide
  - 0.1% (1000 ppm) sodium hypochlorite

*Exposure time:* In hours, manufacturer’s recommendations.

**B. HIGH-LEVEL DISINFECTANT (HLD)**

Semi-critical items (except dental) that will come in contact with mucous membrane or non-intact skin.

*Method:*

- HLD/Chemisterilant
  - 2% aldehyde
  - 6% hydrogen peroxide
  - 1% peracetic acid
  - 0.1% (1000 ppm) sodium hypochlorite

*Exposure time:* 20 minutes
C. DISINFECTION

1. Intermediate-Level

Semi-critical items and non-critical items.

*Method:* Disinfection

- Sodium hypochlorite 0.1% (1000 ppm)
- 70%-90% ethyl or isopropyl alcohol
- Phenolic germicidal detergent solution
- Iodophor germicidal detergent

*Exposure time:* 10 minutes

2. Low-Level

Non-critical items

*Method:* Disinfection

- Ethyl or isopropyl alcohol 70%-90%
- Sodium hypochlorite 0.01% (100 ppm)
- Phenolic germicidal detergent solution
- Iodophor germicidal detergent solution
- Quaternary ammonium germicidal detergent

*Exposure time:* 10 minutes.

D. RECOMMENDATIONS FROM CENTERS FOR DISEASE CONTROL (CDC)*

- Sodium hypochlorite solution (household bleach) prepared daily.

- Concentrations ranging from approximately 500 ppm (1:100 dilution) (0.05%) sodium hypochlorite to 5,000 ppm (1:10 dilution) (0.5%) of household bleach are effective depending on the amount of organic material, (e.g., blood, mucus) present on the surface to be cleaned.

SECTION VIII

HOUSEKEEPING
Housekeeping refers to general cleaning of baths, sinks, wash basins, beds, tables, floors, walls, and other surfaces.

For routine cleaning, the aim is to achieve a clean environment with regular and conscientious general housekeeping. High-level disinfectants and sterilization are not used in housekeeping activities. Visible dust and dirt should be removed routinely with water and detergent and/or vacuuming.

Microbiological control of the health care facility environment relies on maintenance of smooth, dry, and intact surfaces, prompt cleaning of spillage of blood, body fluids, secretions and excretions, and prompt removal of these substances from patient treatment areas.

Cleaning and maintenance prevent the build-up of soil, dust or other foreign material that can harbour pathogens and support their growth.

Cleaning is accomplished with water, detergents and mechanical action. Cleaning reduces or eliminates the reservoirs of potential pathogenic micro-organisms.

The method of required cleaning is determined by:

- Type of surface to be cleaned
- Amount and kind of soil present
- Purpose of the area.

Warm, soapy water is adequate for cleaning areas not directly involved in patient care, e.g., offices, duty rooms. A disinfectant is required when cleaning areas with a large number of pathogens, e.g., isolation areas, toilets, surfaces contaminated by infected body fluids spillages or areas where particularly susceptible patients are housed, e.g., operating theatre, neonatal unit, ICU, burns unit.
POLICY STATEMENTS

A. ROUTINE CLEANING

1. Health care facilities shall determine a schedule for cleaning and maintaining ducts, fans, and air conditioning systems.

2. Routine cleaning of environmental surfaces and non-critical patient care items shall be performed according to a predetermined schedule and shall be sufficient to keep surfaces clean and dust free. Surfaces that are frequently touched by the hands of health care workers and patients, such as call bells, surfaces of medical equipment and knobs for adjustment or opening, require frequent cleaning.

3. The frequency of cleaning and disinfection of the health care facility environment varies according to the:
   - Type of surface to be cleaned
   - The number of people in the area
   - Amount of activity in the area
   - The risk to patients
   - Amount of soiling.

4. Damp rather than dry dusting or sweeping shall be performed.

5. Vacuum cleaners shall be used on carpeted areas. Expelled air from vacuum cleaners shall be diffused so that it does not aerosolize dust from uncleaned surfaces.

6. A routine shall be established to prevent re-distribution of micro-organisms during wet cleaning. This shall be accomplished by cleaning less heavily contaminated areas first and changing cleaning solutions and cloths/mops frequently.

7. Wet mopping is most commonly done with a double bucket technique, which extends the life of the solution because fewer changes are required. When a single bucket is used, the solution shall be changed more frequently because of increased bioload.

8. Tools used for cleaning and disinfecting shall be cleaned, disinfected and dried between uses.
9. Cleaning agents: a detergent is acceptable for surface cleaning of most areas (Table 14). A low or intermediate grade disinfectant, often called a germicidal, may be preferable for cleaning in nurseries, paediatric settings, critical care unit, burns unit, emergency rooms, operating theatres, bone marrow transplantation facilities, and surfaces of dialysis machines.

10. Cleaning and disinfecting agents shall be mixed and used according to manufacturers’ recommendations.

11. Protective apparatus: household utility gloves shall be worn during cleaning and disinfecting procedures.

12. Disinfectant fogging shall **not** be done.

13. Pest control shall be carried out in accordance with health department/health care facility policies and guidelines.

14. An education programme for housekeeping staff to assist them in understanding the effective methods of cleaning and the importance of their work shall be implemented.
B. SPECIAL CLEANING

1. Special organisms of epidemiological significance

   - Except during outbreaks, no special environmental cleaning techniques are advocated for organisms such as *Clostridium difficile*, methicillin-resistant *Staphylococcus aureus* or diarrhoeal diseases. During an outbreak, thorough environmental cleaning and disinfection with a disinfectant that has demonstrated effectiveness against the specific organism may be required.

2. Blood spills

   - Appropriate personal protective equipment shall be worn for cleaning up a blood spill.
   - Gloves shall be worn during the cleaning and disinfecting procedures.
   - The worker shall wear a face shield and plastic apron, if the possibility of splashing exists.
   - Overalls or aprons, as well as boots or protective shoe covers shall be worn for large blood spills.
   - Personal protective equipment shall be changed if torn or soiled, and always removed before leaving the location of the spill, and then hands washed.
   - The blood spill area shall be decontaminated and cleaned of obvious organic material before applying a disinfectant. Blood and other material substantially inactivate sodium hypochlorite and other disinfectants.
   - 0.5% (5000 ppm) sodium hypochlorite is recommended for disinfecting small spills.
   - Large spills can be disinfected using 1.0% (10,000 ppm) sodium hypochlorite.
   - Excess blood and body fluids capable of transmitting infection shall be removed with disposable towels. Discard the towels in a plastic-lined waste receptacle.
   - After cleaning, the area shall be disinfected for 10 minutes with an intermediate-level chemical disinfectant such as sodium hypochlorite household bleach.
   - Concentrations ranging from approximately 500 ppm (1:10 dilution of household bleach) are effective, depending on the amount of organic material, (e.g., blood or mucus) present on the surface to be cleaned and disinfected, as well as the nature of the surface.
   - A 1:100 dilution (0.05%) sodium hypochlorite may be sufficient if the surface is hard and smooth, and has been adequately cleaned.
For carpet or upholstered surfaces a low level disinfectant may be used. Use 3% hydrogen peroxide to remove discoloration.

For home health care, a common supermarket disinfectant may be used. The treated areas shall then be wiped with paper towels soaked in tap water. Allow the area to dry.

Disposable items shall be discarded immediately after use in a plastic lined waste receptacle.

Care shall be taken to avoid splashing or generating aerosols during the clean up.

Hands shall be thoroughly washed and dried after gloves are removed.

For blood spills in clinical, public health or research laboratories, refer to Section X: Risk Management.

3. Surgical settings

Surgical settings include operating theatres, ambulatory surgical units, physicians’ offices where invasive procedures are done, intravascular catheterization laboratories, endoscopy rooms and all other areas where invasive procedures may be performed.

Cleaning procedures shall be completed on a scheduled basis, usually daily.

Areas outside the sterile field contaminated by organic debris shall be cleaned as spills or splashes occur.

Surgical lights and horizontal surfaces, equipment, furniture and patient transport vehicles shall be cleaned between patients with a clean cloth and a low-level disinfectant.

Floors shall be cleaned with a low-level disinfectant/detergent, preferably using a wet vacuum system between patients or, depending on type of procedures carried out, at the end of the day.

Counter tops and surfaces that have been contaminated with blood or body fluids capable of transmitting infection shall be cleaned with disposable towelling, using an appropriate cleaning agent and water as necessary, (e.g., after each procedure, end of the day, etc.), the surfaces then disinfected with a low-level chemical disinfectant or sodium hypochlorite. Loose or cracked work surfaces should be replaced.

All other areas and equipment in the surgical practice setting (e.g. air conditioning grills and/or filters, cabinets, shelves, walls, ceilings, lounges and locker rooms) shall be cleaned according to an established routine. See Table 14 for details of cleaning schedule.

Before any piece of portable equipment enters or leaves the operating theatre, it shall be wiped with the approved disinfectant.
C. TERMINAL CLEANING

1. Upon discharge of a patient, the room, cubicle or bedspace, bed, bedside equipment and environmental surfaces shall be thoroughly cleaned before another patient is admitted.
   - Terminal cleaning shall primarily be directed toward those items that have been in direct contact with the patient or in contact with the patient’s excretions, secretions, blood, or body fluids.
   - Housekeeping personnel shall use the same precautions to protect themselves during terminal cleaning that they would use for routine cleaning. Masks are not needed unless the room was occupied by a patient for whom there were airborne precautions and insufficient time has elapsed to allow clearing of the air of potential airborne organisms.
   - All disposable items shall be discarded immediately in the appropriate receptacle (see Section VII: Disinfection and Sterilization).
   - Reusable items that have been in direct contact with the patient or with the patient’s excretions, secretions, blood, or body fluids shall be reprocessed as appropriate to the item (see Section VII).
   - Bedside tables, bed rails, commodes, mattress covers, and all horizontal surfaces in the room shall be cleaned (see Table 14).
   - Routine washing of walls, blinds, and curtains is not indicated. These shall be cleaned if visibly soiled (see Table 14).
   - Cubicle curtains shall be changed every two months or when visibly soiled.
   - Disinfectant fogging is not a satisfactory method of decontaminating air and surfaces and shall not be used.
   - Fumigation of area shall be done if required and shall adhere to national guidelines.

2. In general, no special cleaning techniques are required for rooms that have housed patients for whom additional precautions were in place.
   - Special terminal cleaning procedures may be indicated for certain organisms, e.g. Clostridium difficile or diarrhoeal outbreaks. In such cases, thorough cleaning and disinfection with a disinfectant known to be effective against the micro-organism in question should be performed. Attention should be paid to frequently touched surfaces such as door knobs, call bell pulls, taps, and wall surfaces, which have been frequently touched by the patient.
   - Local public health authorities shall be consulted about cleaning the room of a patient who has Severe Acute Respiratory Syndrome (SARS), Avian Influenza, and viral haemorrhagic fevers (Lassa, Ebola, Marburg)
D. TERMINAL DISINFECTION

- **Walls**: clean with 0.5% sodium hypochlorite solution.

- **Beds, lockers and tables**: clean with 0.5% sodium hypochlorite solution.

- **Utensils**: clean with 0.5% sodium hypochlorite solution. Soak for 30 minutes. Wash in warm soapy water, rinse and dry.

- **Linen**: Place in appropriate bag. If soiled, decontaminate, remove soil, rinse and place in appropriate bag.

- **Equipment**: Decontaminate, clean and soak in 0.5% sodium hypochlorite for 10–30 minutes. Wash in warm soapy water, rinse and dry.
GUIDELINES

Housekeeping areas are divided into:

1. **Low-risk** – administration and waiting rooms.

2. **High-risk** – areas where contamination is expected, e.g., laboratory, operating theatres, labour and delivery rooms, wards, toilets, areas where blood, body fluids, secretions, excretions spill.

**IMPORTANT POINTS TO REMEMBER!**

Always use frictional cleaning/scrubbing, the most important way to remove dirt and microbes, for all environmental cleaning procedures.

In order to avoid soiling clean areas in the process of cleaning dirty ones, always:

- Treat the cleaning cloths/material as per recommendations *(see Table 14).*

- Change cleaning disinfectant solution after 24 hours OR as per manufacturer’s direction whichever is the sooner OR when obviously dirty.

- Use separate equipment for cleaning contaminated areas, e.g., toilets, isolation rooms.

- Wash walls from top to bottom.

- Change the cleaning solution and wash the equipment between areas or cubicles or when dirty.

- Dilute the disinfectant to the correct, prescribed concentration.

- Prepare and display simple clear routine housekeeping schedules for all personnel *(see Table 14).*
CLEANING ROUTINE

1. Low-Risk Areas

Walls and ceilings

- Clean with water and detergent using a damp cloth
- Ensure routine damp dusting
- Always keep surfaces dry
- Wipe chairs, lamps, tabletops and counters with a damp cloth, water and detergent.

Floors

- Clean regularly when needed to keep areas clean using detergent and water
- Do not use dry brooms to avoid dust.

2. High-Risk Areas

Sinks

- Use a disinfectant cleaning solution with a cloth or brush
- Rinse with clean water.

Toilets

- Wear utility gloves and rubber boots
- Use a disinfectant cleaning solution, scrub daily or as required with a separate cloth or brush.

Waste containers

- Wear rubber gloves
- Use a detergent solution, scrub to remove soil and organic material.
CLEANING SOLUTIONS

Three types of cleaning solutions are used during housekeeping at a health care facility. It is essential that housekeeping staff understand the different types of cleaning agents and how each should be used (see Table 14).

1. Plain detergent and water

   This is used for low-risk areas and general cleaning tasks. Detergents remove dirt and organic material and dissolve or suspend grease, oil and other matter so it can easily be removed by scrubbing.

2. Disinfectant solution (0.5% sodium hypochlorite solution – see Section VII: Disinfection and Sterilization)

   Disinfectants rapidly kill or inactivate infectious micro-organisms during the cleaning process. Disinfectants are also used to decontaminate an area so that it is safer for staff to clean.

   In most settings, a 0.5% sodium hypochlorite solution made from locally available bleach is the cheapest disinfectant, but alternatives include commercial disinfectants that contain 5% carbolic acid (such as Phenol or Lysol) or quaternary ammonium compounds.

3. Disinfectant/Detergent cleaning solution

   This solution contains a disinfectant and a detergent and water, and is used for cleaning areas that may be contaminated with infectious materials (such as operating theatres, procedure rooms, toilets and sluice rooms). The solution must contain both a disinfectant and a detergent. Disinfectants rapidly kill or inactivate infectious micro-organisms during the cleaning process, while detergents remove dirt and organic material, which cannot be done by water or disinfectants alone.
<table>
<thead>
<tr>
<th>Item/Task and Location</th>
<th>Frequency of Cleaning/Disinfection</th>
<th>Agent, Equipment and Supplies Needed</th>
<th>Procedure/Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CLEANING EQUIPMENT</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cleaning cloths</td>
<td>Daily after use.</td>
<td>Liquid detergent and water.</td>
<td>Rinse in soapy water.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sodium hypochlorite 0.5%.</td>
<td>In high-risk areas disinfect after each use and at night.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>POASB 1%.</td>
<td>Store dry.</td>
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<tr>
<td></td>
<td></td>
<td>Clean water.</td>
<td>Incinerate if heavily contaminated.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Bucket.</td>
<td></td>
</tr>
<tr>
<td>Floor, mops, brooms,</td>
<td>Clean and disinfect after use.</td>
<td>Liquid detergent and water.</td>
<td>Wash thoroughly with detergent after each use.</td>
</tr>
<tr>
<td>brushes</td>
<td></td>
<td>Sodium hypochlorite 0.5%.</td>
<td>Rinse in water.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>POASB 1%.</td>
<td>Immerse in disinfectant for 30 minutes then dry.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Abrasive materials to clean.</td>
<td>Always colour code and confine use of each mop to its designated room, e.g. kitchen, toilet, ward, etc.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><strong>DO NOT MIX MOPS</strong></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Mops should be stored dry and upright with head up.</td>
</tr>
<tr>
<td>Plastic buckets for</td>
<td>Daily after use or as required.</td>
<td>Abrasive materials to clean.</td>
<td>Each area to have own bucket.</td>
</tr>
<tr>
<td>use during cleaning</td>
<td></td>
<td>Liquid detergent and water.</td>
<td>General wards clean daily or as required with detergent and water.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sodium hypochlorite 0.5%.</td>
<td><strong>Isolation areas:</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td>POASB 1%.</td>
<td>Soak in sodium hypochlorite or POASB for 10 minutes.</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>TB areas:</strong></td>
<td><strong>TB areas:</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sodium hypochlorite 1%.</td>
<td>Soak for 20 minutes in sodium hypochlorite or phenolic disinfectant 2%.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Phenolic disinfectant 2%.</td>
<td>Rinse with tap water.</td>
</tr>
</tbody>
</table>
Table 14: (cont’d)
Health Care Facility Cleaning/Disinfection Policies

<table>
<thead>
<tr>
<th>Item/Task and Location</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Ablution blocks:</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>• Toilets</td>
<td>Clean twice daily: morning &amp; evening shifts</td>
<td>Liquid detergent and water.</td>
<td>Use a low-level disinfectant.</td>
</tr>
<tr>
<td>• Toilet seats</td>
<td>Clean when soiled.</td>
<td>Sodium hypochlorite 0.01%.</td>
<td>Use deodorizer if necessary as per manufacturer’s instructions.</td>
</tr>
<tr>
<td>• Toilet cistern and urinal</td>
<td>Clean between patients and after discharge.</td>
<td>POASB 1%.</td>
<td>Soak in sodium hypochlorite.</td>
</tr>
<tr>
<td></td>
<td>Disinfect seats.</td>
<td>Deodoriser.</td>
<td>POASB.</td>
</tr>
<tr>
<td>Bedpans/urinals</td>
<td>Scrub with vim, soap and water daily</td>
<td>Detergent and water</td>
<td>Regardless of patients status of infection:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>In case of diarrhoeal disease:</td>
<td>Empty bedpan/urinal/washing bowl down sewer. Clean with soapy water and use scouring powder if stained.</td>
</tr>
<tr>
<td>Disposable sputum mugs</td>
<td></td>
<td>Sodium hypochlorite 0.25% (2,500 ppm) NaDCC powder.</td>
<td>In case of diarrhoeal disease:</td>
</tr>
<tr>
<td></td>
<td>Discard after use</td>
<td></td>
<td>• Sprinkle disinfectant (NaDCC powder, if available) into receptacle then empty.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Otherwise fill with prepared disinfectant solution; leave 30 minutes then empty and wash again in freshly prepared solution.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Rinse with clean water and dry.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Extra bedpans/urinals/sputum mugs not in use should be stored in cupboards.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Sputum mugs after washing, pour full strength disinfectants before dispatching to patients.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Cleaning equipment for toilets, e.g. mops, rags should not be used elsewhere.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Used toilet brushes:</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Soak in disinfectant for one hour, wash in warm soapy water, rinse and hang to dry.</td>
</tr>
</tbody>
</table>

In case of diarrhoeal disease:
• Sprinkle disinfectant (NaDCC powder, if available) into receptacle then empty.
• Otherwise fill with prepared disinfectant solution; leave 30 minutes then empty and wash again in freshly prepared solution.
• Rinse with clean water and dry.
• Extra bedpans/urinals/sputum mugs not in use should be stored in cupboards.
• Sputum mugs after washing, pour full strength disinfectants before dispatching to patients.
• Cleaning equipment for toilets, e.g. mops, rags should not be used elsewhere.

