INFECTION PREVENTION AND CONTROL POLICIES AND GUIDELINES

World Health Organization
Regional Office for Africa (WHO/AFRO)

Commonwealth Regional Health Community Secretariat (CRHCS)

East, Central and Southern African College Of Nursing (ECSACON)

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# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Table of Contents</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>List of Illustrations</td>
<td>vii</td>
</tr>
<tr>
<td>Acknowledgements</td>
<td>xi</td>
</tr>
<tr>
<td>Preface</td>
<td>xii</td>
</tr>
<tr>
<td><strong>SECTION I: INTRODUCTION</strong></td>
<td>1</td>
</tr>
<tr>
<td>1. Introduction</td>
<td>2</td>
</tr>
<tr>
<td>2. Purpose</td>
<td>3</td>
</tr>
<tr>
<td>4. General Policy Statements</td>
<td>5</td>
</tr>
<tr>
<td><strong>SECTION II: MANAGEMENT OF THE INFECTION PREVENTION AND CONTROL POLICIES AND GUIDELINES</strong></td>
<td>8</td>
</tr>
<tr>
<td>5. Responsibility and Authority</td>
<td>9</td>
</tr>
<tr>
<td>a. Levels of Responsibility</td>
<td>9</td>
</tr>
<tr>
<td>6. Infection Prevention and Control Infrastructure</td>
<td>10</td>
</tr>
<tr>
<td>a. Rationale</td>
<td>10</td>
</tr>
<tr>
<td>b. Organization of Infection Prevention and Control</td>
<td>10</td>
</tr>
<tr>
<td>a. Policies</td>
<td>16</td>
</tr>
<tr>
<td>b. Control</td>
<td>16</td>
</tr>
<tr>
<td>c. Distribution</td>
<td>16</td>
</tr>
<tr>
<td>d. Review Cycle</td>
<td>16</td>
</tr>
<tr>
<td><strong>SECTION III: EPIDEMIOLOGY</strong></td>
<td>18</td>
</tr>
<tr>
<td>8. The Infectious Disease Process/The Epidemiological Triangle</td>
<td>19</td>
</tr>
<tr>
<td>a. Source</td>
<td>19</td>
</tr>
<tr>
<td>b. Host</td>
<td>19</td>
</tr>
<tr>
<td>c. Transmission</td>
<td>19</td>
</tr>
</tbody>
</table>
SECTION IV: STANDARD PRECAUTIONS ................................................. 23

- Introduction ................................................................................................................ 24
  A. Standard Precautions .......................................................................................... 24
  B. Transmission-Based Precautions ...................................................................... 25

- Elements of Standard Precautions .......................................................................... 26
  I. Handwashing ....................................................................................................... 26
  II. Personal Protective Equipment ........................................................................... 40
      1. Gowns
      2. Gloves
      3. Surgical Masks
      4. Protective Eye Wear
  III. Patient Care Equipment ................................................................................... 49
  IV. Sharps ................................................................................................................ 51
  V. Accommodation .................................................................................................. 52
  VI. Urine and Faeces .............................................................................................. 52
  VII. Environment Control ....................................................................................... 53
  VIII. Patient Transport ............................................................................................ 53
  IX. Visitors ................................................................................................................ 53
  X. Laboratory Specimens ....................................................................................... 54
  XI. Wastes ................................................................................................................ 55
  XII. Handling a Post-mortem .................................................................................... 55
  XIII. Laundry ............................................................................................................. 56

SECTION V: ISOLATION ............................................................................. 59

- Introduction .............................................................................................................. 60

- Policy Statements ..................................................................................................... 61

- Requirements for Isolation ....................................................................................... 65

- Establishing Priorities for Single Rooms ................................................................. 66

- Isolation Categories ................................................................................................. 67
SECTION VI: TRANSMISSION-BASED OR ADDITIONAL PRECAUTIONS FOR CARE SETTINGS .......... 68

- Introduction ................................................................................................................... 69
- Guidelines for All Health Care Facilities ..................................................................... 70
- Tuberculosis .................................................................................................................. 80
- Precautions for Viral Haemorrhagic Fevers (Ebola) .................................................... 84
- Dentistry ....................................................................................................................... 86

SECTION VII: DISINFECTION AND STERILIZATION .......... 96

- Antiseptics and Disinfectants ....................................................................................... 97
  - Antiseptics .............................................................................................................. 97
    - Uses
  - Disinfectants ........................................................................................................... 100
    - Purpose
    - Types
    - Effectiveness
    - Choice of Disinfection Methods
    - Guide to the Use of Disinfectants
    - Calculations of Concentrations
    - Preparing A Dilute Chlorine Solution
    - Using Chlorine-Releasing Tablets
    - Dilutions of Household Bleach

- Processing ..................................................................................................................... 113
  - Introduction
  - Classification of Risk
  - Steps in Processing

- Summary ....................................................................................................................... 133

SECTION VIII: HOUSEKEEPING ................................................. 136

- Introduction .................................................................................................................. 137
- Policy Statements ......................................................................................................... 138
- Guidelines ..................................................................................................................... 144
SECTION IX: HEALTH CARE FACILITY WASTE MANAGEMENT ................................................................. 161

• Introduction .......................................................................................................................... 162
• Policy Statements ............................................................................................................. 166
• Management Responsibility ............................................................................................. 167
  • Steps in Developing A Waste Management Plan
• Waste Management ......................................................................................................... 173
• On-site Transport ............................................................................................................. 182
• Off-site Transport ............................................................................................................. 183
• Infectious Waste ................................................................................................................ 184
• Tips for Handling Waste Disposal Containers ................................................................. 187
• Characteristics of an Ideal Waste Disposal Container .................................................... 187
• To Build a Burial Pit .......................................................................................................... 188
• To Build A Drum Incinerator ............................................................................................ 189
• Record Keeping ................................................................................................................ 190
• Training .............................................................................................................................. 191
• Workers’ Health and Safety .............................................................................................. 192

SECTION X: RISK MANAGEMENT ......................................................................................... 193

• Purpose of Risk Management .......................................................................................... 194
• Bloodborne Pathogens .................................................................................................... 195
  • Introduction
  • Policy Statements
  • Methods of Compliance
  • Post-Exposure Prophylaxis
Infection Prevention and Control Policies and Guidelines

- Laboratory Biosafety ................................................................. 207
  - Introduction
  - Policy Statements
  - Classification of Biological Agents
  - Biohazard Spills

- Emergencies ............................................................................. 219
  - Medical
  - General First Aid
  - Fires
  - Accident/Incident Reporting

- Antibiotics Resistance in Hospitals ........................................... 223

GLOSSARY ................................................................................. 225

APPENDICES ............................................................................. 235
  1. Checklist/Forms ................................................................. 236
  2. Infection Prevention and Control Resources ......................... 249
  3. Job Description ................................................................. 251
  4. UN Packaging Requirements ................................................ 254
  5. Representation ................................................................. 255

REFERENCES ............................................................................. 256
# LIST OF ILLUSTRATIONS

## TABLES

<table>
<thead>
<tr>
<th>Table</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Status of Infection Prevention and Control Policies and Guidelines</td>
<td>17</td>
</tr>
<tr>
<td>2</td>
<td>Soaps and Antiseptic/Antimicrobial Agents for Handwashing</td>
<td>34</td>
</tr>
<tr>
<td>3</td>
<td>Characteristics of Antiseptic Agents</td>
<td>35</td>
</tr>
<tr>
<td>4</td>
<td>Handwashing Techniques</td>
<td>37</td>
</tr>
<tr>
<td>5</td>
<td>Proposed Strategies to Improve Handwashing Techniques and Compliance</td>
<td>39</td>
</tr>
<tr>
<td>6</td>
<td>Clinical Conditions and Transmission Characteristics</td>
<td>74</td>
</tr>
<tr>
<td>7</td>
<td>Common Antiseptics and Their Use in Patient Preparation</td>
<td>98</td>
</tr>
<tr>
<td>8</td>
<td>Major Classes of Chemical Disinfectants and Their Relative Advantages and Disadvantages</td>
<td>101</td>
</tr>
<tr>
<td>9</td>
<td>Calculations</td>
<td>111</td>
</tr>
<tr>
<td>10</td>
<td>Dilution Efficacy Levels</td>
<td>112</td>
</tr>
<tr>
<td>10A</td>
<td>Dilutions of Household Bleach</td>
<td>112</td>
</tr>
<tr>
<td>11</td>
<td>Classification of Risks</td>
<td>114</td>
</tr>
<tr>
<td>12</td>
<td>Processing of Instruments and Equipment</td>
<td>128</td>
</tr>
<tr>
<td>13</td>
<td>Health Care Facility Cleaning/Disinfection Policies</td>
<td>147</td>
</tr>
<tr>
<td>14</td>
<td>Categories of Health Care Facility Waste</td>
<td>163</td>
</tr>
<tr>
<td>15</td>
<td>Categories of Health Care Facility Care Definitions</td>
<td>164</td>
</tr>
<tr>
<td>16</td>
<td>Principal Health Care Risk Waste Treatment Technologies</td>
<td>185</td>
</tr>
<tr>
<td>17</td>
<td>Recommendations for Management for Categories of Health Care Facility Waste</td>
<td>186</td>
</tr>
<tr>
<td>18</td>
<td>Summary of Risk Groups and Levels of Containment</td>
<td>211</td>
</tr>
<tr>
<td>19</td>
<td>Cleaning and Disinfection in the Laboratory</td>
<td>217</td>
</tr>
</tbody>
</table>
# FIGURES *