Used toilet brushes:
• Soak in disinfectant for one hour, wash in warm soapy water, rinse and hang to dry.
<table>
<thead>
<tr>
<th>Item/Task and Location</th>
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<th>Procedure/Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Jugs</strong> (for measuring urine, emptying catheter bags)</td>
<td>• Between use and daily.</td>
<td>• Bedpan sterilization after use. • Store dry and inverted.</td>
<td>• If sterilizer not available, soak in 1% phenol for at least 1 hour after pouring contents in sluice. • Wash and leave to dry.</td>
</tr>
<tr>
<td><strong>Floors Walls</strong></td>
<td>• Scrub with scouring agent and water daily. • Clean spills as per policy. • Clean walls once a week or as necessary.</td>
<td>• Liquid detergent and warm water. Spills: • Sodium hypochlorite 0.5%. • POASB 1%.</td>
<td></td>
</tr>
<tr>
<td><strong>Sluice rooms</strong></td>
<td>• Once a day and as required. • Disinfect after contamination.</td>
<td>• Liquid detergent and warm water. Spills: • Sodium hypochlorite 0.5%. • POASB 1%.</td>
<td>• Avoid splashing and spills on walls and surrounding area. • Pour contents of urinals and bedpans GENTLY down the sluice. • Disinfect surfaces after use and as necessary.</td>
</tr>
<tr>
<td><strong>Bathrooms:</strong></td>
<td>• Floors • Walls • Enamel baths and basins (bathtubs and sinks) • Washing bowls: autoclavable polypropylene</td>
<td>• Clean once a day as required. • Clean spills as per policy. • Clean once per week and as necessary. • Clean and disinfect between patients.</td>
<td>• Scrub floors and walls to remove any residues. • Clean and dry drainage hole. • Clean walls from top to bottom. <strong>Do not</strong> use ammonia detergent and chlorine-based compound together because of release of toxic compounds. • Rinse thoroughly to remove disinfectant. <strong>Do not</strong> use abrasive material to clean bath and sink, as it will damage the surface.</td>
</tr>
</tbody>
</table>

**Table 14: (cont’d)**

Health Care Facility Cleaning/Disinfection Policies
### Table 14: (cont’d)
Health Care Facility Cleaning/Disinfection Policies

<table>
<thead>
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<tr>
<td><strong>ABLUTION FACILITIES</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shower:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Floor and walls</td>
<td>• Disinfect before, in between and after each patient use.</td>
<td>• Liquid detergent and warm water.</td>
<td>• Scrub floors and walls to remove any residues.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Spills:</td>
<td>• Clean and dry drainage hole.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Sodium hypochlorite 0.5%.</td>
<td>• Clean walls from top to bottom.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• POASB 1%.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pedal bin and container:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Without liner</td>
<td>• Empty daily and as required.</td>
<td>• Scouring powder.</td>
<td>• Damp dust daily and clean thoroughly once per week with detergent.</td>
</tr>
<tr>
<td></td>
<td>• Wash daily and as required with soapy water.</td>
<td>• Liquid detergent and water.</td>
<td>• Rinse and disinfect.</td>
</tr>
<tr>
<td></td>
<td>• Use scouring powder as necessary.</td>
<td>• Disinfect with:</td>
<td>• Dispose liner when ¼ full and clean once per week</td>
</tr>
<tr>
<td>• With liner</td>
<td>• Disinfect daily and as required.</td>
<td>• Sodium hypochlorite 0.5%.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Wash weekly and as necessary.</td>
<td>• POASB 1%.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Disinfect when spills occur.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drains</td>
<td>• Once per week and as necessary.</td>
<td>• Liquid detergent and water.</td>
<td>• Pour hot soapy water down the drain. If blocked use plunger (colour-coded).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Drain cleaner for unblocking.</td>
<td>• Use drain cleaner only if necessary.</td>
</tr>
<tr>
<td><strong>FURNITURE, FITTINGS AND EQUIPMENT</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Beds (including frames)</td>
<td>• Daily damp cleaning</td>
<td>• Liquid detergent and water.</td>
<td>• Scrub the bed with detergent and water.</td>
</tr>
<tr>
<td></td>
<td>• Disinfect on discharge or for spills.</td>
<td>• Spills and terminal disinfection (see pages 155, 157 &amp; 158).</td>
<td>• In between patients, take the mattress and the pillow(s) from the bed and place in the sun.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Use washable mattress covers; change between patients.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Scraped and disinfect.</td>
<td>• Never admit a patient into a bed that has not been disinfected.</td>
</tr>
</tbody>
</table>
## Table 14: (cont’d)
### Health Care Facility Cleaning/Disinfection Policies

<table>
<thead>
<tr>
<th>Item/Task and Location</th>
<th>Frequency of Cleaning/Disinfection</th>
<th>Agent, Equipment and Supplies Needed</th>
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</tr>
</thead>
<tbody>
<tr>
<td><strong>FURNITURE, FITTINGS AND EQUIPMENT</strong></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>
| Bedside lockers (General Ward) | • Daily damp cleaning.  
• Thorough cleaning once per week and on discharge of patient | • Liquid detergent and water.  
• If splashed with blood and body fluids, wipe with 0.5% sodium hypochlorite.  
• Spills and terminal disinfection (see page 155, 157 & 158). | • Check lockers for pest control requirements. |
| Bowls (dressing, surgical, vomit, kidney) | • After each use. | • Clean with detergent.  
• Autoclave at CSSD.  
• Store dry and inverted.  
• Individual bowl for each patient preferred.  
• For communal use, after thorough cleaning, wipe with sodium hypochlorite 0.5%. Empty, wash with detergent, hot water, rinse and store dry. | • For infected patients use individual bowls.  
• Clean with phenolics for bacterial and hypochlorite for viral infections.  
• On discharge, autoclave or disinfect with hypochlorite 1% (10,000 ppm).  
For infected patients, treat as for washing bowls:  
• Decontaminate, wash with detergent and water.  
• Rinse and dry. |
| Couches  
• Occupational, Physiotherapy and Radiography Departments | • Wipe daily or as necessary. | • Liquid detergent and warm water. | |
| Dental equipment surfaces | • Wipe at end of each day and as necessary. | • Methylated spirit.  
OR  
• Sodium hypochlorite 0.5%. | |
| Carpets | • Vacuum daily.  
• Wash quarterly. | • Carpet shampoo or warm soapy water. | • Vacuum clean routinely and wash thoroughly quarterly.  
• Not recommended for patient areas. |
### Table 14: (cont’d)
**Health Care Facility Cleaning/Disinfection Policies**

<table>
<thead>
<tr>
<th>Item/Task and Location</th>
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</tr>
</thead>
<tbody>
<tr>
<td><strong>BED CURTAINS</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bed curtains</td>
<td>• Every 6 months or after infectious cases.</td>
<td>• Laundry detergent and water.</td>
<td>• For infectious cases avoid use of curtains</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• For infectious cases soak for 30 minutes in sodium hypochlorite 0.5%</td>
<td>• Launder after disinfection with sodium hypochlorite 0.5%</td>
</tr>
<tr>
<td>Window curtains</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Wipe surfaces between patients.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Methylated spirit.</td>
<td></td>
</tr>
<tr>
<td><strong>WINDOW CURTAINS</strong></td>
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</tr>
<tr>
<td><strong>ELECTRONIC EQUIPMENT</strong></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Electronic equipment</td>
<td>• Wipe surfaces between patients.</td>
<td>• Methylated spirit.</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>FANS</strong></td>
<td>• Routinely and on discharge of patient.</td>
<td>• Liquid detergent and soapy warm water.</td>
<td>• Damp wipe with clean cloth.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Liquid detergent and warm water.</td>
<td>• Dismantle the fan for terminal cleaning and when visible dirty.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Spills: methylated spirit.</td>
<td></td>
</tr>
</tbody>
</table>

**FURNITURE, FITTINGS AND EQUIPMENT**

<table>
<thead>
<tr>
<th>Item/Task and Location</th>
<th>Frequency of Cleaning/Disinfection</th>
<th>Agent, Equipment and Supplies Needed</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Furniture and fittings</td>
<td>• Routine damp dusting.</td>
<td>• Liquid detergent and warm water.</td>
<td>• Damp dust with detergent soap solution.</td>
</tr>
<tr>
<td></td>
<td>• If contaminated wipe with disinfectant and leave to dry.</td>
<td>• Spills: methylated spirit.</td>
<td>• If contaminated wipe with methylated spirit.</td>
</tr>
<tr>
<td>Hydrotherapy pool</td>
<td>• Clean after each use.</td>
<td>Water:</td>
<td>• Check chlorine levels and pH of pool daily.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Chlorine-based compound.</td>
<td>• Bacteriological investigations of pool water to ensure level of disinfection is sufficient to cope with level of use.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Chlorine level in pool 1.4 to 2.0 ppm.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Tiled areas and floor area surrounding pool:</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Sodium hypochlorite 0.5%.</td>
<td></td>
</tr>
<tr>
<td>Flowers vases/containers</td>
<td>• Change water daily and wash vases/containers.</td>
<td>• Liquid detergent and water.</td>
<td>• Pour dirty water down sluice (not sink).</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Wash in hot water and detergent.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Store dry and inverted.</td>
</tr>
</tbody>
</table>

chlorine-based compound
### Table 14: (cont’d)
Health Care Facility Cleaning/Disinfection Policies

<table>
<thead>
<tr>
<th>Item/Task and Location</th>
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<th>Agent, Equipment and Supplies Needed</th>
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</tr>
</thead>
<tbody>
<tr>
<td><strong>FURNITURE, FITTINGS AND EQUIPMENT</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Linen</td>
<td>• Collect as per health care facility policy.</td>
<td>• Laundry detergent and water.</td>
<td>• If not soiled put into laundry bin and send to laundry.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>If contaminated:</td>
<td>• If soiled, remove solid soil and discard into sluice for flushing.</td>
</tr>
<tr>
<td></td>
<td>• With plastic covering</td>
<td>• Sodium hypochlorite 0.5%.</td>
<td>• If contaminated soak in sodium hypochlorite 0.5% for 30 minutes, remove, wring, rinse, put in colour-coded container and send to laundry.</td>
</tr>
<tr>
<td></td>
<td>• With mackintosh</td>
<td>• Wipe and disinfect when necessary and after each patient.</td>
<td>• All mattresses should be covered with soft impervious plastic.</td>
</tr>
<tr>
<td></td>
<td>• Wash mackintosh with liquid detergent and disinfect after each patient.</td>
<td>• Laundry detergent and water.</td>
<td>• Methylated spirit should be used to disinfect spills in preference to chlorine-based disinfectant and POASB, as these are corrosive.</td>
</tr>
<tr>
<td>Mattress, pillows:</td>
<td>• Damp clean daily and as necessary.</td>
<td>• Laundry detergent and water.</td>
<td>• Clean airflow and change filters as per manufacturer’s instructions.</td>
</tr>
<tr>
<td>• With plastic covering</td>
<td></td>
<td>• Disinfect spills.</td>
<td></td>
</tr>
<tr>
<td>• With mackintosh</td>
<td></td>
<td>• Wipe with methylated spirit.</td>
<td></td>
</tr>
<tr>
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<td></td>
<td></td>
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</tr>
<tr>
<td>Stands for:</td>
<td>• Daily or as necessary.</td>
<td>• Sodium hypochlorite 0.5%.</td>
<td></td>
</tr>
<tr>
<td>• IV sets</td>
<td></td>
<td>• Treat spills as per policy.</td>
<td></td>
</tr>
<tr>
<td>• Gas tanks</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Bedscreen</td>
<td></td>
<td></td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>Sinks</td>
<td>• Wipe at end of each procedure.</td>
<td>• Sodium hypochlorite 0.5%.</td>
<td></td>
</tr>
<tr>
<td>• Kitchen</td>
<td></td>
<td>• Treat spills as per policy.</td>
<td></td>
</tr>
<tr>
<td>• Other</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Safety cabinet (Pharmacy)</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trolleys and Trays:</td>
<td>• Daily damp cleaning and as required.</td>
<td>• Liquid detergent and water</td>
<td>Procedure trolleys and trays:</td>
</tr>
<tr>
<td>• Procedures</td>
<td></td>
<td>Disinfectants:</td>
<td>• Wipe with methylated spirit or chlorhexidine before and after every use.</td>
</tr>
<tr>
<td>• Food</td>
<td></td>
<td>• Methylated spirit – 70%.</td>
<td>Food trolley:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• 0.5% chlorhexidine in alcohol.</td>
<td>• Wipe daily with sodium hypochlorite or POASB.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Sodium hypochlorite 0.5%</td>
<td></td>
</tr>
</tbody>
</table>
### Table 14: (cont’d)
Health Care Facility Cleaning/Disinfection Policies

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>FURNITURE, FITTINGS AND EQUIPMENT</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Glassware and other equipment: • Pharmacy</td>
<td>• As per requirements of Pharmacy.</td>
<td>• Liquid detergent and warm water.</td>
<td></td>
</tr>
<tr>
<td>Image Intensifier</td>
<td>• Daily and after each use.</td>
<td>• Liquid detergent and warm water. OR • Methylated spirit.</td>
<td>• Routinely damp dust. • Wipe with alcohol.</td>
</tr>
<tr>
<td>X-ray equipment</td>
<td>• Daily and after each use.</td>
<td>• Liquid detergent and warm water.</td>
<td>• Routinely damp dust. • Allow to dry before use.</td>
</tr>
<tr>
<td>Tooth mugs</td>
<td>• Wash daily or use disposable.</td>
<td>• Detergent and hot water if reusable.</td>
<td>• For infected patients, use individual mugs or disposables. • Disinfect with sodium hydrochlorite 0.5%.</td>
</tr>
<tr>
<td>Toys</td>
<td>• After discharge or as required.</td>
<td>• Wash, rinse and dry thoroughly. • Do not soak in disinfectant if contaminated, heat disinfect. OR • Wipe surface with 0.5% sodium hypochlorite or 70% methylated spirit.</td>
<td>• For patients with infections, do not use communal toys, which cannot be easily disinfected. • Heavily contaminated toys should be destroyed.</td>
</tr>
</tbody>
</table>
## Table 14: (cont’d)
**Health Care Facility Cleaning/Disinfection Policies**

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<tr>
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</tr>
</thead>
<tbody>
<tr>
<td><strong>FLOORS, WALLS AND WINDOWS, etc.</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Floors: &lt;br&gt;• General wards and areas</td>
<td>• Thorough damp cleaning daily. &lt;br&gt;• Cleaning when soiled. &lt;br&gt;• Cleaning between patients and after discharge (if single room accommodation).  &lt;br&gt;• Damp mop. &lt;br&gt;• Clean spills as per policy. &lt;br&gt;• Wash 3 times per day or as necessary. &lt;br&gt;• Once daily and as necessary.</td>
<td>• Liquid detergent and warm water. &lt;br&gt;Spills: &lt;br&gt;• Sodium hypochlorite 0.5%. &lt;br&gt;• POASB 1%.</td>
<td>• See section on floor mops, broom for care. &lt;br&gt;• Use colour code mops to prevent cross-contamination between areas.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Liquid detergent and warm water.</td>
<td></td>
</tr>
<tr>
<td>Floors – special areas: &lt;br&gt;• Operating Theatre &lt;br&gt;• Renal Unit &lt;br&gt;• Isolation Unit &lt;br&gt;• ICU &lt;br&gt;• Labour and Delivery Rooms &lt;br&gt;• Neonatal Unit &lt;br&gt;• Burns Unit &lt;br&gt;• Kidney Unit</td>
<td>• Daily damp cleaning and disinfection and as required the end of each operating list and as required. &lt;br&gt;• Clean spills as per policy. &lt;br&gt;Operating theatre: &lt;br&gt;• Damp clean and disinfect between each patient. &lt;br&gt;• Clean the total area at the end of each day.</td>
<td>• Detergent and warm soapy water. &lt;br&gt;Disinfectant: &lt;br&gt;• Sodium hypochlorite 0.5%. &lt;br&gt;• POASB 1%  &lt;br&gt;Spills: &lt;br&gt;• Sodium hypochlorite 0.5%. &lt;br&gt;• POASB 1%.</td>
<td>• Damp clean with hot soapy water. &lt;br&gt;Wipe floor with disinfectant after cleaning and leave to dry.</td>
</tr>
<tr>
<td>Walls: &lt;br&gt;• General Wards &lt;br&gt;• Laundry &lt;br&gt;• Pharmacy &lt;br&gt;• Occupational, Physiotherapy, Radiography and Dental Departments</td>
<td>• Thorough washing once every 3 months and when visibly dirty or splashes occur. &lt;br&gt;• High and low damp dusting as necessary. &lt;br&gt;• Disinfect spills as required &lt;br&gt;• Wash once per week or as necessary. &lt;br&gt;• Damp dust daily and when necessary. &lt;br&gt;• Wash once weekly.</td>
<td>• Liquid detergent and warm water. &lt;br&gt;• Bucket. &lt;br&gt;• Clean cloth. &lt;br&gt;Spills: &lt;br&gt;• Sodium hypochlorite 0.5%. &lt;br&gt;• POASB 1%. &lt;br&gt;• Liquid detergent and warm water. &lt;br&gt;• Liquid detergent and warm water.</td>
<td>• Damp clean thoroughly with warm soapy water. &lt;br&gt;• Disinfectant spills as per policy.</td>
</tr>
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### Table 14: (cont’d)

**Health Care Facility Cleaning/Disinfection Policies**

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<tr>
<td><strong>FLOORS, WALLS AND WINDOWS, etc.</strong></td>
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<tr>
<td>Walls:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Operating Theatres</td>
<td>• Daily disinfect and as necessary.</td>
<td>• Detergent and warm water. Routine disinfectant:</td>
<td>• Damp clean with hot soapy water.</td>
</tr>
<tr>
<td></td>
<td>• Disinfect spills as required.</td>
<td>• Sodium hypochlorite 0.5%.</td>
<td>• Treat spills as described in the policy.</td>
</tr>
<tr>
<td>• Kitchen</td>
<td>• Twice a week and as required.</td>
<td>• POASB 1%.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Disinfect spills, see policy.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Detergent and warm water.</td>
<td></td>
</tr>
<tr>
<td>Walls (dusting and removal of cobwebs)</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>• Light fittings</td>
<td>• Clean when dirty and during terminal disinfection.</td>
<td>• Long handled broom covered with a damp cloth.</td>
<td>• Pay particular attention to corners.</td>
</tr>
<tr>
<td>• Pelmets</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Window screens, Insect wire</td>
<td>• Damp clean daily.</td>
<td>• Short mop or cloth.</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>• Liquid detergent and hot water.</td>
<td></td>
</tr>
<tr>
<td>Windows – glass</td>
<td>• Clean when dirty and during terminal disinfection.</td>
<td>• Liquid detergent and hot water.</td>
<td>• <strong>Do not</strong> use the short mop for floors.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Bucket.</td>
<td>• Wash after use, disinfect and dry.</td>
</tr>
<tr>
<td>Windows:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Kitchen</td>
<td>• Once every two weeks.</td>
<td>• Liquid detergent and water.</td>
<td></td>
</tr>
<tr>
<td>Rooms (terminal cleaning)</td>
<td>• After discharge of patient.</td>
<td>• Wash surfaces with detergent solution.</td>
<td>For infected patients:</td>
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<tr>
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</tbody>
</table>

For infected patients:
- Wash surfaces with 1% phenol or hypochlorite solution as appropriate.
### Table 14: (cont’d)
**Health Care Facility Cleaning/Disinfection Policies**

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</tr>
</thead>
<tbody>
<tr>
<td><strong>SPECIAL PROCEDURES AND SURFACES</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| High-level decontamination of surfaces | • As necessary. | • Liquid detergent and water.  
• Methylated spirits.  
• POASB 1%.  
• Sodium hypochlorite 0.5%. | • Pre-clean with detergent solution then wipe/mop with sodium hypochlorite disinfectant.  
• POASB does not require pre-cleaning of items. |
| Kitchen:  
• Food | • Cover to prevent contamination by flies, ants, cockroaches, dust after each use.  
• After each use rinse with warm water and dry on a rack. | • Liquid detergent and hot soapy water.  
• Warm soapy water. | • Wash after use and daily with detergent, hot water and store dry.  
Dish towels (if used) to be used once for every dish wash:  
• Hand or machine wash thoroughly at minimum temperature of 60oC with final rinse at 80o C.  
• Dry and store.  
In case of infectious cases, if dishwashers are not available:  
• Soak in sodium hypochlorite 0.5% for 10-15 minutes.  
• Rinse with clean water.  
• Repeat disinfection with fresh sodium hypochlorite 0.5% for 10-15 minutes.  
• Rinse with clean water, dry and store. |
| • Pots, Pans | | | |
| • Utensils, crockery, trays, feeding and medicine cups | | | |
| • Refrigerators  
• Freezers | • Defrost every two weeks. | • Liquid detergent and warm water. | |
<table>
<thead>
<tr>
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<th>Procedure/Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cupboards</strong></td>
<td>• Wash once weekly and rinse with clean water.</td>
<td>• Liquid detergent and warm water.</td>
<td>• Vector control if necessary.</td>
</tr>
<tr>
<td><strong>Stoves</strong></td>
<td>• Scrub once weekly.</td>
<td>• Vim or scouring powder or grease remover</td>
<td>• Clean 3 times a week with detergent and water or as necessary.</td>
</tr>
<tr>
<td><strong>Routine damp wiping of surfaces in:</strong></td>
<td>• Daily and when necessary.</td>
<td>• Sodium hypochlorite 0.5%.</td>
<td>• Use grease remover to remove stubborn stain.</td>
</tr>
<tr>
<td>• Neonatal Unit</td>
<td></td>
<td>• POASB 1%.</td>
<td></td>
</tr>
<tr>
<td>• ICU</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Transplant unit</td>
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<td></td>
</tr>
<tr>
<td>• Burns unit</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Operating Theatre tables</strong></td>
<td>• After each use and at end of day.</td>
<td>• Sodium hypochlorite 0.5%.</td>
<td>• Wash with disinfectant in between patients and at end of day.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• POASB 1%.</td>
<td></td>
</tr>
<tr>
<td><strong>Terminal disinfection of isolation rooms</strong></td>
<td>• Soon after discharge or death of an infectious patient, e.g.: Chickenpox Cholera Dysentery HBV HCV HIV Measles Rabies Shingles Tuberculosis Typhoid SARS Avian Influenza.</td>
<td>• Liquid detergent and water. Disinfectant: • Sodium hypochlorite 0.5%.</td>
<td>Wash thoroughly with detergents and warm water then disinfect:</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• All floors and walls.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• All mattresses and plastic covered pillows.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Lockers and furniture.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• All plastic items.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Mop heads.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Wash bedpans and urinals thoroughly with detergent, hot water and scouring power then boil for 30 minutes or soak in disinfectant or place in bedpan sterilizer.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Change curtains and ventilate.</td>
</tr>
</tbody>
</table>
### Table 14: (cont’d)
#### Health Care Facility Cleaning/Disinfection Policies

<table>
<thead>
<tr>
<th>Item/Task and Location</th>
<th>Frequency of Cleaning/Disinfection</th>
<th>Agent, Equipment and Supplies Needed</th>
<th>Procedure/Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SPECIAL PROCEDURES AND SURFACES</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Infected body fluid spillages</td>
<td>• As required.</td>
<td>• POASB 1%.</td>
<td>• Soak oxygen masks in disinfectant for 15-20 minutes (see Section VII: Disinfection and Sterilization).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Sodium hypochlorite 0.5% (5000 ppm) to 1% (10,000 ppm) or NaDCC powder.</td>
<td>Small spillages and spots:</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Cover spillage with powder or liquid disinfectant and allow to stand for 3 minutes.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Use gloved hands to scrape powder or use paper towels to transfer spillage mixture into a safe receptacle for disposal.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Wash and disinfect area with disinfectant 0.5% sodium hypochlorite or 1% POASB.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ambulance:</td>
<td>• Delicate equipment, e.g. radios, cardiac monitors</td>
<td>• Liquid detergent and water.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Oxygen masks, nebulizers</td>
<td>Disinfectant:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• After each patient and daily.</td>
<td>• Sodium hypochlorite 0.5%.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• After each patient and daily.</td>
<td>• Liquid detergent and water.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Daily</td>
<td>Disinfectant:</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Sodium hypochlorite 0.5%.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• POASB 1%.</td>
<td></td>
</tr>
<tr>
<td>For any suspect TB patients:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Aldehyde 2%.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Item/Task and Location</td>
<td>Frequency of Cleaning/Disinfection</td>
<td>Agent, Equipment and Supplies Needed</td>
<td>Procedure/Remarks</td>
</tr>
<tr>
<td>------------------------</td>
<td>-----------------------------------</td>
<td>-------------------------------------</td>
<td>------------------</td>
</tr>
<tr>
<td>• Soiled linen</td>
<td>• Daily</td>
<td>• Laundry detergent and water.</td>
<td>• Transport in leakproof bags.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Treat as per policy.</td>
</tr>
<tr>
<td>Inside Ambulance:</td>
<td>• Weekly or after spills.</td>
<td>• Liquid detergent and water.</td>
<td>• Wash daily and as necessary.</td>
</tr>
<tr>
<td>• Walls</td>
<td>• Wash daily and as necessary.</td>
<td>• Treat spills as per policy.</td>
<td>• See Section on floors and walls.</td>
</tr>
<tr>
<td>• Windows</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Floors</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Slats</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mortuary:</td>
<td>• Disinfect trays after every removal of body.</td>
<td>Routine disinfection:</td>
<td>• Wipe trays thoroughly and mop floor.</td>
</tr>
<tr>
<td>• Trays</td>
<td>• Wash floors daily and as required.</td>
<td>• Sodium hypochlorite 0.5%. OR</td>
<td>• If there are excessive smells use deodorizer.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• POASB 1%.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Deodorizer.</td>
<td></td>
</tr>
<tr>
<td>• Floors</td>
<td></td>
<td>• Liquid detergent and water.</td>
<td>• Sweep first, then mop with detergent soap solution.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Deodorizer.</td>
<td>• Wipe and deodorize.</td>
</tr>
</tbody>
</table>

SECTION IX

HEALTH CARE FACILITY
WASTE MANAGEMENT
INTRODUCTION

DEFINITIONS

Health care waste is defined as the total waste stream from health care establishments, laboratories, and research facilities that includes both potential infectious waste and non-infectious waste materials. In addition, it includes the waste originating from “minor” or “scattered” sources, such as that produced in the course of health care undertaken in the home (dialysis, insulin injections, etc.). Infectious wastes include infectious sharps and infectious non-sharp materials.

Infectious sharps consist of syringes and needles, other needles, blades, infusion sets, broken glass or other items that can cause direct injury.

Infectious non-sharps include materials that have been in contact with human blood, or its derivatives, bandages, swabs or items soaked with blood, isolation wastes from highly infectious patients (including food residues), used and obsolete vaccine vials, bedding and other contaminated materials infected with human pathogens. Human excreta from patients are also included in this category.

Non-infectious wastes may include materials that have not been in contact with patients such as paper and plastic packaging, metal, glass or other wastes which are similar to household wastes.

If no separation of wastes takes place, the whole mixed volume of health care waste needs to be considered as being infectious*.  

The basic risk categories defined at Table 15 are:

- Infectious
- Anatomical
- Sharps
- Pharmaceuticals
- Chemical
- Radioactive
- Pressurized containers.

<table>
<thead>
<tr>
<th>Risk Waste</th>
<th>Non-risk Waste</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Infectious Wastes</strong>: Blood and blood products and other body fluids; items contaminated with blood, serum or plasma; cultures and stocks of infectious agents from diagnostic and research laboratories and items contaminated with such agents; isolation wastes from highly infectious patients (including food residues); discarded live and attenuated vaccines; waste, bedding, bandages, surgical dressings, and other contaminated material infected with human pathogens.</td>
<td></td>
</tr>
<tr>
<td><strong>Anatomical /Pathological Wastes</strong>: Human tissues, body parts, foetus, placenta, and other similar wastes from surgeries, biopsies, autopsies; animal carcasses, organs, and tissues infected with human pathogens.</td>
<td></td>
</tr>
<tr>
<td><strong>Sharps Wastes (used or unused)</strong>: Needles, syringes, scalpel blades, suture needles, razors, infusion sets, contaminated broken glass, specimen tubes, and other similar material.</td>
<td></td>
</tr>
<tr>
<td><strong>Chemical Wastes</strong>: Solid, liquid, or gaseous chemicals such as solvents, laboratory reagents, film developer, ethylene oxide, and other chemicals that may be toxic, corrosive, flammable, explosive, or carcinogenic.</td>
<td></td>
</tr>
<tr>
<td>The types of hazardous chemicals used most commonly in the maintenance of health care facilities and are most likely to be found in waste include:</td>
<td></td>
</tr>
<tr>
<td>• Formaldehyde</td>
<td></td>
</tr>
<tr>
<td>• Photographic chemicals</td>
<td></td>
</tr>
<tr>
<td>• Solvents</td>
<td></td>
</tr>
<tr>
<td>• Organic chemicals</td>
<td></td>
</tr>
<tr>
<td>• Inorganic chemicals.</td>
<td></td>
</tr>
<tr>
<td><strong>Pharmaceutical Wastes</strong>: Damaged/Not required/Outdated/Contaminated medications/vaccines of all kinds, as well as residuals of drugs used in chemotherapy that may be cytotoxic, genotoxic, mutagenic, teratogenic, or carcinogenic. Items contaminated by or containing pharmaceutical bottles, boxes.</td>
<td></td>
</tr>
<tr>
<td><strong>Radioactive Wastes</strong>: Any solid, liquid, or pathological waste contaminated with radioactive isotopes of any kind.</td>
<td></td>
</tr>
<tr>
<td><strong>Genotoxic Wastes</strong>: Genotoxic waste is highly hazardous and may have mutagenic or carcinogenic properties. Genotoxic waste may include certain cytotoxic drugs, vomit, urine, or faeces from patients treated with cytotoxic drugs, chemicals and radioactive material.</td>
<td></td>
</tr>
<tr>
<td><strong>Pressurized Containers</strong>: Cylinders/Cartridges containing gases or aerosols which when accidentally punctured or incinerated, could explode.</td>
<td></td>
</tr>
<tr>
<td><strong>Waste with High Contents of Heavy Metals</strong>: Batteries, broken thermometers, blood pressure gauges, mercury and amalgum from Dental Clinics, etc.</td>
<td></td>
</tr>
<tr>
<td><strong>Communal Wastes</strong>: All solid waste that does not contain risk waste types (e.g. infectious, chemical, radioactive). Communal wastes from medical treatment or research centres include uncontaminated wastes such as bottles, office paper, boxes and packaging materials.</td>
<td></td>
</tr>
</tbody>
</table>

IMPORTANCE OF PROPER WASTE DISPOSAL

Proper disposal:

- Minimizes the spread of infections and reduces the risk of accidental injury to staff, patients, visitors and the community.
- Helps provide an aesthetically pleasing atmosphere.
- Reduces odours.
- Attracts fewer insects and rodents and does not attract animals.
- Reduces the likelihood of contamination of the soil or ground water with chemicals or micro-organisms.

Table 16 shows categories of health care definitions for waste.

<table>
<thead>
<tr>
<th>Table 16: Categories of Health Care Facility Waste Care Definitions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Treatment</strong></td>
</tr>
<tr>
<td><strong>Destruction</strong></td>
</tr>
<tr>
<td><strong>Disposal</strong></td>
</tr>
</tbody>
</table>

POLICY STATEMENTS

1. National regulations and legislation shall be observed when planning and implementing waste treatment and disposal guidelines.

2. Every health care facility shall develop a medical waste management plan and shall designate a staff to co-ordinate its management.

3. All health care facility and settings staff have a responsibility to dispose of waste in a manner that poses minimal hazard to patients, visitors, other health care workers, and the community.

4. Infectious waste materials shall be treated properly to eliminate the potential hazard that these wastes pose to human health and environment.

5. Sharps contaminated with blood, tissue, and body fluids, and untreated microbiological waste require special handling and treatment.

6. Sharps shall be contained in a puncture-resistant, liquid-proof container.

7. Sharps and microbiological wastes shall be incinerated and the ashes disposed of in a pit 1.8 metres deep.

8. Infectious waste shall be stored in a designated location with access limited to authorized personnel.

9. Written policies and procedures to promote safety of waste handlers shall be defined with inputs from persons handling the waste.

10. Waste handlers shall wear protective equipment appropriate to the risk (e.g., protective foot wear and heavy work gloves).

11. Waste handlers shall be offered Hepatitis B immunization and any other appropriate vaccines.

12. A biohazard symbol is required on all waste packaged for incineration.

13. Observe regulations regarding colour coding of waste disposal bags specific to Trinidad & Tobago.

14. All health care workers shall be familiar with the National Public Health Ordinance and the Ministry of Health Code of Practice for biomedical waste management.

15. All health care workers shall receive orientation and in-service training on health care facility waste management.
GLOBAL HEALTH CARE WASTE MANAGEMENT POLICIES

Basel Convention

1. Global treaty that applies to international transportation of hazardous wastes.

2. Instigated to prevent industrialized nations from dumping their toxic waste in developing countries.

Stockholm Convention

1. Global treaty to protect human health and environment from Persistent Organic Pollutants (POP), specifically dioxins and furans.

2. Commits all parties to reduce the release of dioxins with the goal of continued minimization and, where feasible, ultimate elimination.

United Nations Packaging Requirements

1. Guidelines for proper packaging and international transport of infectious substances.

2. Defines both inner and outer packaging composition requirements (see Appendix 4).*

HEALTH CARE WASTE MANAGEMENT GOOD PRACTICES*

1. Waste segregation into infectious and non-infectious waste.

2. Syringes or needles are collected in a puncture and leak-proof container with colour coding or bearing a biohazard sign/symbol.

3. Non-sharp infectious wastes are collected in bags (with colour coding or bearing a biohazard sign/symbol).

4. Infectious waste bags and sharps containers are safely handled and transported (on-site).

5. Infectious waste bags and sharps containers are stored in secured places prior to transportation for treatment/disposal.

6. Availability and use of personal protective equipment (PPE) and facility for washing hands for all persons handling waste.

7. Immunization of staff against Hepatitis B virus (HBV).

8. Regular supervision and correction of problems.

In Trinidad and Tobago, the central government usually bears overall responsibility for the regulation of potentially infectious health care facility waste (also called sometimes, health care risk waste). The primary day-to-day responsibility for all the health care facility waste management lies with each facility (private and public) generating the waste, and with local government or government agencies for ensuring public health and environmental regulatory compliance. The starting point in each health care facility is the preparation of a waste management plan.

There are five (5) primary steps toward developing a health care waste management plan. The relevant director should:

1. Advocate for formulation of waste management plans where they are not in existence.
2. Assess current duties, responsibilities and practices.
3. Assess current health care facility waste costs.
4. Decide on the waste management policy the health care facility will follow.
5. Ensure staff responsibility in waste management. (Figure 27).

Step 1: Advocating for formulation of waste management plans

The health care facility director is responsible for initiating discussions on the plan. This advocacy role is very important.

Step 2: Assessment of duties, responsibilities, practices

The second step to an effective health care facility waste management plan is a comprehensive audit to determine the current status of personnel duties and responsibilities regarding health care waste and to define handling and reporting practices.

The facility director or designate should conduct this audit, gathering all relevant information from every floor, department and service throughout the facility. The audit should contain detailed information about all personnel time spent in the performance of a health care facility waste generating, handling, or processing.

Step 3: Assessment of health care waste management costs

The third step in the development of an effective waste management plan is an assessment of its costs (see Box). The Finance Officer should examine purchasing practices, including the cost of those items that routinely become health care facility waste and whether they are disposable or reusable, or could be replaced by reusable items.

<table>
<thead>
<tr>
<th>COSTS TO CONSIDER WHEN AUDITING*</th>
</tr>
</thead>
<tbody>
<tr>
<td>♦  Health care facility waste containers, sacks and labels.</td>
</tr>
<tr>
<td>♦  Disinfectants and antiseptics.</td>
</tr>
<tr>
<td>♦  Personal protective equipment such as gowns and gloves, and their frequency of use must be included.</td>
</tr>
<tr>
<td>♦  Disposable bed coverings, bowls, tubing and many other similar items.</td>
</tr>
<tr>
<td>♦  Personnel time defined in Step 2.</td>
</tr>
<tr>
<td>♦  Vehicles, fuel and driver if the waste is shipped off-site by health care facility personnel, either before or after treatment.</td>
</tr>
<tr>
<td>♦  Contractor costs.</td>
</tr>
</tbody>
</table>

Step 4: Development of health care facility waste management policy

The fourth step in the development of a health care facility waste management plan is to develop a management policy based on the assessment of current practices and costs. A health care facility waste management policy is the compilation of all practices and procedures regularly carried out in regard to health care facility waste, from generation to ultimate disposal.

The policy should be in a written form and describe all levels of responsibility, from the highest administrative authority to janitorial staff. It should be officially approved by the organization’s governing body, endorsed with the director’s signature, and be explained to all employee in all departments (Figure 28).

Figure 28

Finally, the policy should be reviewed and updated annually.

Annual reviews should include re-assessments of purchasing practices and costs to provide comparisons from year-to-year. This will identify deficiencies and good practices to reduce further health care facility waste, cost, or both.

Step 5: Responsibility

This final step describes the responsibility of all categories and levels of staff with respect to the health care facility waste management.

Individual Doctors, Nurses and Other Staff

- Must know the infectious waste policy.
- Place sharps in sharps containers.
- Place infectious waste in infectious waste containers.
- Place other waste in non-infectious waste containers.
- Report any difficulties or suggestions to the Nurse-In-Charge.

Nurse-In-charge of the Ward

- Knows and is able to explain the infectious waste policy.
- Ensures that staff on the ward understand the policy.
- Ensures that staff on the ward place waste in proper containers.
- Ensures that the appropriate colour coded bags are used for infectious waste and non-infectious waste.
- Ensures that appropriate and adequate sharps containers are in place.
- Ensures that sharps containers are removed for disposal when ¾ full.
- Ensures that infectious waste containers are emptied when ¾ full.
- Reports any difficulties or suggestions to the Infection Prevention and Control Officer.

Housekeeping Staff on the Ward

- Must know the infectious waste policy.
- Use the appropriate colour coded bags for placing infectious waste in infectious waste containers and non-infectious waste in the appropriate containers.
- Empty infectious waste containers when ¾ full.
- Remove and replace sharps containers when ¾ full.
- Report any difficulties or suggestions to the supervisor.

Waste Collection Staff

- Must know the infectious waste policy.
- Remove the bags and dispose in designated areas according to the colour code of bags.
- Remove sharps containers to the incinerator or interim storage location when ¾ full.
- Report any difficulties or suggestions to the supervisor.

Housekeeping and Janitorial Supervisor

- Must know and be able to explain the infectious waste policy.
Ensures that the staff understand the policy and is immunized against Hepatitis B.

Ensures that adequate supplies of colour coded bags are available to staff.

Is a member of the Infection Prevention and Control Committee.

Reports any difficulties or suggestions to the Infection Prevention and Control Officer.

**Incinerator Operator**

Must know the infectious waste policy.

Incinerates infectious waste as necessary.

Maintains the incinerator in good working condition.

Reports any problems or suggestions to the maintenance supervisor.

**Maintenance Supervisor**

Must know the infectious waste policy.

Ensures that the incinerator is properly maintained.

Is a member of the Infection Prevention and Control Committee.

Reports any difficulties or suggestions to the Infection Prevention and Control Officer.

**Infection Prevention and Control Committee**
*(see Section II: Management of the Infection Prevention and Control Policies and Guidelines)*

Ensures that every ward and infectious waste producing area has infectious waste containers lined with plastic bags and identified with explanatory signs.

Ensures that every ward and sharps producing area has puncture-resistant containers in place and identified with signs or labels.

Ensures that infectious waste is being properly incinerated and treated to render them safe.

Educates staff as to the policies, procedures and dangers of infectious waste handling.

Ensures that all staff is immunized for Hepatitis B.

Implements and monitors a tracking system to ensure infectious waste generated is safely treated, transported and disposed.
Section IX: Health Care Facility Waste Management

- Investigates any reported instances of needlesticks and other sharps injury by staff.
- Ensures that infectious waste policy is being followed by appointing a sub-committee to conduct weekly rounds of the health care facility.
- Reports any suggestions or difficulties with infectious waste handling or disposal, which it cannot resolve to the health care facility’s Administrator.
- Holds meeting at least once per month.

Health Facility Administrator
- Must know the infectious waste policy.
- Ensures that adequate supplies of personnel protective equipment, waste containers, sharps containers, colour coded bags are available to implement the infectious waste policy.
- Ensures that the on-site incinerator is maintained or, if the incinerator is off-site, ensures that an adequate secure storage area is available for infectious waste awaiting disposal.
- Ensures that the on-site burn and/or burial sites are appropriately sited and maintained.
- Reports any problems or suggestions to the Regional Director or to the Director, Environmental Health Services.

Regional Health Authority, Quality and Infection Prevention and Control Unit, Ministry of Health, Medical/Infectious Waste Coordinator/Environmental Health Officer (Team)
- Develops and/or revises the infectious waste policy for use in the health care facilities.
- Surveys all health care facilities periodically.
- Analyzes and makes recommendations for incineration, burning and burial facilities.
- Inspects all incinerators, burn and burial sites periodically.
- Ensures that adequate incineration facilities are available for all infectious waste.
- Provides technical guidance to the district level health care facility Infection Prevention and Control Committee.
- Ensures that funding is available for the purchase of supplies and equipment needed for the implementation of the infectious waste policy.
- Ensures that funding is available for the transport of infectious waste from the point of generation to the disposal site.
Health care facility waste management (both risk and non-risk waste types) should be managed through a pathway composed of the following elements, each of which must be addressed in terms of personnel and material costs and occupational and safety risks.

Tables 17–18 show waste management technologies and recommendations for management of categories of waste.

The following illustration shows the steps in a waste management plan. (See figure 29)

Figure 29
Key Steps in Waste Management*

- Waste Minimization
- Health Care Waste Generation
- Segregation and Containerization
- Intermediate Storage (in the Health Care Facility)
- Internal Transport (in the Health Care Facility)
- Centralized Storage (in the Health Care Facility)
- External Transport
- Treatment and Final Disposal

STEPS (see Figure 29)

Step 1: Minimization

- This first step comes prior to the production of waste and aims at reducing as much as possible the amount of health care waste that will be produced by setting up an efficient purchasing policy and having a good stock management.

Step 2: Generation

- The point at which waste is produced.

Step 3: Segregation and Containerization

- The correct segregation of waste at the point of generation relies on a clear identification of the different categories of waste and the separate disposal of the waste in accordance with the categorization chosen (see Figures 29, 30).

- Segregation must be done at the point of generation of the waste. To encourage segregation at source (reusable), containers or baskets with liners of the correct size and thickness are placed as close to the point of generation as possible. They should be properly colour-coded (yellow or red for infectious waste) (see Figure 31, page 193) and have the international infectious waste biohazard symbol clearly marked.

Figure 30

Colour-coding must be standardized and compliance with national colour codes in waste management is a requirement.

Each type of waste should be placed in the appropriate waste containers.

When they are ¾ full, the liners are closed with plastic cable ties or string and placed into larger containers or liners at the intermediate storage areas.

All containers should have lids to prevent contamination, spillage, and access by insects, rodents and other animals.

Suitable latex gloves must always be used when handling infectious waste.

To separate and identify health care risk waste, a health care facility waste management policy should:

<table>
<thead>
<tr>
<th>Inclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Include a list of items and materials that will always be considered as risk waste (such as all needles and syringes).</td>
</tr>
<tr>
<td>Include a list of those that can be classified as a risk waste under certain conditions, (e.g., plaster cast is not a risk waste <strong>unless it has blood or body fluids on it</strong>).</td>
</tr>
<tr>
<td>Designate containers using defined colour-coding such as:</td>
</tr>
<tr>
<td>- Yellow for infectious waste and sharps</td>
</tr>
<tr>
<td>- Black for non-infectious/non-hazardous (communal) waste.</td>
</tr>
<tr>
<td>Designate sharps containers as such and provide appropriate labelling, including the international biohazard symbol.</td>
</tr>
<tr>
<td>Ensure sharps containers are placed at all locations where contaminated sharps are generated.</td>
</tr>
<tr>
<td>Ensure puncture-proof, leak-proof and sealable containers are purchased and used for safe waste transport.</td>
</tr>
<tr>
<td>Place information at each waste separation point to reinforce the policy and to illustrate quickly separation procedures*.</td>
</tr>
</tbody>
</table>

Figure 31*
Colour Coding for Waste Management

<table>
<thead>
<tr>
<th>Category</th>
<th>Examples</th>
<th>Colour of Bin Liner</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-infectious</td>
<td>Paper, packaging materials, plastic bottles, food, cartons</td>
<td>BLACK</td>
</tr>
<tr>
<td>Infectious</td>
<td>Gloves, dressings, blood, body fluids, used specimen containers</td>
<td>YELLOW</td>
</tr>
<tr>
<td>Highly Infectious</td>
<td>Anatomical waste, pathological waste</td>
<td>RED</td>
</tr>
<tr>
<td>Chemical</td>
<td>Formaldehyde, batteries, photographic chemicals, solvents, organic chemicals, inorganic chemicals</td>
<td>BROWN</td>
</tr>
<tr>
<td>Radioactive</td>
<td>Any solid, liquid, or pathological waste contaminated with radioactive isotopes of any kind.</td>
<td>YELLOW with radioactive label (see diagram below)</td>
</tr>
</tbody>
</table>

If different colour bags are not available, a biohazard label (see diagram below) may be placed on black bags to indicate their hazardous content.