<table>
<thead>
<tr>
<th></th>
<th>Routine Handwashing Techniques</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Surgical Handwashing Techniques</td>
<td>30</td>
</tr>
<tr>
<td>2</td>
<td>Handwashing: Areas for Special Attention</td>
<td>31</td>
</tr>
<tr>
<td>3</td>
<td>Putting on Gloves</td>
<td>41</td>
</tr>
<tr>
<td>4</td>
<td>Removing Gloves</td>
<td>41</td>
</tr>
<tr>
<td>5</td>
<td>Discarding Gloves</td>
<td>42</td>
</tr>
<tr>
<td>6</td>
<td>Putting on Gown</td>
<td>42</td>
</tr>
<tr>
<td>7</td>
<td>Removing Gown</td>
<td>43</td>
</tr>
<tr>
<td>8</td>
<td>Removing Gown</td>
<td>43</td>
</tr>
<tr>
<td>9</td>
<td>Discarding Gown</td>
<td>43</td>
</tr>
<tr>
<td>10</td>
<td>Putting on a Surgical Mask</td>
<td>44</td>
</tr>
<tr>
<td>11</td>
<td>Removing a Mask</td>
<td>45</td>
</tr>
<tr>
<td>12</td>
<td>Putting on Plastic Glasses</td>
<td>46</td>
</tr>
<tr>
<td>13</td>
<td>Removing Plastic Glasses</td>
<td>46</td>
</tr>
<tr>
<td>14</td>
<td>Putting on Protective Goggles</td>
<td>46</td>
</tr>
<tr>
<td>15</td>
<td>Removing Protective Goggles</td>
<td>46</td>
</tr>
<tr>
<td>16</td>
<td>Putting on Face Shield</td>
<td>47</td>
</tr>
<tr>
<td>17</td>
<td>Removing Face Shield</td>
<td>47</td>
</tr>
<tr>
<td>18</td>
<td>Removing Face Shield</td>
<td>47</td>
</tr>
<tr>
<td>19</td>
<td>Single Hand “Scoop” Method</td>
<td>51</td>
</tr>
</tbody>
</table>
31. Separation of Waste ................................................................. 175
32. Handling of Waste ................................................................. 177
33. Training .................................................................................. 191
34. Worker’s Health and Safety .................................................. 192

* Credits:

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Figure 21: WHO, p. 8. (modified).
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Figure 27: WHO, p. 3.
Figure 28: WHO, p. 4.
Figure 29: WHO, p. 6.
Figure 31: WHO, p. 8.
Figure 32: WHO, p. 10.
Figure 33: WHO, p. 15.
Figure 34: WHO, p. 16.

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The activities associated with the preparation of the Manual of Infection Prevention and Control has its genesis with the expressed concerns of senior nurses and midwives with respect to the infection prevention and control-related practices of all health care workers. The subsequent developments including the preparation of an assessment tool, the assessment studies in the three countries, and the presentation of the findings at the Conference of Health Ministers were outcomes of such concerns.

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The Governments of Malawi, Tanzania, and Zimbabwe through their respective Ministries of Health supported the country-specific activities. The activities undertaken by the Consultant could not have succeeded without the tremendous support of these Ministries.
The preparation of this Manual of Infection Prevention and Control Policies and Guidelines is in response to a need to provide safe and quality care to patients, to prevent them, their families, visitors and health care workers from acquiring and/or transmitting infections in the care environments.

The HIV/AIDS epidemic currently ravaging the Sub-Saharan region and the efforts by the countries to accelerate their response also underscores the need to have infection prevention and control policies and guidelines to promote safe practices by all health care workers in all health care facilities and settings.

The purpose of the Manual is to provide health care workers, managers and supervisors the standards and criteria against which to measure safe practice in infection prevention and control. Additionally, it provides relevant information for communities and home-based care.

The East, Central and Southern African College of Nursing (ECSACON) instigated the preparation of the Manual and supporting activities.

A team of senior nurses, members of ECSACON, from Kenya, Malawi, Swaziland, Tanzania, and Zimbabwe designed an assessment tool for the collection of data on infection prevention and control practices. Subsequently, nurses from Malawi, Tanzania, and Zimbabwe conducted assessment studies in their countries.

The findings of the three countries studies were presented at the 32nd Conference of Health Ministers held in Swaziland in October 2000. The significance of the findings moved the Ministers to pass resolution (CRHC/RHMC32/R5), indicating that countries should be assisted to develop and/or strengthen their infection prevention and control practices.

In response to the resolution, World Health Organization Regional Office for Africa (WHO/AFRO) in partnership with the Commonwealth Regional Health Community Secretariat (CRHCS) recruited a consultant Dr. Una V. Reid to assist countries in the development and/or strengthening of their infection prevention and control policies and guidelines, and to develop a related training programme. This work has resulted in the prototype Manual of Infection Prevention and Control Policies and Guidelines, which provides a framework and details for the establishment of infection prevention and control in all health care facilities (government and private), homes, and communities.

The policies and guidelines are very comprehensive, simple to follow and are appropriate for use by all disciplines. The Manual is designed with sections, which outline the respective policies and guidelines, which may be adapted/adopted to meet country-specific requirements. However, like all manuals, this Manual should be considered a work in progress.

Infection prevention and control practices are a multidisciplinary endeavour, and require compliance by all categories and levels of staff. Such compliance is obligatory to the prevention and control of nosocomial and other infections in the health care facilities and settings, as well as in the community.
The following are examples of strategies to guide countries in the use of the Manual:

1. The respective Ministries of Health are required to formulate policies indicating their position with respect to the *Manual of Infection Prevention and Control Policies and Guidelines*, and their commitment for the establishment of and adherence to infection prevention and control practices in all health facilities (government and private).

2. The Manual is to be duplicated and disseminated to all health care facilities, etc. as indicated in Section 11.

3. The Quality Assurance Unit in each Ministry of Health to be responsible for the monitoring, evaluation, and update of the *Policies and Guidelines*.

4. The Director of each District level health service to initiate the dissemination of the Manual and to follow-up the required initiatives in the health care facilities for the respective districts.

5. The Ministry of Health to support the development and implementation of training programmes for all categories and levels of staff based on the *Manual of Infection Prevention and Control Policies and Guidelines*. Training of Trainers is to be considered a first step in the launch of the training programme.

We are confident that these perspectives will be enriched through the use of the Manual. Ultimately, the combined effect of everyone’s positive efforts will undoubtedly translate into improved quality of care for both patients and health care workers.
INTRODUCTION

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
- 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. Individual countries may require further modifications.
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.

Infection prevention and control policies, guidelines and procedures 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. Their adaption/adoption does **not** guarantee implementation by health care workers. The reduction of nosocomial infection risks depends largely on the actual performance of correct patient care practices. Health care workers may be motivated to follow these practices if adequate infrastructure and supplies are provided, they are appropriately supervised, and given adequate training followed by periodic in-service education.

Continuous or periodic evaluation of patient care practices, preferably under the supervision of the infection prevention and control committee, might assure continued performance of correct practices. Good 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.

GENERAL POLICY STATEMENTS

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

5. 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.

6. An Infection and Prevention Control Officer (IPCO) shall be assigned to each health care facility countrywide.

7. 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.

8. The Infection Prevention and Control Committee shall approve all chemicals used for disinfection and all methods of sterilization.
9. 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.

10. 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**.

11. 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.

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

13. 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.

14. It shall be the responsibility of the head of department/unit to ensure all staff attends the in-service education programmes.

15. 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.
16. There shall be an occupational health and safety programme at national and/or health care facility level as appropriate, which monitors the health and safety of health care workers, and provide the relevant services.

17. 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.

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

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

20. Content on infection prevention and control shall be integrated into the curricula for pre-service education/training of all health care workers.

21. There shall be a programme of civic education for the community to create awareness of infection prevention and control. 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 Quality Assurance Unit within the Ministry of Health is responsible for the monitoring, review and update of the Infection Prevention and Control Policies and Guidelines.

- **Regional/Provincial Board of Health**
  The Regional or Provincial Board of Health is responsible for monitoring the facilities under its control for utilization and compliance with infection prevention and control. The Board is also responsible for ensuring adequate and appropriate resources are available for support of infection prevention and control practices within these facilities.

- **District Health Boards**
  District Health Boards have similar responsibility to Region or Province with a less span of control.

- **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 (Allied Health Professions, Dental, Medicine and Nursing), Education/Training Institutions**
  The Regulatory Bodies and related education/training institutions have the responsibility for ensuring that the respective pre-service 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 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 vice-versa. Patients 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.


**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 Assurance, 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 Quality Assurance Unit, 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**


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.
Section II: Management of the Infection Prevention and Control Policies and Guidelines

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 washing, 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 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.

She/he 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 Superintendent (Clinical Director) of that facility. She/he 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 focusing 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 QA/CQI Committees, assisting with the definition of infection prevention and control standards. She/he 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 structures identified in this section were developed as reference for all countries. They may be modified to suit local requirements such as the size and type of health care facility, as well as the level of autonomy at the various levels of the health service.
THE INFECTION PREVENTION
AND CONTROL
POLICIES AND GUIDELINES
MANUAL

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 (Allied Health Professions, Dental, Medicine, Nursing), 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:

____________________________ _____________________
Director of Health Services in the            Date
Ministry of Health
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>Approved</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>By</td>
<td>By</td>
</tr>
<tr>
<td></td>
<td>Date</td>
<td>Date</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) elements: source of infecting organisms, a susceptible host, and a means 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 nosocomial 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.
INTRODUCTION

In 1996, the Centers for Disease Control developed revised Guidelines for Isolation Precautions in Hospital that has two tiers: Standard Precautions and Transmission-Based Precautions.

A. STANDARD PRECAUTIONS

These precautions are designed for the care of all patients in health care facilities and settings regardless of their diagnosis or presumed infectious status. Patients may also be assigned an additional category of isolation precaution dependent upon the patient’s clinical situation.

The precautions are also designed to reduce the risk of transmission of micro-organisms from both recognised and unrecognised sources of infection in health care facilities. Implementation of these Standard Precautions is the primary strategy for successful nosocomial infection control.

Standard Precautions synthesize the major features of Universal Precautions (blood and body fluid), whose purpose is to reduce the risk of transmission of bloodborne pathogens from blood and body substances and, apply them to all patients receiving care in hospital.