---

Step 4: Intermediate Storage (in the health care facility)

- In order to avoid both the accumulation and decomposition of the waste, it must be collected on a regular daily basis.

- This area, where the larger containers are kept before removal to the central storage area, should both be close to the wards and not accessible to unauthorized people such as patients and visitors.

Step 5: Internal Transport (in the health care facility)

- Transport to the central storage area is usually performed using a wheelie bin or trolley. Wheelie bins or trolley should be easy to load and unload, have no sharp edges that could damage waste bags or containers and be easy to clean. Ideally, they should be marked with the corresponding coding colour.

- The transport of general waste must be carried out separately from the collection of healthcare risk waste to avoid potential cross-contamination or mixing of these two main categories of waste. The collection should follow specific routes through the health care facility to reduce the passage of loaded carts through wards and other clean areas.

Step 6: Centralized Storage (in the health care facility)

- The storage area should not be situated in the proximity of fresh food stores or food preparation areas.

- The central storage area should be sized according to the volume of waste generated, as well as the frequency of collection.

- The storage area should have an impermeable, hard-standing floor with good drainage.

- It should be clearly separated from the central storage area used for health care generated waste in order to avoid cross-contamination.

- The area should be easy to decontaminate, clean and disinfect.

- There should be a water supply for cleaning purpose.

- A supply of cleaning equipment, personal protective equipment, and waste bags or containers should be located conveniently close to the storage room.

- There should be protection from the sun.

- There should be good lighting and at least passive ventilation.

- The storage area should be inaccessible to animals, insects, rodents and birds.
• It should be possible to lock the store to prevent access by unauthorized persons.

• The storage area should afford easy access for staff in-charge of handling the waste.

• Easy access for waste collection vehicles is essential.

• Storage time should not exceed 24–48 hours especially in countries that have a warm and humid climate.

Step 7: External Transport

• External transport should be done using dedicated vehicles. They shall be free of sharp edges, easy to load and unload by hand, easy to clean/disinfect, and fully enclosed to prevent any spillage in the hospital premises or on the road during transportation (see Figure 32).

• The transportation should always be properly documented and all vehicles should carry a manifest from the point of collection to the treatment facility.

Step 8: Treatment and Final Disposal

• There are a number of different treatment options to deal with infectious waste. These include autoclaving, incineration, burial, etc.

Figure 32*

DISPOSAL METHODS FOR WASTE

(see Table 17)

The following are common methods of waste disposal, which may vary in availability according to location:

(i) **Sanitary Landfill (residue ash from incinerators, other solids)**

Specific categories of waste can be disposed of in a properly managed landfill, provided there are procedures in place to protect workers from contact with waste. Waste must be non-hazardous based on environmental regulations. The landfill method of disposal is inexpensive when compared to incineration.

(ii) **Sanitary Sewer (Liquids)**

This is an acceptable method of disposal of blood, suctioned fluids, excretions and secretions, if the liquids have been neutralized and the method is acceptable to local authorities. The disposal of such fluids into sanitary sewers must conform to local health legislation and regulations.

(iii) **Incineration/Burning (all waste types)**

The incineration/burning process converts combustible materials into non-combustible ash, achieving a reduction of 90% by volume or 75% by weight. The product gases are vented into the atmosphere, and the treatment residue may be disposed of in a landfill.

(iv) **Burial (anatomical parts)**

If the parts are not incinerated, they should be buried. The burial pit should be large enough for all the waste generated at the health care facility. It should be fenced to limit access and to prevent scavenging of waste.

(v) **Encapsulation**

Encapsulation involves filling containers with waste and adding an immobilizing material (cement, sand or clay) and sealing the containers. This is the appropriate method for disposing of expired/contaminated/unused vaccines/medications.

**How to encapsulate expired vaccines and other pharmaceutical waste**

- Use an empty tin can or metal drum or plastic container.
- Place vials of expired vaccines/medications in the container.
- When containers are full, pour in an immobilizing material such as plastic foam, sand, cement, or clay. Once dry, the containers are sealed and disposed of in landfill sites or waste burial pits.

*Remember, the most effective, cost-efficient waste management technique is minimization, which includes reuse.*
RECOMMENDATIONS FOR TRANSPORT

ON-SITE TRANSPORT

- Health care facility waste should be transported within the facility by means of wheeled trolleys, containers, or carts that are not used for any other purpose.

A. Medical/Infectious Waste

- Dedicated trucks, trolleys or wheeled containers should be used to transport waste containers to the storage/disposal area. Such conveyances should be decontaminated, cleaned and disinfected at least weekly and whenever there is a spillage or leakage.
- The direct handling of sacks/bags should be kept to a minimum to prevent any threat to the health of any staff who is at risk.
- All persons involved in carrying>Loading should receive adequate training and while carrying out their duties should wear appropriate personal protective equipment. Staff who is at risk should be offered Hepatitis B immunization.

B. Chemical/Hazardous Waste

- Only designated personnel should transport chemical wastes. Transport within the health care facility should be by laboratory carts with materials carefully packaged so as to minimize potential exposure to employees, patients and visitors if there is a spill or accident.

C. Radioactive Waste

- Only designated personnel should transport radioactive waste. This applies for both on-site and off-site transportation.
- Comply with national regulations for transport.
- **Caesium Inserts** are used for 5–6 years and are disposed of in special lead pots provided for this purpose from Oncological Suppliers. The inserts are placed in the lead pots after each use and stored according to the hospital Standing Orders. If inserts are spent, they are returned to supplier by air.
- **COBALT** is used in Radiation Machine and is replaced by Oncological Supplier Personnel who travels to with replacement and takes spent COBALT away, out of Trinidad and Tobago.
D. Chemotherapy Waste

- The transporting of chemotherapy waste is similar to that for intravenous/intra-muscular (IV/IM) drugs.

E. Pharmaceutical Waste (Expired/damaged)

- Refer to Ministry of Health Policy/Board of Survey.

**OFF-SITE TRANSPORT**

Regulation and Control System

- The health care facility waste producer is responsible for the safe packaging and adequate labelling of waste to be transported off-site and for the authorization of its destination.

- Packaging and labelling should comply with UN regulations (see Appendix 4).

- The control strategy for health care facility waste should have the following components:
  - A manifest to accompany the waste from the place of production to the site of final disposal. On completion of the journey, the transporter should complete the part of the manifest especially reserved for him and return it to the waste producer.
  - The Transport Organization/Contractor should be a registered Regional/National/Municipal Body.
  - Handling and disposal facilities should hold a permit issued by the waste regulation agency, allowing the facilities to handle and dispose of health care facility waste.

Special Packing Requirements for Off-Site Transport

- In general, the waste should be packaged in sealed bags or containers, to prevent spilling during handling and transportation.

Waste vehicles should:

1. Be in accordance with the requirements of the waste regulation authority.
2. Be dedicated solely to the carriage of clinical waste and not carry any other commodity.

3. Have enclosed secure storage facilities containing all necessary equipment and materials to facilitate the prescribed procedure to be carried out in the event of spillage or leakage of medical waste. Hand cleaning materials should be provided including disposable gloves, disposable overall and rubber boots. These should be as described in the health care facility waste disposal policy.

4. Have waste containing accommodation separated from the driver and passengers’ accommodation by a bulkhead of sufficient integrity and strength to prevent the driver or passenger from coming in contact with the waste in the event of an impact with a similar vehicle at a relative speed of 40 mph.

5. Incorporate a system to secure the load during transportation. Sharps containers should be securely stored.

**INFECTIOUS WASTE**

Health care facility wastes that are known or suspected to contain pathogens likely to cause human disease, is considered “Infectious Substances” and must comply with the packaging requirements as outlined by the United Nations packaging requirements for infectious substances, division 6.2, UN No.2814 (see Appendix 4).

The packaging recommended for transporting most health facility waste, with a relatively low probability that infectious substances are present and which are not likely to cause human disease are also outlined in Appendix 4 – United Nations packaging requirements for infectious substances, division 6.2, UN No. 3291.
### Table 17
**Principal Health Care Risk Waste Treatment Technologies**

<table>
<thead>
<tr>
<th>Incineration</th>
<th>Steam Autoclave Disinfection</th>
<th>Microwave Disinfection</th>
<th>Mechanical/Chemical Disinfection</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Reduction of waste volume, weight.</td>
<td>• Reduction of waste volume.</td>
<td>• Significant volume reduction.</td>
<td>• Significant waste volume reduction.</td>
</tr>
<tr>
<td>• Waste unrecognizable after treatment.</td>
<td>• Low investment cost.</td>
<td>• Waste made unrecognizable.</td>
<td>• Waste made unrecognizable.</td>
</tr>
<tr>
<td>• Acceptable for all waste types.</td>
<td>• Low operating cost.</td>
<td>• No liquid discharge.</td>
<td>• Rapid waste processing.</td>
</tr>
<tr>
<td>• Heat recovery potential.</td>
<td>• Easy biological testing.</td>
<td></td>
<td>• Waste deodorization.</td>
</tr>
<tr>
<td>• Appropriate method of decontamination of microbiological waste for final disposal in a landfill.</td>
<td></td>
<td></td>
<td>• Indicated for the clean-up of blood spills.</td>
</tr>
</tbody>
</table>

**POSITIVE**
- Incinerators using coal may not completely burn sharps.
- Public opposition.
- High investment operation costs.
- Formation of dioxins, furans.
- High maintenance, testing, repair costs.
- Future restrictive emission laws.

**NEGATIVE**
- Waste appearance unchanged.
- Waste weight unchanged.
- Not suitable for all waste types.
- Uncharacterized air emissions.
- High investment costs.
- Increased waste weight.
- Not suitable for all waste types.
- Potential contaminated shredder exposure to pathogens.
- Uncharacterized air emissions.

- High investment costs.
- Not suitable for all waste types.
- Chemical storage and use.
- Uncharacterized air emissions.

Table 18: Recommendations for Management of Categories of Health Care Facility Waste
(See Categories of Health Care Facility Waste)

<table>
<thead>
<tr>
<th>Waste Category</th>
<th>Examples</th>
<th>Types of Container to be Used*</th>
<th>Handling Disposal**</th>
<th>Special Consideration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infectious waste</td>
<td>Blood, blood products, body fluids, dialysis waste.</td>
<td>Impervious container with lid</td>
<td>Disinfect with 3-3.5% chlorine-based compound prior to discharging in sewer.</td>
<td>Bags should be ¾ full, sealed, marked with site of origin and removed.</td>
</tr>
<tr>
<td>Anatomical waste/Pathological waste</td>
<td>Tissues, organs, body parts, foetuses, placentas, surgical wastes, etc.</td>
<td>Suitable impervious containers or waste storage bags placed in rigid containers with lids.</td>
<td>Incineration, burn.</td>
<td>Bags should be ¾ full, sealed, marked with site of origin and removed. Mark container with biohazard symbol.</td>
</tr>
<tr>
<td>Animal waste</td>
<td>From research laboratory.</td>
<td>Impervious container with lid.</td>
<td>Incineration, burn.</td>
<td>Bag sealed and marked with site of origin.</td>
</tr>
<tr>
<td>Laboratory waste (highly infectious)</td>
<td>Cultures and stocks Diagnostic specimens Vaccines.</td>
<td>Impervious container with lid.</td>
<td>Incineration, burn.</td>
<td>Bags should be ¾ full, sealed, marked with site of origin.</td>
</tr>
<tr>
<td>Medical waste</td>
<td>Gloves Sponges Dressings Sanitary pads, Surgical drapes soiled or soaked with blood, body fluids, secretions.</td>
<td>Impervious waste holding bag or double plastic bag.</td>
<td>Incineration, burn or landfill. Empty ash in pit latrine. Container ¾ full for disposal.</td>
<td></td>
</tr>
<tr>
<td>Food waste</td>
<td>Milk, food, meat, fish, chicken, vegetables, etc.</td>
<td>Lined plastic bins covered with a tight lid.</td>
<td>Incineration, burn or landfill. Empty ash in pit latrine. Container ¾ full for disposal.</td>
<td></td>
</tr>
<tr>
<td>Other kitchen waste</td>
<td>Empty bulk cartons Food containers Food wrappers.</td>
<td>Lined bins with lid.</td>
<td>Incineration or landfill.</td>
<td>Place separately from food. When ¾ full seal and dispose of.</td>
</tr>
</tbody>
</table>

*Biohazard symbol must be used where appropriate. Colour coding of bags requirements at national level.

**All transportation of infection waste must comply with national laws and regulations.

**TIPS FOR HANDLING WASTE CONTAINERS**

1. Use heavy-duty long gloves for handling containers.
2. Wash hands with soap and running water after removal of gloves.
3. Incineration is the best method for destroying micro-organisms.
4. Incinerate wastes immediately after collection and transportation to the incinerator.
5. Fence the incinerator site to keep out human, animals, insects, rodents and birds.
6. Containers should be:
   - Lined with plastic bags
   - Must have sealable lid
   - Place at convenient place for use
   - Must **not** be used for any other purpose in the health care facility
   - Must be decontaminated, cleaned, and disinfected after each use.

**CHARACTERISTICS OF AN IDEAL WASTE DISPOSAL CONTAINER**

The container should:

1. Have a well fitted lid
2. Be leak proof
3. Be non-corrosive
4. Be washable.
BUILDING INSTRUCTIONS

BURIAL PIT*

1. Choose an appropriate site
   - At least 50 metres away from any water source to prevent contamination of the water source.
   - The site should have proper drainage.
   - Be located downhill from any wells.
   - Be free of standing water.
   - Be in an area that does not flood.
   - The site should not be located on land that will be used for agriculture or development.

2. Dig a pit 1 to 2 metres wide and 2 to 5 metres deep
   - The bottom of the pit should be 1.8 metres above the water table.
   - Consult the local water engineer/water authority for information about the location of the water table.

3. Fence in the area
   - To keep out animals, scavengers, and children.

4. Keep waste covered
   - Each time waste is added to the pit, cover it with a 10 to 30 cm layer of soil.

5. Seal the pit
   - When the level of the waste reaches to within 30 to 50 cm of the surface of the ground, fill the pit with dirt, seal it with concrete, and dig another pit.

DRUM INCINERATOR*

In general, a drum incinerator is only useful for small, usually rural, facilities that do not have large quantities of medical waste. If the health care facility is large, it is more efficient to build or install an incinerator large enough to accommodate all of the facility’s waste-disposal needs.

When using a drum incinerator

1. Choose a place that is downwind from the clinic
   - To prevent smoke and odours from coming into the clinic.

2. Make sure there are sufficient air inlets on the sides of the oil drum and bottom of the fire bed
   - For efficient burning.

3. Place the incinerator on hardened earth or a concrete base
   - To prevent grass from catching fire during the burning process.

4. Burn only medical waste
   - Use a regular community disposal site for general waste. This will conserve both time and resources.

5. Treat the ash as general waste
   - Bury or otherwise dispose of it in a designated area.

Medical waste may not burn easily, especially if it is wet. Add kerosene to make the fire hot enough to burn all waste. Be sure to add the kerosene before starting the fire – adding kerosene after the fire has started might cause an explosion.

RECORD KEEPING

Effective health care facility waste management requires accurate record keeping to assess waste quantities, annual expenditures and success of waste minimization efforts. The health care facility waste management policy should identify those persons who are responsible for record keeping.

WASTE MANAGEMENT

* Keep Records On
  * Amounts of waste generated in each department.
  * Amounts of waste generated for entire facility.
  * Direct costs for supplies and materials used for collection, transport, storage, treatment, disposal, decontamination, and cleaning.
  * Costs for labour and materials for training.
  * Costs for labour and materials for occupational health activities such as immunization, needlesticks and other injuries, and post-exposure treatments.
  * Costs for repairs and maintenance of incinerator or other treatment technology.
  * Costs for contractor services.
TRAINING

1. A health care facility waste management policy is only effective if it is used daily, consistently and accurately. Training employees in implementing the policy is critical to a successful health care facility waste management programme.

2. Orientation and in-service training programmes for new employees, as well as on-going in-service training for existing employees should be developed and implemented.

3. Training should focus on all principles of health care facility waste management as discussed throughout this section. It also should highlight employees’ roles and responsibilities with respect to the waste management programme (Figure 33).

Figure 33

WORKERS’ HEALTH AND SAFETY

1. A health care facility waste management policy should include continual monitoring of workers’ health and safety to ensure that proper handling, treatment, storage, transport and disposal are being adhered to, and that appropriate preventive measures are being carried out (Figure 34).

2. Good health and safety measures include:

   - Relevant training
   - Issuing of personal protective equipment (PPE)
   - Establishment of an effective occupational health programme that includes immunization, post-exposure prophylaxis and medical surveillance.

3. Health and safety training should ensure that workers know and understand the potential risks associated with health care facility waste, the value of immunization against the Hepatitis B virus, and the importance of using the personal protective equipment available to them.

SECTION X

RISK MANAGEMENT
One of the major goals of risk management is to regulate facilities where work is carried out and to promote safe work practices in an effort to minimise the incidence of illness and injury experienced by employees.

Compliance with Standard Precautions is necessary to reduce occupational exposure to HBV, HCV, and HIV and other bloodborne pathogens that employees may encounter in their workplace.
BLOODBORNE PATHOGENS

INTRODUCTION

Transmission of Human Immunodeficiency Virus (HIV), Hepatitis B Virus (HBV), and Hepatitis C Virus (HCV) in the workplace occurs in the following ways:

1. **Accidental exposure to blood (AEB):** Any contact with blood or body fluids as a result of injury with a needle or any other sharp instruments, or via mucous membrane (eye, mouth), or contact via damaged skin (eczema, wounds).

2. **Percutaneous exposure (PE):** Exposure to blood or body fluids through non-intact skin.

3. **Needlestick or sharps injury:** Puncture with a needle or sharp instrument that is contaminated or potentially contaminated with blood or body fluids.

4. **Blood splash:** Skin visibly contaminated with blood or body fluids.

5. Exposure of intact normal skin to a large volume of blood.

6. Human bites.

Preventing transmission of HIV and HBV in the workplace, therefore, means:

1. Preventing the occurrence of these types and exposure to them; and

2. Complying with **Standard Precautions** (see Section IV).
POLICY STATEMENTS

1. Departments/wards/units shall institute as many engineering and work practice controls as possible to eliminate or minimise employee exposure to blood, and body fluids.

2. All health care workers shall be knowledgeable about specific operating procedures pertinent to their work area.

3. All supervisors shall be responsible for informing health care workers of any special precautions pertinent to their area of work.

4. All health care workers shall use Engineering Controls and comply with Standard Precautions and Work Practice Controls.

5. All health care facilities shall have in place Post-Exposure Prophylaxis (PEP) procedures. These procedures shall be consistent with procedures for other workplace accidents/incidents and shall utilise existing mechanism for treatment, compensation, rehabilitation, retraining and long-term follow-up of employees injured at work.

6. All health care workers shall comply with these guidelines.

7. All health care workers shall immediately report an incident of contact with blood or other potentially infectious material sustained during the course of occupational duties, according to the Post-Exposure Prophylaxis procedure, which follows. Supervisors are responsible for posting this procedure.

8. Health care workers who experienced injuries and exposures to blood or other potentially infectious material shall be given first aid immediately after occurrence.

9. HBV vaccine shall be offered at health care facility’s expense, to all health care workers whose occupational tasks place them at risk of exposure to blood or other potentially infectious material.

10. Susceptible and infectious workers, including pregnant women, shall not care for patients with chickenpox, herpes zoster, or rubella.

11. Responsibility for compliance with the infection prevention and control polices and guidelines including the Post-Exposure Prophylaxis rest with the supervisor and individual employee.
METHODS OF COMPLIANCE

The following are methods aimed at eliminating or minimising exposure to bloodborne pathogens:

2. Training in infection prevention and control policies and guidelines including Standard Precautions.
3. Complying with the hierarchy of controls:
   - Elimination of Hazards
   - Engineering Controls
   - Administrative Controls
   - Work Practice Controls
   - Personal Protective Equipment (PPE).
4. Implementing appropriate housekeeping procedures.
5. Responsibility of all health care workers.

1. Training
   - It is essential that all health care workers receive initial and ongoing training in infection prevention and control to enable them to perform their duties safely.
   - A goal of training is to enable health care workers anticipate and manage situations in which they may be exposed to infectious micro-organisms such as HIV or HBV.
   - It is also important that all health care workers have access to appropriate professional counselling, and follow-up services after any possible and definite exposures to blood, and body fluids.