Standard Precautions apply to:

1. Blood.
2. All body fluids, secretions and excretions, regardless of whether or not they contain visible blood.
3. Non-intact skin.
4. Mucous membranes.
B. TRANSMISSION-BASED PRECAUTIONS

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

These additional or Transmission-Based Precautions are based on modes of transmission and are used for patients known or suspected to be infected or colonized with highly transmissible or epidemiological important pathogens for which additional precautions beyond Standard Precautions are needed to interrupt transmission in health care facilities.

The following three (3) types of Transmission-Based Precautions are designed to reduce the spread of related infections in health care facilities:

1. **Airborne Precautions** – primarily for patients diagnosed or suspected of having pulmonary or laryngeal tuberculosis, particularly those who are acid-fast bacilli (AFB) positive.

2. **Droplet Precautions** – for paediatric patients with a variety of paediatric respiratory diseases, meningitis.

3. **Contact Precautions** – for patients being colonized or infected with epidemiological important organisms such as diarrhoeal diseases.

These types of precautions may be combined for diseases that have multiple routes of transmission. When used either singularly or in combination, they are to be used in addition to Standard Precautions.
ELEMENTS OF STANDARD PRECAUTIONS

1. Handwashing
   - Handwashing before and after contact with each patient is the single most important policy for decreasing cross infection.

(a) Purpose

The purpose of handwashing is to remove soil, organic material and transient micro-organisms from the skin. Three elements are essential for effective handwashing:

- Soap
- Running water
- Friction.

(b) Types of Handwashing (see Table 4)

There are four types of handwashing.

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 most situations when hands should be washed, including after arriving at work.

2. Handwashing with antiseptic 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 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 handwashing.

2. The patient’s hands shall be washed before eating, after toileting and when soiled.

3. A health care facility approved soap shall be used for routine handwashing.

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. Airblow dryers are **not** recommended.
Hands shall be washed:

7. **Immediately** on arrival at work.

8. **Before** and **after** each patient contact.

9. **Whenever** there is a chance of contamination.

10. **Before** putting on gloves for performing clinical procedures (e.g. insertion of IUD).

11. **Before** putting on gloves for performing invasive procedures.

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

13. **After** touching blood, body fluids, secretions, excretions, exudates from wounds.

14. **After** contact with items known or considered likely to be contaminated with blood, body fluids, secretions, or excretions (e.g. bedpans, urinals, wound dressings) whether or not gloves are worn.

15. **Before** and **after** gloves are removed.

16. **Before** medication preparation.

17. **Before** preparing, handling, serving or eating food, and before feeding a patient.

18. **After** diapering or toileting children.

19. **When** hands are visibly soiled.

20. **After** personal body functions – such as using the toilet, wiping or blowing one’s nose.

21. **Before** leaving work.
Section IV: **Standard Precautions**

**(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.

**(e) Skin Care**

1. Frequent handwashing and gloving can irritate skin.

2. Handwashing cannot reduce the bacterial counts of personnel with dermatitis.

3. Staff responsible for processing instruments who has 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.

5. Lotions can ease the dryness resulting from frequent handwashing. It can also help prevent dermatitis from frequent glove use.

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.

Handwashing techniques are indicated at Table 4.

Figures 1 and 2 illustrate the dynamism of handwashing for infection prevention and control.

Figure 3 shows the parts of the hands that are often missed during handwashing.
Figure 1

Routine Handwashing Techniques

OR

OR

OR

OR

OR
Section IV: Standard Precautions

Figure 2

Surgical Handscrub Techniques
Figure 3

Handwashing: Areas for Special Attention

Areas to be given special attention when handwashing
(f) Care of handwashing 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 Handwashing

<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>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>Good</td>
<td>Good</td>
<td>Good</td>
<td>Good</td>
<td>Good</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.</td>
</tr>
<tr>
<td>Chlorhexidine gluconate 2% aqueous/foam 4% liquid</td>
<td>Good</td>
<td>Good</td>
<td>Fair</td>
<td>Fair</td>
<td>Good</td>
<td>Good</td>
<td>Intermediate</td>
<td>Fast</td>
<td>Minimal</td>
<td>Has persistent effect; good for both handwashing 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>
<td></td>
<td></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>
<td></td>
<td></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>
<th>Gram-negative bacteria</th>
<th><em>Mycobacterium tuberculosis</em></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>Iodophors</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>Povidone-iodine</td>
<td>0.05%, 2%, 7.5%, 10% solution</td>
<td>Good</td>
<td>Fair</td>
<td>Good</td>
<td>Good</td>
<td>Intermediate</td>
<td>Moderate</td>
<td>Effect over Gram-negative bacteria: low, absorbed through intact skin.</td>
</tr>
<tr>
<td>Para-chloro-meta-xyleneol (PCMX)</td>
<td>0.5%–3.75%</td>
<td>Good</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>Triclosan</td>
<td>0.3%–2%</td>
<td>Good</td>
<td>Fair</td>
<td>Poor</td>
<td>Good</td>
<td>Intermediate</td>
<td>Minimal</td>
<td>*Activity improved by addition of chelating agent such as EDTA</td>
</tr>
</tbody>
</table>

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

### Section IV: Standard Precautions

#### Table 4: Handwashing 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 (<a href="#">Fig 1</a>):</td>
<td>• Frequently missed areas are thumbs, under nails, backs of fingers and hands (<a href="#">Fig 3</a>).</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</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>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</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>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. If towels are</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>not available, shake off excess water and allow hands to air-dry.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Use same paper towel to turn off tap if tap not elbow</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>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>• 0.5% chlorhexidine with or without glycerol.</td>
<td></td>
<td>• Reusable towels are to be avoided because of the potential for microbial contamination.</td>
</tr>
<tr>
<td></td>
<td>• Povidone-iodine scrub</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Alcohol 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></td>
</tr>
</tbody>
</table>
### Table 4:
Handwashing 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 Or Chlorhexidine 5% surgical scrub (undiluted) | • 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 Handwashing 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, handwashing 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 handwashing facilities</td>
<td>• Handwashing facilities conveniently located throughout the health care facility.</td>
</tr>
<tr>
<td></td>
<td>• Available running water.</td>
</tr>
<tr>
<td></td>
<td>• Handwashing 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 handwashing products</td>
<td>• Availability of handwashing 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

(a) Types of gloves

There are three types of gloves:

1. Sterile surgical single use or re-usable gloves, used for invasive procedures.

2. Examination disposable gloves for single 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 handwashing.

2. Gloves are not required for routine care activities in which contact is limited to a patient’s intact skin.

3. Clean, non-sterile gloves shall be worn:
   - For examinations and non-surgical procedures.
   - For contact with blood, body fluids, secretions and excretions, mucous membranes, draining wounds or non-intact skin (open skin lesions or exudative rash).
   - For handling items visibly soiled with blood, body fluids, secretions or excretions when the health care worker has open skin lesions on the hands.
   - When the health care worker has non-intact skin on his/her hands.

4. Surgical gloves shall be worn for surgical procedures, for invasive therapy, e.g. venipuncture and other vascular procedures.

5. When indicated, gloves shall be put on directly before contact with the patient or just before the task or procedure requiring gloves.

6. Gloves shall be changed between care activities and procedures with the same patient after contact with materials that may contain high concentrations of micro-organisms, e.g. after handling an indwelling urinary catheter or suctioning an endotracheal tube to prevent cross-contamination of body sites.
7. Gloves may be worn in the transport of laboratory specimens.

8. Gloves shall be removed before moving to another patient.

9. Gloves shall be removed immediately after completion of care or a specified task, at point of use and before touching clean environmental surfaces.

10. Hands shall be washed and dried immediately after removing gloves.

11. Single-use disposable gloves shall **not** be washed, decontaminated and reused.

12. Gloves shall not be worn while walking in corridors and travelling in 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

(a) Policy Statements

1. The unnecessary use of gown is **not** recommended.

2. Gowns shall be used for protective isolation.

3. Gowns shall **not** be worn outside the area for which they are intended.

4. Gowns shall be worn to protect uncovered skin and to prevent soiling of clothing during procedures and patient care activities likely to generate splashes or sprays of blood, body fluids, secretions, or excretions. Plastic aprons are recommended where splashes are likely to occur.

(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. Wash hands after removal of gown and other personal protective barrier equipment.
3. Surgical Masks

(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

Masks shall be worn where appropriate to protect the mucous membranes of the nose and mouth during procedures and patient care activities likely to generate splashes or sprays of blood, body fluids, secretions, and excretions.

(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. Used mask must not be crushed or squeezed before discarding into a waste receptacle.

5. Discard used masks into a waste receptacle for that purpose.

4. Protective Eye Wear

   *(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.
3. If gloved hands are used for these procedures, the gloves should not be contaminated with blood or other potentially infectious material.
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. Once assembled, the face shield is donned similarly to a pair of glasses, but the face shield may fit a little higher on the forehead than glasses.

3. 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 order for the removal should be:

- Protective eye wear
- 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. Wash hands and dry after removal of protective barriers.
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 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. Sharps (needles, scalpels, etc.) shall be handled with extreme caution to avoid injuries during use, disposal, or reprocessing.

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

3. Used needles shall not be bent or broken after use.

4. 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/pit for disposal. These containers shall not be located in areas open to the public.

5. Used syringes and needles shall be discarded as a unit in the designated puncture-resistant container.

6. Reusable syringes, needles, or sharps, shall be held in a puncture-resistant leak-proof container (labelled with a biohazard sign) for transport to the reprocessing area.

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

8. Caution shall be exercised when rotating instruments are in use.
9. Sharp end of instruments shall be positioned away from oneself and others.

10. Used needles shall not be broken, recapped or otherwise manipulated by hand.

11. Heavy duty/strong utility gloves shall be worn during decontamination, cleaning, and disinfection of instruments.

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

V. Accommodation

Policy Statements

1. Single rooms or segregated patient accommodation shall not be used for routine patient care.

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

3. Infectious patients shall be managed using barrier nursing.

4. 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. Contaminated commodes and bedpans shall be disinfected.
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 and implemented.