2. Hierarchy of Controls
   - Elimination of hazards: Include removal of all hazards from the workplace. Examples include eliminating all unnecessary injections, use of needleless intravenous systems.
   - Engineering Controls: Are used to eliminate or minimise employee exposure to blood, and body fluids, and for disposal of biohazard wastes, etc. Engineering controls used throughout a health care facility include:
(a) Hand hygiene facilities, readily accessible to staff wherever occupational exposure may occur (soap, running water, paper towels, bin for disposal of used towels, alcohol-based handrub products).

(b) Re-use prevention syringes and needles.

(c) Puncture-resistant, leak-proof sharps containers, labelled or colour-coded, and located as close as possible to their places of use;

(d) Leak-proof containers for specimens and other regulated wastes properly labelled or colour-coded.

(e) Mechanical pipettes. Pipetting by mouth is prohibited.

(f) Laboratory equipment specific to the type of work involved.

(g) It is recommended that all departments shall have a first aid kit, which is easily accessible, and contain a disinfectant.

3. Administrative Controls: Include policies aimed at limiting exposure to the hazard, such as the use of Standard Precautions.

4. Work Practice Controls: Are safe work procedures developed within the framework of:

- Risk identification
- Risk assessment
- Risk control.

The implementation of effective controls impact on many areas in the workplace, such as:

- Effective signage at strategic locations to reinforce consistent adherence to infection prevention and control and risk management.
- Selection and purchasing of supplies and equipment
- Staffing
- Policies and procedures in the workplace
- Provision of information and training
- Recording and monitoring of exposures to blood and body fluids.
The following work practice controls are part of the Standard Precautions for bloodborne pathogens compliance guidelines:

(a) Eating, drinking, smoking, applying cosmetics, and handling contact lenses are prohibited in the work areas and/or work surfaces that carry an inherent potential for contamination. Food and drink shall not be stored in refrigerators, freezers, or cabinets where blood or other potentially infectious material is stored. Such storage equipment must be clearly labelled to prevent this possibility.

(b) Hands and other skin surfaces contaminated with blood or other potentially infectious materials shall be washed immediately and thoroughly with soap and running water.

(c) Mucous membranes, if contaminated, shall be washed thoroughly with water.

(d) All persons who have open wounds or weeping skin rashes shall refrain from all direct patient care, potentially hazardous laboratory procedures and from handling patient-care equipment until the condition resolves. Cuts or abrasions shall be protected with a waterproof dressing and gloves prior to performing any procedure involving contact with blood and other potentially infectious material.

(e) Pregnant women shall be especially familiar with and strictly adhere to Standard Precautions. Infection in mother places the foetus at risk of acquiring the infection.

4. **Personal Protective Equipment** (see Section IV: Standard Precautions).

5. **Infectious Waste Disposal** (see Section IX: Health Care Facility Waste Management).
POST-EXPOSURE PROPHYLAXIS (PEP)

1. High-risk Procedures
   - All invasive procedures
   - Blood taking
   - Suturing
   - Giving injections
   - Inadequate disposal of sharps.

2. Prevention
   - Training of health care workers in Standard Precautions
   - Application of Standard Precautions (see Section IV)
   - Hierarchy of controls
   - Availability and use of appropriate supplies and equipment
   - Surveillance of work practices.

3. Guidelines
   The post-exposure guidelines should address:
   - Immediate action
   - Follow-up action
   - Record keeping with standardized codes
   - Confidentiality.
NATIONAL POST-EXPOSURE PROPHYLAXIS*

Post-Exposure Prophylaxis works best within the first 3 to 24 hours after the accident occurred. It can also be started up to 72 hours after the accident, but is not effective after that.

**ACTION TO BE TAKEN AFTER EXPOSURE**
Immediately encourage site bleeding while washing the wound and skin sites exposed to blood or body fluids. Wash with soap and water or other antiseptics.

<table>
<thead>
<tr>
<th>LEVELS OF RISK</th>
<th>ACTION</th>
</tr>
</thead>
</table>
| **LOW**
Exposure to body fluids or secretions from a potential source of HIV infection without any muco-cutaneous penetration | Counselling, and follow-up for 4 weeks (no antiretroviral treatment) |
| **MEDIUM**
Exposure to moderate quantity of body fluids or secretions from a potential source of HIV infection with superficial muco-cutaneous penetration (e.g., needle stick injuries). | Administer:
  - AZT 300 mg x bid + 3TC 150 mg x bid daily for 4 weeks |
| **HIGH**
Exposure to large body fluids or secretions from a potential source of HIV infection with deep muco-cutaneous penetration | Administer:
  - AZT 300 mg x bid + 3TC 150 mg x bid + Nelfinavir 1250 mg x bid daily for 4 weeks **OR**
  - AZT 300 mg x bid 3TC 150 mg x bid + Indinavir 800 mg x bid daily for 4 weeks **OR**
  - AZT 300 mg x bid 3TC 150 mg x bid + Efavirenz 600 mg at bedtime, daily for 4 weeks |
SCENARIOS FOR MODERATE AND HIGH RISK LEVELS

**SCENARIO 1:** After prescribing the ARV treatment for moderate and high risk cases, undertake voluntary counselling and testing for both the exposed individual and the potential source of HIV infection to establish the baseline serological status for both individuals.

**SCENARIO 2:** Where the two individuals are HIV negative, stop the treatment and re-evaluate for HIV anti-bodies the situation in 3 and 6 months, with ongoing counselling and psychological support.

**SCENARIO 3:** Where the source is HIV positive and the exposed individual is HIV negative, continue the treatment and do a follow-up check for HIV anti-bodies in 1 month, 3 months and 6 months, with ongoing counselling and psychological support.

**SCENARIO 4:** Where the exposed individual and/or the potential source of HIV infection refuse to be tested, continue the post exposure prophylaxis treatment for the exposed individual based on the level of the risk. Stop the treatment at the end of four weeks, with ongoing counselling and psychological support.

**SCENARIO 5:** Where the source and the exposed individuals are HIV positive, stop the post exposure prophylaxis treatment and refer them to an HIV/AIDS treatment centre where they can be evaluated and managed adequately, based on the Caribbean Epidemiology Centre/Pan American Health Organization (CAREC/PAHO) regional norms for ARV treatment, using the basic criteria for inclusion.

**Record Keeping**

The employee completes the Accidents/Incidents and Spills Form (see Accidents/Incidents & Spills Form and Appendix 5).

**Confidentiality**

As with all medical information, the information is confidential. Information is disclosed only with the health care worker’s signed consent.

**IMPORTANT LABORATORY MARKERS TO BE MONITORED**

1. Haemoglobin
2. Kidney and Liver Functions

Source: * Ministry of Health, Trinidad & Tobago.*
## ACCIDENTS/INCIDENTS AND SPILLS REPORT FORM*

**PLEASE COMPLETE THIS FORM AND RETURN TO THE SUPERVISOR**

### PERSONAL INFORMATION

Name: _______________________________ Date of Birth (dd/mm/yy) ________________

Address: ______________________________ Home Phone #: ______________________

Department: __________________________ Work Phone #: ______________________

Employment category: Staff ( ) Student ( ) Visitor ( ) Contractor ( ) Other ( ) __________

Occupational Title: (e.g. technician, electrician, professor, etc.) ______________________

Supervisor’s Name: ________________________________

### STATEMENT OF ACCIDENT/INCIDENT or SPILL

Date of Accident/Incident or Spill: _______________ Time: __________am/pm

Location of Accident/Incident/Spill: ________________________________

Type of injury: (e.g. cut, fracture, puncture, etc.) ________________________________

Treatment of Injury or Exposure: (e.g. first aid, medical treatment, lost work days):

____________________________________________________________________________

Name of person rendering treatment, if any: ________________________________

Worker’s compensation report filed? Yes ( ) No ( )

Did any defects of equipment/tools contribute to this accident/incident or spill? Yes ( ) No ( )

Was there any property/equipment damage? Yes ( ) No ( )

Was the correct equipment/tool/material used? Yes ( ) No ( )

What environmental, if any, conditions were contributing factors? (e.g. slippery floors, noise level, illumination, etc.) ________________________________

Was lack of person protective equipment or safety controls a contributing factor in this accident/incident/spill? Yes ( ) No ( )

Explain: ____________________________________________________________________

____________________________________________________________________________

Was adequate emergency equipment available? Yes ( ) No ( )

Was training in accident prevention given to the injured employee prior to duties performed at the time of the incident? Yes ( ) No ( )
Specify:
________________________________________________________________________________
________________________________________________________________________________
________________________________________________________________________________

Describe how this accident/incident or spill occurred and the remedial actions (if a spill, list the name of the material and quantities released).
________________________________________________________________________________
________________________________________________________________________________
________________________________________________________________________________
________________________________________________________________________________
________________________________________________________________________________

What preventive measures will be taken to avoid a reoccurrence of this accident/incident or spill?
________________________________________________________________________________
________________________________________________________________________________
________________________________________________________________________________
________________________________________________________________________________
________________________________________________________________________________
________________________________________________________________________________

The undersigns agree to the accuracy of this report and the preventive measures.

Supervisor’s Signature: _____________________________ Date: _____________________

Employee’s Signature: ______________________________    Date: _____________________

Reviewed by Medical Director and/or Physician-In-Charge of Clinic

Director’s Signature: _______________________________    Date: _______________________

Comments:
________________________________________________________________________________
________________________________________________________________________________
________________________________________________________________________________

LABORATORY BIOSAFETY

INTRODUCTION

The primary goal of this section is to provide basic information on laboratory biosafety. More in-depth information can be found in manuals detailing the subject.

POLICY STATEMENTS*

1. All laboratory personnel and others whose work requires them to enter the laboratory shall be knowledgeable about the chemical and biological hazards with which they will come in contact through their normal work in the laboratory, and be trained in appropriate safety precautions and procedures.

2. All situations in the laboratory that should be dealt with as an emergency shall be clearly identified, and made known to all employees of the laboratory.

3. All laboratory employees shall be competently trained to deal with emergency procedures.

4. All laboratories shall have clear written procedures for dealing with spillages or other accidental contamination.

5. The laboratory shall be kept neat, orderly and clean, and storage of materials not pertinent to the work shall be minimised.

6. Protective laboratory clothing (uniforms, coats, gowns) shall be made available, and worn properly by all personnel including visitors, trainees, and others entering or working in the laboratory. Protective laboratory clothing shall not be worn in non-laboratory areas. Suitable footwear with closed toes and heels and preferably with non-slip soles shall be worn in all laboratory areas.

7. Safety face and eyewear, (e.g., glasses, goggles, face shields, or other protective devices) shall be worn when necessary to protect the face and eyes from splashes, impacting objects, harmful substances, UV light, or other rays.

8. Eating, drinking, smoking, storing food or utensils, applying cosmetics, and inserting or removing contact lenses shall not be permitted in any laboratory work area. Contact lenses shall be worn only when other forms of corrective eyewear are not suitable, and always with goggles.

9. Long hair shall be tied back or restrained.

10. Oral pipetting is prohibited in any laboratory.

11. Hypodermic needles and syringes shall be used only for parenteral injection and aspiration of fluids from laboratory animals and diaphragm bottles. Extreme caution shall be used when handling needles and syringes to avoid auto-inoculation and the generation of aerosols during use and disposal. Needles shall not be bent or re-capped, and shall be promptly placed in a puncture-resistant container for disposal (see Section IV: Standard Precautions).

12. Gloves shall be worn for all procedures that might involve direct skin contact with toxins, blood, infectious materials, or infected animals. Gloves shall be removed carefully and decontaminated with other laboratory wastes before disposal. Reusable gloves shall be appropriately decontaminated.

13. Hands shall be washed before leaving the laboratory and at any time after handling materials known or suspected to be contaminated, and after removal of gloves.

14. Work surfaces shall be cleaned and decontaminated with suitable disinfectant at the end of the day and after any spill of potentially dangerous material. Loose or cracked work surfaces should be replaced.

15. All technical procedures shall be performed in a manner that minimises the creation of aerosols.

16. All contaminated or infectious liquid or solid materials shall be decontaminated before disposal or reuse. Contaminated materials that are to be autoclaved or incinerated at a site away from the laboratory shall have the outside disinfected chemically or be double-bagged and then transported to the autoclave or incinerator in durable leak-proof containers which are closed and wiped on the outside with disinfectant before being removed from the laboratory.

17. Access to the laboratory shall be severely restricted at Levels 3 and 4. Decisions on entry into Levels 1 and 2 laboratories shall be at the discretion of the principal investigator (e.g. only persons who have been advised of the potential hazards and meet any specific requirements such as immunisation shall be allowed to enter the laboratory area).

18. Hazard warning signs shall be posted outside laboratories operating at Levels 2, 3 or 4. Where the infectious agent(s) used in the laboratory require special provisions for entry, the relevant information shall be included in the sign.
19. All spills, accidents/incidents and overt or potential exposures shall be reported in writing to the supervisor. The Accident/Incident Spill Report Form and Post-Exposure Form shall be completed. Appropriate medical evaluation, surveillance, and treatment shall be provided as required.

20. Laboratory personnel shall be protected against relevant infection by immunisation where possible and show immunity.

**CLASSIFICATION OF BIOLOGICAL AGENTS**

The inherent risks of a pathogen are judged according to:

- The severity of the disease it causes
- Routes of infection
- Its virulence and infectivity
- Existence of effective therapies
- Immunisation
- Presence or absence of vectors.

Biological agents are classified into four (4) risk groups, which primarily reflect the judgements made on their inherent risk. There are four (4) corresponding levels of containment. Table 19 summarizes the risk groups and levels of containment.

Sources: **Health Canada. Laboratory biosafety guidelines.**
http://www.hc-sc.gc.ca/hpb/lcdc/biosafty/docs/lbg4_e.html

*Biosafety guidelines.* http://duke.usask.ca/~whiterv/bioman3e.html
### Table 19: Summary of Risk Groups and Levels of Containment *

<table>
<thead>
<tr>
<th>Risk Group</th>
<th>Containment Level</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1</strong></td>
<td>• Good microbiological practice recommended for all work with microorganisms. This should minimise risks for inadvertently culturing pathogenic organisms or non-pathogenic organisms proving harmful.</td>
</tr>
<tr>
<td></td>
<td>• Agents most unlikely to cause human disease.</td>
</tr>
<tr>
<td><strong>2</strong></td>
<td>• Good microbiological practice mandatory.</td>
</tr>
<tr>
<td></td>
<td>• Agents that may cause human disease and may be a hazard to laboratory workers but unlikely to spread to community.</td>
</tr>
<tr>
<td></td>
<td>• May be high risk of spread to community.</td>
</tr>
<tr>
<td></td>
<td>• Laboratory exposure rarely produces infection.</td>
</tr>
<tr>
<td></td>
<td>• Effective prophylaxis or treatments are usually available.</td>
</tr>
<tr>
<td><strong>3</strong></td>
<td>• Risks of airborne contamination reduced by working in safety cabinets (usually open fronted).</td>
</tr>
<tr>
<td></td>
<td>• Agents that may cause serious human disease and may be a hazard to laboratory workers.</td>
</tr>
<tr>
<td></td>
<td>• May be high risk of spread to community.</td>
</tr>
<tr>
<td></td>
<td>• Effective prophylaxis is usually available.</td>
</tr>
<tr>
<td><strong>4</strong></td>
<td>• Work performed in closed cabinets in maximum containment laboratories.</td>
</tr>
<tr>
<td></td>
<td>• Agents that cause severe human disease and are a serious hazard to laboratory workers.</td>
</tr>
<tr>
<td></td>
<td>• May be high risk of spread to the community.</td>
</tr>
<tr>
<td></td>
<td>• Usually no effective prophylaxis or treatment available.</td>
</tr>
</tbody>
</table>

Source: * [http://www.soton.ac.uk/~safety/GuidelinesforHandlingMicroorganisms.html](http://www.soton.ac.uk/~safety/GuidelinesforHandlingMicroorganisms.html)
A. BIOLOGICAL SPILLS

Biological spills outside biological safety cabinets will generate aerosols that can be dispersed in the air throughout the laboratory. These spills can be very serious if they involve micro-organisms that require Level 3 Containment, since most of these agents have the potential for transmitting disease by infectious aerosols. To reduce the risk of inhalation exposure in such an accident, occupants should leave the laboratory immediately. The laboratory should not be re-entered to decontaminate or clean up the spill for at least 30 minutes. During this time the aerosol may be removed from the laboratory via the exhaust ventilation systems, such as biological safety cabinets or chemical fume hoods, if present (see Table 20 page for cleaning and disinfection in the laboratory).

1. Spills on the Body
   - Remove contaminated clothing.
   - Wash exposed area vigorously with soap and running water for one minute.
   - Obtain medical attention (if necessary).
   - Report the incident to the laboratory supervisor.

2. Biosafety Level 1 Organism Spill
   - Wear disposable gloves.
   - Soak paper towels in disinfectant and place over spill.
   - Place towels in a plastic bag for disposal.
   - Clean up spill area with fresh towels soaked in disinfectant.

3. Biosafety Level 2 Organism Spill
   - Alert people in immediate area of spill.
   - Put on personal protective equipment. This may include a laboratory coat with long sleeves; back fastening gown or jumpsuit, disposable gloves, disposable shoe covers, safety goggles, mask or full-face shield.
   - Cover spill with paper towels or other absorbent materials.
• Pour a freshly prepared 1:10 dilution of household bleach around the edges of the spill and then into the spill. Avoid splashing (see Section VIII: Housekeeping).

• Allow a 20-minute contact period.

• Clean up the spill area with fresh towels soaked in disinfectant, after the spill has been absorbed.

• Place towels in a plastic bag and incinerate or burn.

4. Biosafety Level 3 Organism Spill

• Attend to injured or contaminated persons and remove them from exposure.

• Alert people in the laboratory to evacuate.

• Close doors to affected area.

• Call appropriate emergency number for emergency response.

• Have a person knowledgeable of the incident/accident and laboratory assist emergency personnel on arrival.

5. Biosafety Level 4 Organism Spill

(Refer to WHO, USDHHS, CDC. *Infection control for viral haemorrhagic fevers in African health care settings*. WHO/EMC/ESR/98.2).

B. CYTOTOXIC/ANTINEOPLASTIC SPILLS

1. General Procedures

• Follow appropriate guidelines established by the laboratory.

• Clean up immediately spills and breakages of cytotoxic/antineoplastic drugs.

• Remove broken glass carefully.

• Identify spill with a warning sign so that other persons in the area will not be contaminated.

2. Personnel Contamination

• Remove the gloves or gown immediately.
- Wash the affected skin area immediately with soap (not germicidal cleanser) and running water. For eye exposure, immediately flood the affected eye with water or normal saline designated for the purpose for at least five minutes.

- Obtain medical attention immediately.

3. Clean-up of Small Spills

- Clean immediately spills of less than 5 ml. or 5 gm. outside a hood.

- Wear gowns, double surgical latex gloves and eye protection for procedure.

- Wipe up liquid with absorbent gauze pads. Wipe solids with wet absorbent gauze. Then clean the spill areas (three times) using a detergent solution followed by clean water.

- Place broken glass fragments in a small cardboard or plastic container and then into a disposal bag, along with the used absorbent pads and any non-cleanable contaminated items.

- Place reusable glassware or other contaminated items in a plastic bag and wash in a sink with detergent by a trained employee wearing double surgical latex gloves.

4. Clean-up of Large Spills

For spills of amounts larger than 5 ml. or 5 gm. the spread should be limited by gently covering with absorbent sheets of spills-control pads or pillows or, if a powder is involved, with damp cloths or towels. Be sure not to generate aerosols.

- Access to the spill areas should be restricted.

- Wear personal protective equipment with the addition of a respirator when there is any danger of airborne powder or an aerosol being generated. The dispersal of particles into surrounding air and the possibility of inhalation is a serious matter and should be treated as such.

- Chemical inactivators, with the exception of sodium thiosulfate, which can be used safely to inactive nitrogen mustard, may produce hazardous by-products and should not be applied to the spilled drug.

- Clean all contaminated surfaces with detergent solution and then wipe with clean water. All contaminated absorbents and other materials should be disposed of in the disposal bag.
5. **Spills in Hoods**

If the spill occurred in a glove box, clean bench or biological safety cabinet, the filter contained in the cabinet is more than likely contaminated. Label the unit “Do Not Use – Contaminated with *(name of substance)*”. The filter and filter cabinet must be decontaminated and the filter changed and properly disposed of. This procedure may require the services of an outside contractor trained in the use of specialised personal protective equipment.

6. **Waste Disposal**

(see Section IX: Health Care Facility Waste Management).

C. **BLOOD SPILLS**

(see Sections VI: Standard Precautions and Section VIII: Housekeeping).

D. **BROKEN GLASS**

1. Contain the area.
2. Do not pick up broken glass with bare or unprotected hands.
3. Use mechanical means (tongs, brush and dust pan) to clean up broken glass.
4. Remove broken glass in sinks by using tongs for large pieces and cotton held by tongs for small pieces and slivers.
5. Place all the recovered broken glass into the broken glass puncture-resistant container, and disposed of as biohazard waste.
6. Disinfect area with 0.5% sodium hypochlorite.
7. Complete an incident form, documenting the circumstance of the incident.