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 barrier 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 completed properly 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 pills 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 boxes 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 haemorrhagic 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.
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 ‘STOP’ 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 transport 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 ‘STOP’ 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: Transmission-Based or Additional 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 **Transmission-Based 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).
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.
SECTION VI
TRANSMISSION-BASED OR ADDITIONAL PRECAUTIONS FOR CARE SETTINGS
INTRODUCTION

Transmission-Based Precautions are to be used in addition to Standard Precautions. The type of additional 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 6 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) as well as dentistry.
SYNOPSIS OF TYPES OF PRECAUTIONS AND PATIENTS REQUIRING THE PRECAUTIONS

Standard Precautions

- Use Standard Precautions for the care of all patients.

Airborne Precautions

In addition to Standard Precautions, use Airborne Precautions (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.

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: Transmission-Based 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 6 for a listing of infections requiring additional precautions.
### Table 6: 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>
<th>Duration of Precautions</th>
<th>Potential Pathogens</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A. Abscess</strong></td>
<td>Direct and indirect contact</td>
<td>Contact (major)</td>
<td>Pus</td>
<td>Duration of drainage</td>
<td><em>Staphylococcus aureus</em> <em>Streptococcus gr. A.</em> Many other bacteria</td>
</tr>
<tr>
<td>- Draining – major</td>
<td></td>
<td>Standard (minor)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Draining – minor</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acute polioyelitis (or infantile paralysis)</td>
<td>Direct and indirect contact</td>
<td>Contact Standard</td>
<td>Faeces, respiratory secretions</td>
<td>Until 6 weeks from onset of illness or faeces culture negative</td>
<td>Entero-virus, poliovirus</td>
</tr>
<tr>
<td>Acquired Immunodeficiency Syndrome (AIDS)</td>
<td>Mucosal or percutaneous exposure to infective blood, body fluids</td>
<td>Standard</td>
<td>Blood, body fluids, secretions, excretions</td>
<td>Duration of illness</td>
<td>Human Immunodeficiency Virus (HIV)</td>
</tr>
<tr>
<td>Adenovirus infection in infants and young children</td>
<td>Large droplets</td>
<td>Droplet, contact Standard</td>
<td>Respiratory secretions</td>
<td>Duration of illness</td>
<td>Respiratory strains</td>
</tr>
<tr>
<td>Amoebiasis (dysentery, abscess)</td>
<td>Direct and indirect contact (faecal/oral)</td>
<td>Contact Standard</td>
<td>Faeces, pus</td>
<td>Duration of illness</td>
<td><em>Entamoeba histolytica</em></td>
</tr>
<tr>
<td>Anthrax</td>
<td>Vehicle</td>
<td>Standard</td>
<td>Lesion drainage</td>
<td>Duration of illness</td>
<td><em>Bacillus anthracis</em></td>
</tr>
<tr>
<td>- Cutaneous</td>
<td></td>
<td>Droplet</td>
<td>Respiratory secretions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Intestinal</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Pulmonary</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Antimicrobial Resistant Organism (ARO)</td>
<td>Direct and indirect contact</td>
<td>Contact Standard</td>
<td>Infect or colonized secretions, excretions</td>
<td>As directed by IPCC</td>
<td>MRSA, VRE, resistant gram-negative rods other organisms</td>
</tr>
<tr>
<td>Arthropod borne viral fevers (dengue, yellow fever)</td>
<td>Insectborne</td>
<td>Contact Standard</td>
<td>Varies</td>
<td>Depending on aetiology</td>
<td>Different viruses</td>
</tr>
</tbody>
</table>
## Table 6: (cont’d)
Clinical Conditions and Transmission Characteristics

<table>
<thead>
<tr>
<th>Clinical Conditions</th>
<th>Route of Transmission</th>
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</tr>
</thead>
<tbody>
<tr>
<td><strong>B. Botulism</strong></td>
<td>Foodborne</td>
<td>Standard</td>
<td></td>
<td>Variable</td>
<td>Clostridium botulinum</td>
</tr>
<tr>
<td>Bronchiolitis</td>
<td>Large droplets and direct and indirect contact</td>
<td>Droplet and contact Standard</td>
<td>Respiratory secretions</td>
<td>Duration of illness</td>
<td>Respiratory syncytial virus (RSV), parainfluenza virus, influenza, adenovirus</td>
</tr>
<tr>
<td>Brucellosis</td>
<td>Possibly direct contact Zoonotic</td>
<td>Contact Standard</td>
<td>Drainage from open lesions</td>
<td>Duration of drainage</td>
<td>Brucella sp.</td>
</tr>
<tr>
<td>Burns infected</td>
<td>Contact</td>
<td>Contact Standard</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(see abscess)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>C. Cellulitis drainage</strong></td>
<td>Contact</td>
<td>Contact Standard</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(see abscess)</td>
<td></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>H. Ducreyi</td>
</tr>
<tr>
<td>Chickenpox (Varicella/Shingles)</td>
<td>Direct and indirect contact Airborne</td>
<td>Contact Airborne Standard</td>
<td>Lesion drainage, respiratory secretions</td>
<td>Until all lesions are crusted and dried</td>
<td>Varicella-zoster virus</td>
</tr>
<tr>
<td>Chlamydia trachomatis • 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>Vibrio cholerae</td>
</tr>
<tr>
<td>Common cold</td>
<td>Large droplets, direct and indirect contact</td>
<td>Droplet and contact</td>
<td>Respiratory secretions</td>
<td>Duration of illness</td>
<td>Rhinovirus, RSV, parainfluenza, influenza, adenovirus, coronavirus</td>
</tr>
</tbody>
</table>
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Clinical Conditions and Transmission Characteristics