E. **LEAKING COMPRESSED GAS CYLINDERS**

Occasionally, a cylinder or one of its component parts develops a leak. Many such leaks occur at the top of the cylinder in areas such as the valve threads, safety device, valve stem, and valve outlet.
If a leak is suspected, do not use a flame for detection; rather, a flammable gas leak detector or soapy water or other suitable “snoop” solution should be used. If the leak cannot be remedied by tightening a valve gland or a packing nut, emergency action procedures should be effected.

Laboratory workers should never attempt to repair a leak at the valve threads or safety device; rather, they should consult with the supplier for instructions.

If the substance in the compressed gas cylinder is not inert or is hazardous, then use the procedures for “Chemical Spills”.

If the substance in the compressed gas cylinder is inert, or non-hazardous contact the supplier for instructions.
### Table 20: Cleaning and Disinfection in the Laboratory

<table>
<thead>
<tr>
<th>Item</th>
<th>Agent</th>
<th>Procedure/Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Equipment</strong></td>
<td></td>
<td><strong>All disposables must be discarded in black bags or sharps containers and incinerated.</strong></td>
</tr>
<tr>
<td></td>
<td><strong>• Disinfect according to manufacturer’s instructions.</strong></td>
<td><strong>• Equipment, which has become contaminated, must be rendered safe to handle before it is thrown away or washed and used again.</strong></td>
</tr>
<tr>
<td>Blood analyser</td>
<td>For routine use:</td>
<td><strong>• Wipe with tissue or cotton wool soaked in alcohol at the end of the day.</strong></td>
</tr>
<tr>
<td>Centrifuges</td>
<td><strong>• Methylated spirit.</strong></td>
<td><strong>After breakages:</strong></td>
</tr>
<tr>
<td></td>
<td><strong>• POASB 1%.</strong></td>
<td><strong>• Flood affected area with disinfectant. Leave for no longer than 10 minutes.</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>• Remove with tissue or cotton wool and rinse with clean water.</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>• Dry thoroughly.</strong></td>
</tr>
<tr>
<td>Laboratory discard jars</td>
<td><strong>• Sodium hypochlorite 0.25% (2500 ppm). OR</strong></td>
<td><strong>Soak in disinfectant for a minimum of 10 minutes, wash thoroughly.</strong></td>
</tr>
<tr>
<td>(Collect only reusable glassware</td>
<td><strong>• POASB 1%.</strong></td>
<td><strong>Do not</strong> soak metal instruments longer than the recommended time as they will corrode (autoclave if possible).</td>
</tr>
<tr>
<td>and instruments)</td>
<td></td>
<td><strong>• Rinse thoroughly first with tap water.</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Never top-up discard jars.</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Use ‘in-use’ disinfectant test to monitor effectiveness of disinfectant as level of organic matter will vary daily</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>• Wash container thoroughly after use.</strong></td>
</tr>
<tr>
<td>Other laboratory glassware and</td>
<td><strong>• Steam sterilise where possible to render glassware safe to handle. If disinfection is necessary use:</strong></td>
<td><strong>Soak equipment for at least 30 minutes.</strong></td>
</tr>
<tr>
<td>instruments</td>
<td><strong>• Sodium hypochlorite.</strong></td>
<td><strong>Rinse clean according to laboratory requirements.</strong></td>
</tr>
<tr>
<td></td>
<td><strong>• 0.25% (2500 ppm). OR</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>• POASB 1%.</strong></td>
<td></td>
</tr>
</tbody>
</table>
Table 20: (cont’d)
Cleaning and Disinfection in the Laboratory

<table>
<thead>
<tr>
<th>Item</th>
<th>Agent</th>
<th>Procedure/Remarks</th>
</tr>
</thead>
</table>
| Safety cabinet  | • Sodium hypochlorite 0.5%.  
                   | • POASB 1%.             | • Ensure cabinet is sited correctly. If not, it will not function effectively.                                                                     |
|                 | • To treat spills, refer to policy. | • Wipe bench and inner walls at end of every day.                                                                                                   |
|                 | • If cultures inoculated in the cabinet are consistently contaminated fumigate with formaldehyde. | • Check air-flow regularly and change filters as per manufacturer’s instructions.                                                                    |
|                 |                        | • Fumigate only if absolutely necessary and before filters are changed.                                                                             |
|                 |                        | • Fumigation is a high-risk procedure and should be supervised by experienced personnel.                                                            |
|                 | ENVIRONMENT (refer to Section VIII: Housekeeping) |                                                                                                                                                    |
| Bench tops      | • Sodium hypochlorite 0.5%.  
                   | • POASB 1%.             | • Wipe at the end of each day or as necessary.                                                                                                       |
| Floors          | • To treat spills refer to policy. | • Walls adjacent to bench top that may come into contact with contaminated aerosols should be disinfected at the same time.                       |
| Walls           | • Liquid detergent and water. | • Wash floors daily and as necessary.                                                                                                               |
|                 | • To treat spills refer to policy. | • Wash walls weekly.                                                                                                                                 |

EMERGENCIES

A. MEDICAL

- Personal injury is not uncommon in laboratories. These injuries are usually minor cuts or burns but can be as severe as acute effects of chemical exposure or incidents such as heart attacks or strokes.

- The initial responsibility for first aid rests with the first person(s) at the scene, who should react quickly but in a calm and reassuring manner. The person assuming responsibility should immediately summon medical help (be explicit in reporting suspected types of injury or illness, location of victim, and type of assistance required), and send people to meet the ambulance crew at likely entrances of the building. The injured person should not be moved except where necessary to prevent further injury.

- The names of persons in the area trained in CPR and First Aid should be posted by the telephone.

- The number to call for medical emergencies shall also be posted by the telephone.

- All first aid, chemical exposures and medical emergencies, shall be reported as required for “Accident/Incident Reporting”.

- Prevention of injuries should be a major emphasis of any laboratory safety programme.

- Proper training will help prevent injuries from glassware, toxic chemicals, burns and electrical shock. In the event of any type of injury beyond that which first aid can treat, call the emergency number for medical assistance.

B. GENERAL FIRST AID

1. First aid is defined as any one-time treatment and any follow-up visit for the purpose of observation, treatment of minor scratches, cuts, burns, splinters, and so forth, which do not ordinarily require medical care.

2. First aid equipment should be readily available in each laboratory.

3. Following any first aid, a nurse or physician qualified to handle chemical emergencies should provide further examination and treatment.
4. It is recommended that each laboratory have at least one person trained in basic first aid and cardiopulmonary resuscitation.

5. Someone knowledgeable about the accident/incident should always accompany the injured person to the medical facility.

6. Minor injuries requiring first aid should always be reported to a supervisor and recorded on an Injury/Exposure Report Form. Reasons for this are as follows:
   - A minor injury may indicate a hazardous situation, which should be corrected to prevent a serious future injury.
   - It is important to document a minor injury as having been “work related” if the injury later leads to serious complications, such as from an infected cut.

**Personal Protection During First Aid**

1. Persons responding to a medical emergency shall adhere to Standard Precautions.

2. For most situations in which first aid is given, the following guidelines should be adequate:
   - For bleeding control with *minimal bleeding* and for handling and cleaning instruments with microbial contamination, disposable gloves alone should be sufficient.
   - For bleeding control with *spurting blood*, disposable gloves, a gown, a mask and protective eye wear are recommended.
   - For measuring temperature or measuring blood pressure, no protection is required.

3. After emergency care has been administered, hands and other skin surfaces shall be washed immediately and thoroughly with soap under running water and dried with disposable towels. Hands should always be washed after gloves are removed, even if the gloves appear to be intact.

**C. FIRES**

Fires are a common emergency in a chemistry laboratory. In the event of a fire do the following:

1. Assist any person in immediate danger to safety, if it can be accomplished without risk to oneself.

2. Immediately activate the building fire alarm system.
3. If the fire is small, use a nearby fire extinguisher to control and extinguish the fire. **Do not** fight the fire if the following conditions exist:
   - The fire is too large or out of control.
   - If the atmosphere is toxic.

4. If the first attempts to put out the fire do not succeed, evacuate the building immediately.

5. Doors, and if possible, windows, must be closed as the last person leaves a room or areas of a laboratory.

6. **Do not** use elevators, use building stairwells.

7. When the fire alarm sound is heard, all personnel in the affected areas must evacuate the building immediately.

8. Upon evacuating the building, personnel must proceed to the designated meeting area (at least 150 feet from the affected building) where the supervisors are responsible for taking a head count and accounting for all personnel.

9. No personnel will be allowed to re-enter the building without permission of the Fire Department.

10. All fires must be reported to the Environmental Health Services. The Environmental Health Services will investigate all fires.

**D. BIOLOGICAL TERRORISM**

The key to biological terrorism is knowledge of the major terrorist biological agents and the basic infection prevention and control precautions required for each:

- Smallpox
- Pneumonic Plague
- Anthrax: inhalation, cutaneous, gastro-intestinal
- Botulism.

**E. ACCIDENT/INCIDENT REPORTING**

**All** injuries shall be reported to laboratory management and Environmental Health Services personnel. Minor injuries can sometimes lead to more serious complications that only become
evident at a later time. In addition, safety and management personnel should investigate all minor accidents. Taking corrective action as a result of minor accident may keep a major incident from happening. Without knowledge of all minor accidents, the desirable investigation is circumvented.

Employees should understand that the purpose of reporting and documenting accidents is not to affix blame, but instead to determine the cause of the accident/incident so that similar accidents/incidents may be prevented in the future.

If the accident/incident involves overexposure to hazardous materials, an Employee Exposure Report should also be prepared and forwarded to Environmental Health Services.
The rapid emergence and dissemination of antibiotic resistant organism (ARO) in hospital worldwide have their origins in at least two major problem areas for infection prevention and control, namely antibiotic misuse and lapses in basic infection prevention and control practices.

1. **Emerging Patterns of Antibiotic Resistance**

According to the literature, the appearance of methicillin-resistance in both *Staphylococcus aureus* (MRSA) and coagulase-negative staphylococci, followed by penicillin resistance in enterococci, has left Vancomycin as the sole effective prophylactic and therapeutic agent for many infections caused by these organisms. Vancomycin use increased further following the discovery that oral Vancomycin is effective therapy against *Clostridium difficile*, the cause of antibiotic-associated colitis. The widespread use of Vancomycin (and probably other antibiotics) has led to the development of enterococcal resistance (VRE) to this agent.

2. **Excessive and Inappropriate Use of Antibiotics**

Excessive and inappropriate use of antibiotics is the principal cause of the emergence of resistance. It has been estimated that 40-50 percent of antibiotic use in hospitals is inappropriate; either the clinical condition does not require antibiotics, the most effective and least expensive drug is not chosen, or the correct dosage or duration of therapy is not prescribed.

3. **Suggested Principles of Antibiotics Policies**

An antibiotic policy:

- Improves patient care by considered use of antibiotics for prophylaxis and therapy.
- Makes more efficient use of finance.
- Retards the emergence of multiple antibiotic-resistant bacteria.
- Improves education of physicians by providing guidelines for appropriate therapy.
4. **Suggested Good Practice**

- Consider whether or not the patient actually requires an antibiotic.

- In general, **do not** change antibiotic therapy if the clinical condition indicates improvement.

- If there is no clinical response in 72 hours to the clinical diagnosis, the choice of antibiotic and a secondary infection should be considered.

- Review the duration of antibiotic therapy (e.g., after 7 to 10 days).

- For surgical prophylaxis, start with the induction of anesthesia and continue for a maximum of 24 hours only.

- A list of available antibiotics agreed to by all clinicians should be available.

- Guidelines for therapy and prophylaxis should also be available.

- Laboratory testing of antibiotic susceptibility and naturally occurring resistance should be considered.

- An antibiotic policy should be included in the infection prevention and control guidelines.

- Comply with appropriate infection prevention and control policies and guidelines.
GLOSSARY
<table>
<thead>
<tr>
<th>Glossary Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Ambulatory Care</strong></td>
<td>Health services provided on an outpatient basis to those who visit a facility for care and depart on the same day.</td>
</tr>
<tr>
<td><strong>Acute Care</strong></td>
<td>A pattern of health care in which a patient is treated for a brief but severe episode of illness, for the sequelae of an accident or other trauma, or during recovery from surgery.</td>
</tr>
<tr>
<td><strong>Acute Care Facility</strong></td>
<td>A hospital where average length of stay is &lt; 30 days, and where a variety of services are provided, including surgery and intensive care.</td>
</tr>
<tr>
<td><strong>Administrative controls</strong></td>
<td>A method of controlling employee exposures through enforcement of policies and procedures, modification of work assignment, training in specific work practices, and other administrative measures designed to reduce the exposure (OSHA).</td>
</tr>
<tr>
<td><strong>Antimicrobial Resistant Organism</strong></td>
<td>A micro-organism that has developed resistance to the action of several antimicrobial agents and that is of special clinical or epidemiological significance. Organisms included in this group are MRSA, VRE, penicillin-resistant pneumococcus, certain Gram-negative bacilli resistant to all penicillin and cephalosporins, and multi-drug resistant <em>Mycobacterium tuberculosis</em>. Other microorganisms may be added to this list if antibiotic resistance is judged to be significant in a specific health care facility or patient population, at the discretion of the infection control programme or local, regional or national authorities.</td>
</tr>
<tr>
<td><strong>Antiseptic</strong></td>
<td>A product with antimicrobial activity that is designed for use on skin or other superficial tissues; removes both transient and resident flora. The term is used for preparations applied to living tissue.</td>
</tr>
<tr>
<td><strong>Asepsis</strong></td>
<td>The process of preventing the access of micro-organisms.</td>
</tr>
<tr>
<td><strong>Barrier Techniques</strong></td>
<td>Use of single rooms, gloves, masks, or gowns in health care settings to prevent transmission of micro-organisms.</td>
</tr>
<tr>
<td><strong>Biosafety</strong></td>
<td>The application of combinations of laboratory practice and</td>
</tr>
</tbody>
</table>
procedure, laboratory facilities, and safety equipment when working with potentially infectious micro-organisms.

| **Blood** | Human blood components, and products made from human blood. |
| **Bloodborne Pathogens** | Pathogenic micro-organisms that are present in human blood and can cause disease in human. These pathogens include, but are not limited to hepatitis B virus (HBV) and human immunodeficiency virus (HIV). |
| **Carrier** | An individual who is found to be persistently colonized (culture-positive) for a particular organism, at one or more body sites, but has no signs or symptoms of infection. |
| **Chemical Disinfectant** | The destruction or inhibition of most viruses and bacteria while in their active growth phase. The process does not necessarily kill all spores nor can it be verified by a monitor. |
| **Cleaning** | The physical removal of foreign material, e.g. dust, soil, organic material such as blood, secretions, excretions and micro-organisms. Cleaning physically removes rather than kill micro-organisms. It is accomplished with water, detergents and mechanical action. Cleaning agents are the most common chemicals used in housekeeping activity. |
| **Clinical Laboratory** | Workplace where diagnostic or other screening procedures are performed on blood or other potentially infectious materials. |
| **Colonisation** | Presence of micro-organisms in or on a host with growth and multiplication but without tissue invasion or cellular injury. |
| **Communicable** | Capable of being transmitted from one person to another synonymous with “infectious” and “contagious”. |
| **Community-acquired Infection** | Infection acquired outside a health care setting. |
| **Contaminated** | The presence or the reasonably anticipated presence of blood or potentially infectious materials. |
**Contaminated Laundry**
Laundry that has been soiled with blood or other potentially infectious materials.

**Contaminated Sharps**
Any contaminated object that can penetrate the skin including, but not limited to, needles, scalpels, broken glass, broken capillary tubes, and exposed ends of dental wires.

**Contamination**
The presence of micro-organisms on inanimate objects (e.g. clothing, surgical instruments) or micro-organisms transported transiently on body surface such as hands, or in substances (e.g. water, food, milk).

**Contagious**
Capable of being transmitted from one person to another; synonymous with “infectious” and “communicable”.

**Critical Items**
Instruments and devices that enter sterile tissues, including the vascular system. Clinical items present a high-risk of infection if the item is contaminated with any micro-organisms, including bacterial spores. Reprocessing critical items involves decontamination and meticulous cleaning followed by sterilisation.

**Decontamination**
The use of physical or chemical means to remove, inactivate, or destroy bloodborne pathogens on a surface or item to the point where they are no longer capable of transmitting infectious particle and the surface of the item is rendered safe for handling.

**Dental Item Classification**
The classification of dental items as critical, semi-critical, or non-critical based on the pathways through which cross-contamination may occur and the location and technique of instrument use.

**Disease**
Clinical expression of infection; signs and/or symptoms are produced.

**Disinfect**
Means to inactivate virtually all recognized pathogenic micro-organisms, but not necessary all microbial forms, on inanimate objects.

**Disinfection**
The inactivation of disease-producing micro-organisms. Disinfection does not destroy bacterial spores. Disinfectants are
used on inanimate objects; antiseptics are used on living tissue. Disinfection usually involves chemicals, heat or ultraviolet light. Levels of chemical disinfection vary with the type of product used.

**Engineering Controls**

Controls (e.g., sharps disposal containers, self-sheathing needles) that isolate or remove the bloodborne pathogens hazard from the workplace.

**Exposure**

Reasonably anticipated skin, eyes, mucous membrane, or parenteral contact with blood or other potentially infectious materials that may result from the performance of an employee’s duties. This definition excludes incidental exposures that may take place on the job, and that are neither reasonably nor routinely expected and that the worker is not required to incur in the normal course of employment.

**Exposure Incident**

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 an employee’s duties.

**Fomites**

Those objects in the inanimate environment that may become contaminated with micro-organisms and serves as a vehicle of transmission.

**Germicide**

An agent that destroys micro-organisms, especially pathogenic organisms.

**Hand Hygiene**

Performing handwashing, using an antimicrobial or plain soap under running water, or use of alcohol-based handrub; surgical hand hygiene/antisepsis CDC).

**Handwashing Facility**

A facility providing an adequate supply of running portable water, soap and towel for drying hands.

**Handwash (ing)**

A process for the removal of soil and transient micro-organisms from the hands.

**Heavy Microbial Soiling**

The presence of infection or high levels of contamination with organic material, e.g. infected wounds, faeces.
<table>
<thead>
<tr>
<th>Term</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>HBV</td>
<td>Hepatitis B virus.</td>
</tr>
<tr>
<td>HCV</td>
<td>Hepatitis C virus.</td>
</tr>
<tr>
<td>HIV</td>
<td>Human Immunodeficiency virus.</td>
</tr>
<tr>
<td>High-Level Disinfection</td>
<td>Level of disinfection required when processing semi-critical items. High-level disinfection process destroys vegetative bacteria, mycobacteria, fungi and non-enveloped (lipid) and non-enveloped (non-lipid) viruses, but not necessarily bacterial pores. High-level disinfectant chemicals also called chemisterilants) must be capable of sterilisation when contact time is extended. Items must be decontaminated and thoroughly cleaned prior to high-level disinfection.</td>
</tr>
<tr>
<td>Hospital Disinfectant</td>
<td>An agent shown to be effective against specific micro-organisms such as <em>Staphylococcus aureus</em>, <em>Salmonella choleraesuis</em> and <em>Pseudomonas aeruginosa</em>. It may also be effective against other organisms and some viruses. The labels of all commercially available hospital disinfectants contain a claim of effectiveness for specific agents.</td>
</tr>
<tr>
<td>Immunocompromised</td>
<td>Increased susceptibility to infection. In this document the term refers to patients with congenital or acquired immunodeficiency or immunodeficiency due to chemotherapeutic agents or haematological malignancies.</td>
</tr>
<tr>
<td>Infection</td>
<td>The entry and multiplication of an infectious agent in the tissues of the host (a) unapparent (asymptomatic, subclinical) infection: an infectious process running a course similar to that of clinical disease but below the threshold of clinical symptoms (b) apparent (symptomatic, clinical) infection: one resulting in clinical signs and symptoms (disease).</td>
</tr>
<tr>
<td>Infectious</td>
<td>Caused by infection or capable of being transmitted.</td>
</tr>
<tr>
<td>Infectious Tuberculosis</td>
<td>Factors related to the patient that enhance transmission and determine the patient’s level of infectivity include disease involving the lungs, airways or larynx.</td>
</tr>
<tr>
<td>Term</td>
<td>Definition</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Infection Waste</td>
<td>That portion of biomedical waste that is capable of producing infectious disease.</td>
</tr>
<tr>
<td>Intermediate-Level Disinfection</td>
<td>Level of disinfection required for some semi-critical items. Intermediate-level disinfectants kill vegetative bacteria, most viruses and most fungi but not resistant bacterial spores.</td>
</tr>
<tr>
<td>Isolation</td>
<td>The physical separation of infected individuals from those uninfected for the period of communicability of a particular disease.</td>
</tr>
<tr>
<td>Invasive Procedure</td>
<td>A surgical entry into the tissues, cavities, organs, or repair of traumatic injuries.</td>
</tr>
<tr>
<td>Long Term Care</td>
<td>The provision of health, social, personal care and housing services on a recurring or continuing basis to persons of all age groups with chronic health and mental conditions that limit their ability to carry out normal daily activities without assistance. Encompasses care in institutions, community-based settings and private homes.</td>
</tr>
<tr>
<td>Long Term Care Facility</td>
<td>Residential care that includes a variety of levels and types of care for clients who can no longer safely live at home (e.g. because of their need for medication supervision, 24 hour surveillance, assisted meal services, professional nursing care and/or supervision). Terminology varies, e.g. nursing home; chronic care hospital, extended care unit.</td>
</tr>
<tr>
<td>Low-Level Disinfection</td>
<td>Level of disinfection required when processing non-critical items or some environmental surfaces. Low-level disinfectants kill most vegetative bacteria and some fungi as well as enveloped (lipid) viruses (e.g. hepatitis B, C, Hantavirus, and HIV). Low-level disinfectants do not kill mycobacteria or bacterial spores. Low-level disinfectants-detergents are used to clean environmental surfaces.</td>
</tr>
<tr>
<td>Micro-organisms</td>
<td>Bacteria, fungi, viruses, and bacterial spores.</td>
</tr>
<tr>
<td>NaDCC</td>
<td>Sodium dichloroisocyanurate.</td>
</tr>
</tbody>
</table>
### Glossary

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Non-critical Items</strong></td>
<td>Instruments, equipment, or materials that touch only intact skin, but not mucous membrane, or do not directly touch the patient. Reprocessing of non-critical items require decontamination, cleaning and/or low-level disinfectant.</td>
</tr>
<tr>
<td><strong>Nosocomial infection</strong></td>
<td>An infection originating in the environment of a hospital that was not present or incubating at the time of patient admission.</td>
</tr>
<tr>
<td><strong>Outbreak</strong></td>
<td>An excess over the expected incidence of disease within a geographic area during a specified time period, synonymous with epidemic.</td>
</tr>
<tr>
<td><strong>Occupational Exposure</strong></td>
<td>Reasonable anticipated skin, eye, mucous membrane, or parenteral contact with blood or other potentially infectious materials that may result from the performance of an employee’s duties.</td>
</tr>
<tr>
<td><strong>Other Potentially Infectious Material</strong></td>
<td>Semen, vaginal secretions, cerebro-spinal fluid, synovial fluid, pleural fluid, pericardial fluid, peritoneal fluid, saliva in dental procedures, any body fluid that is visibly contaminated with blood, and all body fluids in situations where it is difficult or impossible to differentiate between body fluids. Any unfixed tissues or organ (other than intact skin) from a human (living or dead). HIV-contaminated cell or tissue cultures, organ cultures, and HIV or HBV-containing medium or other solutions and blood, organs, or other tissues from experimental animals infected with HIV or HBV.</td>
</tr>
<tr>
<td><strong>Parenteral</strong></td>
<td>Piercing of mucous membranes or the skin barrier through such events as needlesticks, human bites, cuts, and abrasions.</td>
</tr>
<tr>
<td><strong>Personal Protective Equipment</strong></td>
<td>Specialised clothing or equipment worn by an employee for protecting against a hazard.</td>
</tr>
<tr>
<td><strong>Physical Containment</strong></td>
<td>The containment of a micro-organism or eukaryotic cell to prevent or minimize its contact with people and/or the environment.</td>
</tr>
<tr>
<td><strong>Plain or Nonantimicrobial Soap</strong></td>
<td>Detergent-based cleanser in any form (bar, liquid, leaflet, or powder) used for the primary purpose of physical removal of soiled and contaminating micro-organisms. Such soap work</td>
</tr>
</tbody>
</table>
principally by mechanical action and have weak or no bactericidal activity. Although some soap contains low concentrations of antimicrobial ingredients, these are used as preservatives and have minimal effect on colonising flora.

**PPM**
Parts per million.

**POASB**
Peroxygen and organic acid surfactant blend.

**Precautions**
Interventions implemented to reduce the risk of transmission of micro-organisms from patient to patient, patient to health care worker and health care worker to patient.

**Research Laboratory**
A laboratory producing or using research-scale amounts of HIV or HBV. Research laboratories may produce high concentration of HIV or HBV, but not in the volume found in production laboratories.

**Regulated Waste**
Liquid or semi-liquid blood or other potentially infectious materials; contaminated items that would release blood or other potentially infectious materials and are capable of releasing these materials during handling; contaminated sharps; pathological and microbiological wastes containing blood or other potentially infectious materials.

**Sanitary Sewer System**
A sewer system connected to a sewage treatment plant.

**Semi-critical Items**
Instruments, equipment or materials that come in contact with non-intact skin or mucous membranes but ordinarily do not penetrate them. Reprocessing semi-critical items involves decontamination and meticulous cleaning followed preferably by high-level disinfection (level of disinfection required is dependent on the item. Depending on the type of item and its intended use, intermediate-level disinfection may be acceptable.

**Sharps**
Needles, syringes, blades, laboratory glass or other objects capable of causing punctures or cuts.

**Source Individual**
Any individual, living or dead, whose blood or other potentially infectious materials may be a source or occupational exposure to the employee.
<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sporicide</td>
<td>A chemical agent or thermal process that destroys bacterial spores.</td>
</tr>
<tr>
<td>Standard Precautions</td>
<td>An approach to infection prevention and control. Universally applied to all patients, regardless of infection status, to reduce the risk of blood borne pathogen transmission.</td>
</tr>
<tr>
<td>Sterilize</td>
<td>The use of a physical or chemical procedure to destroy all microbial life including highly resistant bacterial endospores.</td>
</tr>
<tr>
<td>Sterile</td>
<td>Free from all living micro-organisms.</td>
</tr>
<tr>
<td>Sterilizer or Sterilant</td>
<td>An agent intended to destroy all micro-organisms and their spores on inanimate surface.</td>
</tr>
<tr>
<td>Sterilization</td>
<td>The destruction of all forms of microbial life including bacteria, viruses, spores and fungi. Items must be decontaminated and cleaned thoroughly before effective sterilization can take place.</td>
</tr>
<tr>
<td>Universal Precautions</td>
<td>A protocol for infection prevention and control that treats all human blood and body fluids as if known to be infectious for HIV, HBV, and other blood borne pathogens.</td>
</tr>
<tr>
<td>Work Practice Controls</td>
<td>Controls that reduce the likelihood of exposure by altering the way one performs a task.</td>
</tr>
</tbody>
</table>
APPENDICES
**Appendix 1**

**GENERIC CHECKLIST FOR COMPLIANCE**

The following generic checklist has been compiled to help employers and employees comply with infection prevention and control. This checklist however, is only a guide and its use does not necessarily assure full compliance with all infection prevention and control requirements.

Department/Ward/Unit: _________________________________________________________

Charge Nurse at Time of Visit: ________________________________________________

Date and Time of Visit: ________________________________________________________

Name and Position of Auditor: _________________________________________________

<table>
<thead>
<tr>
<th>RECEPTION AREAS AND OFFICES</th>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Are the areas clean?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Are the areas debris-free?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>GROUNDS</th>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Are the grounds debris/litter free?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Are bins lined, clean, kept covered at all times?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Are outside drains clean, free of litter?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Disposal of litter:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• is garbage collected as scheduled?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• are incinerators emptied as scheduled?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• are other litter burned as stipulated?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• is the ash disposed of as stipulated?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>STANDARD PRECAUTIONS</th>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Are gloves worn when:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• direct contact with blood or body fluids is anticipated?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• during invasive procedures?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• examining non-intact skin?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• during examination of the oral cavity, GI or GU tracts?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### STANDARD PRECAUTIONS (Cont’d)

<table>
<thead>
<tr>
<th>NO.</th>
<th>Question</th>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>the health care worker has cuts, lesions or dermatitis?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>working directly with contaminated instruments?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>during phlebotomy?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Are gloves of appropriate size, material and quality?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>Are patient care gloves used only once?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>Are masks and protective eye wear (with solid side shields) worn when spraying or spattering is anticipated?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td>Are protective gowns/aprons worn when spraying or spattering is anticipated?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td>Do protective gowns prevent strike through for the procedure at hand?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9.</td>
<td>Is proper handwashing employed following exposure to blood or body fluids?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10.</td>
<td>Are facilities available to conduct proper handwashing practices?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11.</td>
<td>Are sharps containers puncture-resistant?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12.</td>
<td>Are masks and other resuscitation equipment strategically located and available to key personnel?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13.</td>
<td>Are all items of personal protective equipment removed prior to leaving the work area?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14.</td>
<td>Is there a continuous source of running water?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15.</td>
<td>All health care workers:</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Had medical examination on entry?</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Medical examinations are conducted periodically within scheduled time frames in accordance with Section V1 Sub-section E IPC Manual?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### HOUSEKEEPING, ENGINEERING AND WORK PRACTICE CONTROLS

<table>
<thead>
<tr>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Are all areas maintained in a clean and sanitary condition?</td>
<td></td>
</tr>
<tr>
<td>2. Does the cleanup of spills involving blood or body fluids employ an appropriate disinfectant?</td>
<td></td>
</tr>
<tr>
<td>3. Is soiled linen:</td>
<td></td>
</tr>
<tr>
<td>• sorted, sluiced and rinsed only in appropriate care areas (not in patient care areas)?</td>
<td></td>
</tr>
<tr>
<td>• contained at the site of use?</td>
<td></td>
</tr>
<tr>
<td>• placed in leak resistant/biodegradable bags?</td>
<td></td>
</tr>
<tr>
<td>• double-bagged?</td>
<td></td>
</tr>
<tr>
<td>4. Do infectious waste containers prevent leakage?</td>
<td></td>
</tr>
<tr>
<td>5. Is infectious waste tagged or colour-coded?</td>
<td></td>
</tr>
<tr>
<td>6. Are employees aware of the meaning of colour-codes (if used)?</td>
<td></td>
</tr>
<tr>
<td>7. Is there a written schedule for cleaning and appropriate disinfection of equipment and work surfaces?</td>
<td></td>
</tr>
<tr>
<td>8. Are cleaning schedules posted/displayed within appropriate areas?</td>
<td></td>
</tr>
<tr>
<td>9. Are broken glass, and spills involving blood or body fluids treated according to appropriate procedure?</td>
<td></td>
</tr>
</tbody>
</table>

### HEPATITIS B PROPHYLAXIS

<table>
<thead>
<tr>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Is there a Hepatitis B Virus (HBV) vaccination and post-exposure follow-up programme?</td>
<td></td>
</tr>
<tr>
<td>2. Is pre-exposure vaccine offered free of charge to all employees at risk of occupational exposure?</td>
<td></td>
</tr>
<tr>
<td>3. Is complete and detailed documentation maintained on all exposure events?</td>
<td></td>
</tr>
<tr>
<td>4. Are all employees aware of the HBV vaccination programme?</td>
<td></td>
</tr>
<tr>
<td>5. Is prescreening required before HBV vaccination is afforded?</td>
<td></td>
</tr>
</tbody>
</table>
**HEPATITIS B PROPHYLAXIS (Cont’d)**

<table>
<thead>
<tr>
<th></th>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>6. Is the declaration statement signed by all employees who choose to decline HBV vaccine?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**EDUCATION AND TRAINING**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Do all employees subject to occupational exposure:</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>receive orientation on infection prevention and control?</td>
</tr>
<tr>
<td></td>
<td>receive annual upgrades on infection prevention and control?</td>
</tr>
<tr>
<td></td>
<td>receive annual training on the epidemiology, transmission and prevention of HIV and HBV?</td>
</tr>
<tr>
<td></td>
<td>receive annual information on the location and proper use of personal protective equipment?</td>
</tr>
<tr>
<td></td>
<td>understand and employ Standard Precautions?</td>
</tr>
<tr>
<td></td>
<td>understand procedures to be followed after an exposure to blood or body fluids?</td>
</tr>
<tr>
<td></td>
<td>have access to a copy of the policy governing Post-Exposure Prophylaxis (PEP) Plan?</td>
</tr>
</tbody>
</table>

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Does new employee orientation cover all aspects of the PEP Plan?</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Are training programmes conducted in person by a qualified facilitator, with opportunity for questions?</td>
</tr>
</tbody>
</table>

**RECORD KEEPING**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Are permanent, confidential records maintained on HBV vaccination and post-exposure follow-up?</td>
<td></td>
</tr>
</tbody>
</table>

In addition to the generic checklist, which is applicable to all health care facilities, the following service specific items should be addressed by selected health care disciplines.
### RECORD KEEPING (Cont’d)

<table>
<thead>
<tr>
<th></th>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.</td>
<td>Are training records kept for at least 7–10 years?</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Do training records include date, content, identification/title of employee and identification/qualifications of the facilitator?</td>
<td></td>
</tr>
</tbody>
</table>

### OPERATING THEATRE/CENTRAL SUPPLY STERILE DEPARTMENT (CSSD)

1. Do all employees adhere to Standard Precautions?

2. Are appropriate (heavy duty) gloves provided and worn when:
   - cleaning or handling contaminated equipment and instruments?
   - processing endoscopy equipment?
   - disposing of suction container contents?
   - handling contaminated sponges, dressings and the like?
   - cleaning up blood spills?
   - during wound debridement?
   - handling linen or drapes soiled with blood or body fluids?
   - handling specimens?
   - washing instruments?

3. Is protective eye wear with solid side shields (e.g., goggles) worn when:
   - engaged in cardiovascular procedures?
   - engaged in major orthopaedic procedures other than arthroscopy and closed reductions?
   - engaged in other procedures where spattering is possible, e.g., trauma procedures, caesarean section?
   - assisting with upper/lower endoscopy?
   - during manual cleaning of instruments?
   - during post-mortem examination?
<table>
<thead>
<tr>
<th></th>
<th>OPERATING THEATRE/CENTRAL SUPPLY STERILE DEPARTMENT (CSSD) (Cont’d)</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.</td>
<td>Are gowns/aprons worn when engaged in manual cleaning of instruments?</td>
</tr>
<tr>
<td>5.</td>
<td>Are scrub gowns resistant to strikethrough for the procedure at hand?</td>
</tr>
<tr>
<td>6.</td>
<td>Have all personnel received instruction on the epidemiology, transmission and prevention of HIV and HBV infection?</td>
</tr>
<tr>
<td>7.</td>
<td>Do all employees understand the meaning of infectious waste (as defined by national regulations) and its proper disposal?</td>
</tr>
<tr>
<td>8.</td>
<td>Do employees report incidents of blood exposure (e.g., needlesticks, scalpel lacerations) to proper authorities and in a timely manner?</td>
</tr>
<tr>
<td>9.</td>
<td>Have all scrub personnel and CSSD technicians been offered pre-exposure HBV vaccine, free of charge?</td>
</tr>
<tr>
<td>10.</td>
<td>Are trolleys used for transporting sterile packages, free from dust exposure and cleaned on a daily basis?</td>
</tr>
<tr>
<td>11.</td>
<td>Are all packages of instruments labelled?</td>
</tr>
<tr>
<td>12.</td>
<td>Is spores testing conducted monthly/after down time on the autoclaves?</td>
</tr>
<tr>
<td>13.</td>
<td>Is the result/outcome of spores testing recorded, reviewed and followed-up?</td>
</tr>
<tr>
<td>14.</td>
<td>Is the chemical indicator Bowie Dick check with each run?</td>
</tr>
<tr>
<td>15.</td>
<td>Are autoclave charts reviewed by the Supervisor weekly/as necessary?</td>
</tr>
</tbody>
</table>
### INTENSIVE CARE UNIT/ACCIDENT & EMERGENCY DEPARTMENT

<table>
<thead>
<tr>
<th></th>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Do all employees adhere to Standard Precautions?</td>
<td></td>
</tr>
</tbody>
</table>
| 2. | Are gloves worn when:  
• disposing of suction container contents?  
• handling contaminated supplies, linen, or instruments?  
• handling specimens?  
• cleaning up spills of blood or body fluids?  
• working with open wounds?  
• during direct contact with blood, faeces, urine, as examples?  
• examining open lesions, cuts, rashes and the like?  
• gaining intravascular access?  
• during wound debridement? |
| 3. | Are protective gowns/aprons and protective eyewear worn when:  
• receiving trauma/accident victims?  
• involved with extensive debridement or lavage?  
• disposing of liquid infectious waste via sluice or designated dirty sink? |
<p>| 4. | Are protective gowns resistant to strikethrough for the procedure at hand? |
| 5. | Do all employees understand the meaning of infectious waste as defined by national regulations? |
| 6. | Do employees report incidents of blood exposure (e.g., needlesticks, scalpel lacerations) to proper authorities and in a timely manner (1-6 hours)? |
| 7. | Have all employees with potential for exposure to blood been offered HBV vaccine free of charge? |
| 8. | Have all personnel received instruction on the epidemiology, transmission and prevention of HIV and HBV infection? |
| 9. | Is there an effective system for registering blood and other potentially infectious material exposure? |</p>
<table>
<thead>
<tr>
<th>MEDICAL/SURGICAL UNITS</th>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Do all employees adhere to Standard Precautions?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Are gloves worn when:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• handling contaminated gauze pads, dressings?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• disposing of suction contents?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• cleaning up blood spills, body fluids?</td>
<td></td>
<td></td>
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<tr>
<td>• during dressing changes?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• during wound abridement?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• during direct contact with blood, faeces, urine?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• gaining intravascular access?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• handling linen contaminated with blood or body fluids?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• handling specimens?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Do all employees understand the meaning of infectious waste as defined by national standards?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Is infectious waste properly identified (e.g., tags or colour coded) in accordance with national regulations?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Do employees report accidents of blood exposure (e.g., needlesticks) to proper authorities and in a timely manner?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Have all personnel received instruction on the epidemiology, transmission and prevention of HIV and HBV infection?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Have all employees with the potential for exposure to blood been offered HBV vaccine free of charge?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Are protective gowns/aprons worn when disposing of liquid infectious waste via a hopper or dirty sink?</td>
<td></td>
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<tr>
<td>9. Is protective eyewear with side shields worn during pressurised wound irrigations?</td>
<td></td>
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<tr>
<td>10. Is there a written policy addressing post-exposure prophylaxis to HBV exposure?</td>
<td></td>
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</tr>
<tr>
<td>DENTAL UNITS</td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td>------------------------------------------------------------------------------</td>
<td>-----</td>
<td>----</td>
</tr>
<tr>
<td>1. Are gloves worn when:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• examining or working within the oral cavity?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• working with impressions?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• handling extracted teeth?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• cleaning/handling contaminated equipment or supplies (e.g., cotton, gauze, bibs)?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• cleaning up blood spills?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• taking intra-oral radiographs?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Are gloves disposed of after individual patient use?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Are protective gowns/aprons and eyewear with solid side shields (e.g., goggles) worn when:</td>
<td></td>
<td></td>
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<tr>
<td>• engaged in extractions or drilling?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• during the use of air/water syringes and ultrasonic scalers?</td>
<td></td>
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<tr>
<td>• during oral prophylaxis?</td>
<td></td>
<td></td>
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<tr>
<td>• during the use of grinding wheels and polishers (e.g., lathe with pumice)?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• when spraying teeth or the oral cavity?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Are rubber dams used whenever possible?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Is there policy on the practice of recapping of needles?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Is there documentation that all dental personnel have been offered HBV immunization free of charge?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Have all personnel received instruction in the epidemiology, transmission and prevention of HIV and HBV infection and bloodborne disease transmission?</td>
<td></td>
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</tr>
<tr>
<td>8. Is there a written policy addressing post-exposure prophylaxis to HBV exposure and HIV?</td>
<td></td>
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<tr>
<td>9. Is documentation of potential exposure to HBV/HIV maintained?</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>AMBULATORY SURGERY</td>
<td>YES</td>
</tr>
<tr>
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</tr>
<tr>
<td>1.</td>
<td>Do all employees adhere to Standard Precautions?</td>
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<tr>
<td>2.</td>
<td>Are gloves worn when:</td>
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<tr>
<td></td>
<td>• cleaning/handling contaminated equipment and instruments?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• handling contaminated sponges, dressings and the like?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• cleaning up blood spills, body fluids?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• processing endoscopy equipment?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• during wound debridement?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• handling linen or drapes soiled with blood or body fluids?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• handling specimens?</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Is protective eyewear with solid side shields (e.g., goggles) worn when assisting with upper/lower endoscopy, other procedures where spattering is possible, and during manual cleaning of instruments?</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Are gowns/aprons worn when engaged in manual cleaning of instruments?</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>Are scrub gowns resistant to strikethrough for the procedure at hand?</td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>Do all employees understand the meaning of infectious waste (as defined by national regulations) and its proper disposal?</td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td>Do employees report incidents of blood exposure (e.g., needlesticks, scalpel lacerations) to proper authorities and in a timely manner?</td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td>Have all personnel received instruction on the epidemiology, transmission and prevention of HIV and HBV infection?</td>
<td></td>
</tr>
<tr>
<td>9.</td>
<td>Have all employees with the potential for exposure to blood been offered HBV vaccine free of charge?</td>
<td></td>
</tr>
<tr>
<td>10.</td>
<td>Is there a written policy addressing post-exposure prophylaxis to HBV exposure?</td>
<td></td>
</tr>
<tr>
<td>11.</td>
<td>Is documentation of potential exposure to HBV/HIV maintained?</td>
<td></td>
</tr>
</tbody>
</table>
### LABORATORIES

<table>
<thead>
<tr>
<th></th>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Do all employees adhere to Standard Precautions?</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Have all employees who may come in direct contact with body fluids been educated on exposure to HBV/HIV?</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Is smoking, eating and drinking prohibited in all technical areas of the laboratory?</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Is the application of cosmetics by laboratory personnel banned in all technical areas?</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>Are specimens received in a safe condition? (Secured containers that have been appropriately packaged for transport)</td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>Are specimens unpacked with care and attention to possible breakage and leakage?</td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td>Are gloves worn for unpacking specimens and for blood and body fluids testing?</td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td>Have employees been instructed in the proper use and care of disposable gloves? (The need for proper fitting gloves, to replace gloves when torn and to avoid washing or disinfecting gloves for reuse).</td>
<td></td>
</tr>
<tr>
<td>9.</td>
<td>Are workbenches decontaminated with an appropriate disinfectant on a daily basis?</td>
<td></td>
</tr>
<tr>
<td>10.</td>
<td>Is there a written procedure for prohibiting the recapping, bending or other hand manipulations of hypodermic needles?</td>
<td></td>
</tr>
<tr>
<td>11.</td>
<td>Are employees trained to use syringes and other bloodletting devices in a manner that is safe and minimizes injury?</td>
<td></td>
</tr>
<tr>
<td>12.</td>
<td>Are needles stored so that they are inaccessible to unauthorised persons?</td>
<td></td>
</tr>
<tr>
<td>13.</td>
<td>Are all sharps (bloodletting devices) used only once?</td>
<td></td>
</tr>
<tr>
<td>14.</td>
<td>Have facilities (i.e., destructor clips) been provided for the safe disposal of needles and other sharps?</td>
<td></td>
</tr>
<tr>
<td>15.</td>
<td>Are the containers for all bloodletting devices easily accessible, labeled, liquid and puncture-proof?</td>
<td></td>
</tr>
<tr>
<td>16.</td>
<td>Do discarded infectious materials, i.e. cultures accumulate on benches and other places?</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>YES</td>
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<td>---</td>
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</tr>
<tr>
<td>17.</td>
<td>Are all infectious wastes, glassware, blood tubes, specimens, etc., discarded into biohazard-labeled containers?</td>
<td></td>
</tr>
<tr>
<td>18.</td>
<td>Are discarded infectious materials removed daily or more often as needed?</td>
<td></td>
</tr>
<tr>
<td>19.</td>
<td>Are all employees aware of the procedures for dealing with breakage and spillage of cultures and infectious materials?</td>
<td></td>
</tr>
<tr>
<td>20.</td>
<td>Is contaminated glassware either disinfected or autoclaved before washing or disposal (if broken)?</td>
<td></td>
</tr>
<tr>
<td>21.</td>
<td>Are used media decontaminated before it is discarded?</td>
<td></td>
</tr>
<tr>
<td>22.</td>
<td>Do all laboratory personnel understand the policies for the disposal of biological wastes?</td>
<td></td>
</tr>
<tr>
<td>23.</td>
<td>Is a Biological Safety Cabinet (BSC) (Level 1) provided for the processing of all specimens that may contain contagious organisms transmitted by respiratory routes?</td>
<td></td>
</tr>
<tr>
<td>24.</td>
<td>Does the BSC meet the minimum requirements for the work being done in it?</td>
<td></td>
</tr>
<tr>
<td>25.</td>
<td>Is the BSC checked periodically for the airflow rate and the efficiency of filtration?</td>
<td></td>
</tr>
<tr>
<td>26.</td>
<td>Is the BSC decontaminated after use, either with a UV light or with an appropriate disinfectant?</td>
<td></td>
</tr>
<tr>
<td>27.</td>
<td>Are Petri dishes containing fungal cultures taped to prevent accidental opening?</td>
<td></td>
</tr>
<tr>
<td>28.</td>
<td>Is the preparation of slide cultures prohibited when working with highly infectious dimorphic fungi?</td>
<td></td>
</tr>
<tr>
<td>29.</td>
<td>Is a wetting agent added to mycelia growth before it is picked for direct examination?</td>
<td></td>
</tr>
<tr>
<td>30.</td>
<td>Are relevant staff provided with specific safety information on handling parasites?</td>
<td></td>
</tr>
<tr>
<td>31.</td>
<td>Is aerosol production by bacteriologic loops and needles minimized by the use of suitable sterilizing equipment, i.e., Bunsen burners or Bacti incinerators?</td>
<td></td>
</tr>
<tr>
<td>32.</td>
<td>Are mechanical pipetting devices readily available to all staff in the laboratory?</td>
<td></td>
</tr>
<tr>
<td>33.</td>
<td>Is there special training for staff who work in Containment - Biosafety Level 3) and Maximum Containment - Biosafety Level 4 laboratories?</td>
<td></td>
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</tbody>
</table>
## OFFICES AND CLINICS

<table>
<thead>
<tr>
<th></th>
<th>YES</th>
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<tbody>
<tr>
<td>1.</td>
<td>Do all employees adhere to Standard Precautions?</td>
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</tr>
<tr>
<td></td>
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</tr>
<tr>
<td></td>
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</tr>
<tr>
<td></td>
<td>• cleaning up blood spills?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• during wound debridement?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• handling linen or drapes soiled with blood or body fluids?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• handling specimens?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• during direct contact with blood, urine, faeces?</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Is protective eyewear with solid side shields (e.g., goggles) worn when assisting with upper/lower endoscopy, other procedures where spattering is possible and during manual cleaning of instruments?</td>
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</tr>
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<td>4.</td>
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<td>8.</td>
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</tr>
<tr>
<td>12.</td>
<td>Have all employees with the potential for exposure to blood been offered HBV vaccine free of charge?</td>
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</table>
## KITCHEN

<table>
<thead>
<tr>
<th></th>
<th>COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td><strong>Food</strong></td>
</tr>
<tr>
<td></td>
<td>• where is it stored and cooked?</td>
</tr>
<tr>
<td></td>
<td>• how is it stored and transported?</td>
</tr>
<tr>
<td></td>
<td>• how are left-overs handled?</td>
</tr>
<tr>
<td>2.</td>
<td><strong>Utensils</strong></td>
</tr>
<tr>
<td></td>
<td>• are they clean?</td>
</tr>
<tr>
<td></td>
<td>• storage facilities?</td>
</tr>
<tr>
<td></td>
<td>• what happens to broken utensils?</td>
</tr>
<tr>
<td>3.</td>
<td><strong>Cleaning Utensils</strong></td>
</tr>
<tr>
<td></td>
<td>• what equipment and supplies are used for cleaning?</td>
</tr>
<tr>
<td></td>
<td>• what agent is used for cleaning?</td>
</tr>
<tr>
<td></td>
<td>• how is the cleaning done?</td>
</tr>
<tr>
<td></td>
<td>• where are the equipment stored after care?</td>
</tr>
<tr>
<td>4.</td>
<td><strong>Storage Rooms</strong></td>
</tr>
<tr>
<td></td>
<td>• are floors and walls clean?</td>
</tr>
<tr>
<td></td>
<td>• are the storerooms tidy?</td>
</tr>
<tr>
<td></td>
<td>• are there cockroaches and rats?</td>
</tr>
<tr>
<td>5.</td>
<td><strong>Deep Freezers and Refrigerators</strong></td>
</tr>
<tr>
<td></td>
<td>• are they clean?</td>
</tr>
<tr>
<td></td>
<td>• correct temperature for food stored maintained?</td>
</tr>
<tr>
<td></td>
<td>• food assorted for freezing?</td>
</tr>
<tr>
<td></td>
<td>• cleaning fluid used?</td>
</tr>
<tr>
<td></td>
<td>• how often defrosted and clean?</td>
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</table>
### KITCHEN (Cont’d)

<table>
<thead>
<tr>
<th>Section</th>
<th>Comments</th>
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</thead>
<tbody>
<tr>
<td>6. Cleaning solutions</td>
<td></td>
</tr>
<tr>
<td>• what type of solutions are used for walls, floors, furniture, kitchen equipment?</td>
<td>YES</td>
</tr>
<tr>
<td>• how are mops, brushes, buckets, clothes maintained?</td>
<td>YES</td>
</tr>
<tr>
<td>• how often are solutions used?</td>
<td>YES</td>
</tr>
<tr>
<td>• kitchen equipment?</td>
<td>YES</td>
</tr>
<tr>
<td>• problems encountered in use of available solution?</td>
<td>YES</td>
</tr>
<tr>
<td>• availability of solutions or agents?</td>
<td>YES</td>
</tr>
<tr>
<td>7. Kitchen Staff</td>
<td></td>
</tr>
<tr>
<td>• general fitness?</td>
<td>YES</td>
</tr>
<tr>
<td>• cleanliness, general hygiene?</td>
<td>YES</td>
</tr>
<tr>
<td>• had medical examination and results?</td>
<td>YES</td>
</tr>
<tr>
<td>• is hair kept covered?</td>
<td>YES</td>
</tr>
<tr>
<td>• are finger nails kept short?</td>
<td>YES</td>
</tr>
<tr>
<td>• any record of infectious diseases?</td>
<td>YES</td>
</tr>
<tr>
<td>• care of abrasions and cuts?</td>
<td>YES</td>
</tr>
<tr>
<td>• how often are the medical examinations done?</td>
<td>YES</td>
</tr>
</tbody>
</table>

### 8. Disposal of kitchen waste

<table>
<thead>
<tr>
<th>Section</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>• type of waste?</td>
<td>YES</td>
</tr>
<tr>
<td>• how disposed?</td>
<td>YES</td>
</tr>
<tr>
<td>• how often disposed?</td>
<td>YES</td>
</tr>
<tr>
<td>PEST CONTROL PROGRAMME</td>
<td>YES</td>
</tr>
<tr>
<td>------------------------</td>
<td>-----</td>
</tr>
<tr>
<td>1. Are there pests, vectors, rodents, animals:</td>
<td></td>
</tr>
<tr>
<td>• on the grounds?</td>
<td></td>
</tr>
<tr>
<td>• in the health care facility?</td>
<td></td>
</tr>
<tr>
<td>2. Is there a programme for pest control?</td>
<td></td>
</tr>
<tr>
<td>3. Does programme include scheduled pest control, eg., every 6 months or every 3 months?</td>
<td></td>
</tr>
</tbody>
</table>

Name: _____________________________________________________________

Signature: _________________________________________________________

Date: _____________________________________________________________

INFECTION PREVENTION AND CONTROL RESOURCES

REQUIRED RESOURCES

1. SUPPLIES AND EQUIPMENT

The resources required for infection prevention and control in a health care facility are the same (to some extent) as those required for the normal day-to-day functions of the facility, which include:

- Gloves: latex and industrial type
- Gowns
- Plastic aprons
- Overshoes and/or golashes
- Masks
- Face shields
- Goggles
- Bags: plastic, laundry, etc.
- Buckets with lids and liners
- Syringes, needles
- Sterilisers
- Disinfectants
- Antiseptic/anti-microbial agents
- Soap, detergent, running water
- Transfer carts and trolleys
- Mops, brooms, cloths, brushes, etc.
- Other.
II. STAFFING

- Infection Prevention and Control Committee
- Infection Prevention and Control Officer
- All health care facility staff knowledgeable about infection prevention and control practices.

Infection Prevention and Control Staffing Standard

*(For information)*

The literature cites the following staffing levels:

- 1 Infection Prevention and Control Nurse (IPCN) per 386 beds (UK)
- 0.2 – 0.75 IPCN per 250 beds (Swiss University Hospitals)
- 1 IPCN per 700 beds (Belgium)
- 1.5 IPCN per 200 beds (USA/JCAHO)
- 1 IPCN per 150 beds (US Navy).
JOB DESCRIPTION

TITLE OF POST: INFECTION PREVENTION AND CONTROL OFFICER (IPCO)

CLASSIFICATION OF POST: Senior Level Position

DIVISION: Quality Assurance Unit

REPORTING RELATIONSHIP:

Administratively, the IPCO reports directly to the Principal Matron of the health facility and through her/him to the Medical Director of the facility.

Functionally, the IPCO day-to-day activities relate to the Infection Prevention and Control Committee (IPCC) to which she/he is the Technical Secretary.

QUALIFICATION:

Graduate of a health care professional education programme, with post-basic qualification in infection prevention and control.

JOB SUMMARY:

Duties are primarily associated with infection prevention and control in the health care facility and/or in the district health care service.

ABILITIES:

Excellent working knowledge of the principles of microbiology and epidemiology, and in particular, the epidemiology of infectious diseases.

She/he must be competent in her/his field of practice, especially in relation to asepsis, decontamination, cleaning, disinfectants and sterilisation, and must be capable of independent judgement.
DUTIES AND RESPONSIBILITIES

Infection prevention and control to include:

MANAGEMENT

1. Advising health care facility staff about the policies and guidelines related to infection prevention and control.

2. Assessing, planning, implementing, maintaining and evaluating infection prevention and control in the health care facility.

3. Monitoring all clinical care and diagnostic areas, housekeeping, laundry, kitchen, CSSD, mortuary, etc.

4. Appraising environmental cleanliness by liaising with responsible departments internal and external to the health care facility.

5. Conducting surveillance to detect and record the occurrence of nosocomial and other infections throughout the health care facility on a systematic and current basis.

6. Taking appropriate action(s) based on the analysis of the surveillance audits.

7. Preparing appropriate reports and records.

8. Collaborating with the IPCC to initiate epidemiological investigation of all significant clusters of infection.

9. Developing and maintaining close liaison with the local Public Health Department in the reporting and investigation of infectious disease cases in the health care facility.

10. Co-ordinating infection prevention and control activities at the health care facility.

11. Keeping the health care facility staff abreast of current and relevant information on infection prevention and control.

12. Liaising with the quality assurance programme on matters relating to infection prevention and control to ensure that the standards of infection prevention and control are met.
13. Monitoring staff health and safety at the workplace.

14. Preparing agenda for IPCC meetings; serving as the Recording Secretary.

15. Representing the health care facility and/or IPCC at meetings and workshops.

16. Performing any other duties as and when required.

**EDUCATION**

1. Conducting learning needs assessment on infection prevention and control for all disciplines and levels of staff.

2. Planning, implementing and/or participating in ongoing training/educational programmes to meet perceived and/or actual needs on infection prevention and control.

3. Conducting and/or participating in orientation programmes on infection prevention and control for all new employees.

**RESEARCH**

Conducting research in infection prevention and control practices.

**PROFESSIONAL**

1. Maintaining good inter-personal and inter-department relationships.

2. Keeping abreast of current developments in infection prevention and control.
United Nations Packaging Requirements For Infectious Substances, Division 6.2, UN 2814:*

Infectious Substance Affecting Humans and Division 6.2, UN 3291:*

Wastes Derived from Medical Treatment of Humans or Animals or Bio-research with Low Probability of Infectious Substances

Packaging System

UN 2814

The system consists of three layers as follows:

1. **Primary receptacle** – A labelled watertight, leakproof receptacle containing the specimen. The receptacle is wrapped in enough absorbent material to absorb all fluid in case of breakage.

2. **Secondary receptacle** – A second durable, watertight, leakproof receptacle to enclose and protect the primary receptacle(s). Several wrapped primary receptacles may be placed in one secondary receptacle. Sufficient additional absorbent material must be used to cushion multiple primary receptacles.

3. **Outer shipping package** – The secondary receptacle is placed in an outer shipping package which protects it and its contents from outside influences such as physical damage and water while in transit.

Specimen data forms, letters and other types of information that identify or describe the specimen and also identify the shipper and receiver should be taped to the outside of the secondary receptacle.

UN 3291

There are two possibilities for packaging:

1. Rigid and leak-proof packaging.

2. Intermediate bulk containers, i.e., large rigid or flexible bulk containers made from a variety of materials such as wood, plastics or textile.

Package of intermediate bulk containers intended to contain sharp objects such as broken glass and needles shall be puncture resistant.


Appendix 5

OCCUPATIONAL EXPOSURE TO BLOODBORNE PATHOGENS REPORT FORM

CONFIDENTIAL

(Please Print or Type)

EMPLOYEE DATA

1. Last name: _________________________________________________________________
2. Middle name: _______________________________________________________________
3. First name: _________________________________________________________________
4. Home address: ______________________________________________________________
5. Home phone number: ________________________________________________________
6. Date of birth (MM/DD/YYY): _________________________________________________
7. Gender: [ ] Male ___________________ [ ] Female _________________________________
   [ ] Other

EMPLOYMENT DATA

9. Place and address of employment (check as appropriate):
   [ ] Hospital _________________________________________________________________
   [ ] Health Centre/Clinic _______________________________________________________

10. Name and title of immediate supervisor ________________________________________

EXPOSURE DATA (to be completed by the Health Care Worker)

11. Job category of the injured/affected worker: (check one box only):
    [ ] Physician [ ] Dental Surgeon [ ] Registered Nurse
    [ ] Registered Midwife
    [ ] Nursing Auxiliary [ ] Laboratory Technologist [ ] Dental Auxiliary
    [ ] Housekeeping Staff [ ] Laundry Worker
    [ ] Health Care Waste Personnel
    [ ] Medical Student [ ] Nursing Student [ ] Allied Health Profession Student
    [ ] Other (specify) __________________________
12. Date of report (MM/DD/YYYY): ______________________
   Date of exposure (MM/DD/YYYY): ______________________
   Time of exposure ______________________

13. Name & address of hospital/clinic site where exposure occurred ______________________

14. Details of the procedure being performed; including where and how the exposure occurred:
   ____________________________________________________________________________
   ____________________________________________________________________________
   ____________________________________________________________________________

15. Type of exposure (check as appropriate):
   [ ] Skin puncture
   [ ] Scratch
   [ ] Bite
   [ ] Non-intact skin
   [ ] Splash to mucous membrane of: Eye [ ] Nose [ ] Mouth [ ]
   [ ] Sharp device (check as appropriate): Needle type: Suture [ ]
       Injection [ ] IV Needle [ ]
   [ ] Scalpel
   [ ] Instrument
   [ ] Broken glass
   [ ] Other sharp device (describe): ________________________________
   [ ] Blood/Body fluid splash
   [ ] Other Type of Exposure [ ] (describe) ________________________________

16. Extent of exposure (type and amount of blood/body fluid/material, severity of exposure including depth and whether fluid was injected, etc.)
   ____________________________________________________________________________
   ____________________________________________________________________________
   ____________________________________________________________________________

17. PPE (personal protective equipment) worn:
   [ ] Gloves
   [ ] Gown/Apron
   [ ] Mask
   [ ] Protective eyewear
   [ ] Goggles
   [ ] Face shield
   [ ] Other PPE [ ] (describe) ________________________________________________
18. Decontamination (describe) (i.e., hand hygiene, flushing mucous membrane eye, nose, mouth, cleaning up of spills, etc.):

_____________________________________________________________________________
_____________________________________________________________________________
_____________________________________________________________________________

19. Action taken by the employee (describe):

_____________________________________________________________________________
_____________________________________________________________________________
_____________________________________________________________________________

20. Action taken by the supervisor (describe):

_____________________________________________________________________________
_____________________________________________________________________________
_____________________________________________________________________________

Signature of employee

__________________________________________

Date ((MM/DD/YYYY): ______________________Time:_______________

Name of supervisor: ___________________________________________

Signature of supervisor: _________________________________________

Date (MM/DD/YYYY): ____________________________Time:_________

Health care worker’s name_____________________________________
**Health care worker**

**Hepatitis B immunity status:**

- Date of last tetanus booster
- (MM/DD/YYYY): __________
- Series completed: YES [ ] NO [ ]
- Post-immunization Titre (HBsAb): Positive [ ] Negative [ ] Unknown [ ]

**Post-exposure testing of health care worker completed:**

- HIV: YES [ ] NO [ ]
- HCV: YES [ ] NO [ ]
- HBsAb: YES [ ] NO [ ]
- NOT TESTED (known immunity) [ ]

Other tests performed:

_____________________________________________________

**Source patient**

Was the source patient identifiable? YES [ ] NO [ ]

**If YES:**

- HIV: Date drawn  Positive [ ] Negative [ ] Not Tested [ ]
- HCV: Date drawn  Positive [ ] Negative [ ] Not Tested [ ]
- HBsAg: Date drawn  Positive [ ] Negative [ ] Not Tested [ ]

Other laboratory testing:

- Name of test ________ Date drawn ________ Results ________
- Name of test ________ Date drawn ________ Results ________
Post-exposure management

**Hepatitis B:**

Recommendations: No further follow-up [ ] HBIG [ ] (date; dose)

Additional recommendations:

**Hepatitis C:**

Recommendations: No further follow-up [ ] Baseline HCV [ ]
Baseline alanine aminotransferase (ALT) [ ] HCV 6 months [ ] ALT 6 months. [ ]

**HIV:**

Recommendations: No further follow-up [ ] HIV testing at 6 weeks, 12 weeks, and 6 months [ ]

Further recommendations for post-exposure management and follow-up:

Health care worker counseling included topics of:

Post-exposure medical consultation by: ____________________________ (Please print name)

Title: ____________________________

Signature: ______________________ Date (MM/DD/YYYY): __________________

Date Report received: ____________________________ Supervisor: __________________
Appendix 6

REPRESENTATIVE GROUPS OF THE IN-COUNTRY COMMITTEES ON THE INFECTION PREVENTION AND CONTROL POLICIES AND GUIDELINES

The in-country groups engaged in the activities of the infection prevention and control initiative represent:

1. Policy makers in the Ministry of Health
2. Ministry of Health and Regional Health Authorities Quality Improvement Staff
3. Health facility administrators including physicians and Matrons
4. Nursing
5. Medicine
6. Dentistry
7. Pharmacy
8. Laundry
9. Housekeeping
10. Environmental health
11. Laboratory
12. Kitchen
13. Microbiology
14. Training/Education institutions for health professions
15. Health Professions Regulatory Councils
16. Health Professions Associations
17. Pan American Health Organization/World Health Organization (PAHO/WHO)
REFERENCES

PRIMARY SOURCES


SECONDARY SOURCES

GUIDES


INTERNET