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<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><strong>D.</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Decubitus ulcer, infected (see abscess)</strong></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</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><em>Staphylococcus aureus</em></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><em>Enteric pathogen, Clostridium difficile</em></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><em>Coryn bacterium diphtheriae</em></td>
</tr>
</tbody>
</table>
### Table 6: (cont’d)
**Clinical Conditions and Transmission Characteristics**

<table>
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<tr>
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<th>Potential Pathogens</th>
</tr>
</thead>
<tbody>
<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><em>Streptococcus gr A</em></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>Escherichia 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 Contact plus airborne if pneumonia Standard</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 6: (cont’d)
**Clinical Conditions and Transmission Characteristics**

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</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) infection</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 immunodeficiency 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>N. americanus A. duodenale</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>Streptococcus gr A, Staphylococcus aureus</td>
</tr>
<tr>
<td>L. 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>Mycobacterium leprae</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>Plasmodium sp.</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>
<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: *Neisseria meningitides, Haemophilus influenzae type b, Streptococcus pneumoniae, E. coli and other Gram-negative rods.</td>
</tr>
</tbody>
</table>
### Table 6: (cont’d)

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<th>Potential Pathogens</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>P. Plague</strong></td>
<td>Large droplets (Bubonic) Droplets (Pneumonic)</td>
<td>Droplet Standard</td>
<td>Respiratory secretions</td>
<td>Until 72 hours of appropriate antibiotic therapy received</td>
<td><em>Yersinia pestis</em></td>
</tr>
<tr>
<td><strong>R. Rabies</strong></td>
<td>Mucosal or percutaneous exposure to saliva</td>
<td>Standard</td>
<td>Saliva</td>
<td></td>
<td>Contact with infected animals</td>
</tr>
<tr>
<td>Rubeola (measles)</td>
<td>Airborne</td>
<td>Airborne Standard</td>
<td>Respiratory secretions</td>
<td>4 days after start of rash</td>
<td></td>
</tr>
<tr>
<td><strong>S. Syphilis</strong></td>
<td>Contact</td>
<td>Standard</td>
<td>Genital secretions, lesion exudates</td>
<td>Until infection contained</td>
<td><em>Treponema pallidum</em></td>
</tr>
<tr>
<td><strong>T. Tetanus</strong></td>
<td>Contact</td>
<td>Standard</td>
<td>Spores in soil</td>
<td></td>
<td><em>Clostridium tetani</em></td>
</tr>
<tr>
<td>Tuberculosis, pulmonary and extra-pulmonary</td>
<td>Airborne</td>
<td>Airborne Standard</td>
<td>Respiratory secretions</td>
<td>See Section on TB</td>
<td><em>Mycobacterium tuberculosis</em></td>
</tr>
<tr>
<td>Typhoid or enteric fever including para-typhoid fever (see diarrhoea)</td>
<td>Contact</td>
<td>Standard</td>
<td>Faeces</td>
<td>Varies</td>
<td><em>S. Typhi-typhoid bacillus</em></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td><em>S. Enterica-para-typhoid</em></td>
</tr>
<tr>
<td>Typhus endemic and epidemic</td>
<td>Vectorborne</td>
<td>Standard</td>
<td>Infected fleas</td>
<td></td>
<td><em>Rickettsia typhi, Rickettsia mooseri Rickettsia felis</em></td>
</tr>
<tr>
<td><strong>U. Urinary tract infection</strong></td>
<td>Contact</td>
<td>Standard unless ARO*</td>
<td>Secretions</td>
<td>Until infection contained</td>
<td>Many</td>
</tr>
<tr>
<td><strong>W. Whooping cough (pertussis)</strong></td>
<td>Large droplets</td>
<td>Droplet</td>
<td>Respiratory secretions</td>
<td>Until 5 days after patient is placed on effective therapy</td>
<td><em>Bordetella pertussis</em>.</td>
</tr>
</tbody>
</table>

TUBERCULOSIS (TB)

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. Environmental contamination, e.g. from blankets or linen is not a source of infection.

2. Any patient in whom TB is suspected must have a sputum smear examination as a matter of urgency. This is best done on an outpatient basis. Disposable non-transparent sputum cups with lids should be used. Reusable sputum mugs should be avoided wherever possible. Reusable mugs should be disinfected with 1% hypochlorite (10,000 ppm available chlorine). Sodium dichloroisocyanurate (NaDCC) can be used as an alternative.

3. Patients who are coughing and are in the outpatient clinic or in Casualty should wait, preferably outside or in a well-ventilated area. They should be reminded about precautions and be encouraged to use tissues when coughing. These signs should be prominently displayed. TB suspects should be examined in a well-ventilated area.

4. If a patient with suspected TB is admitted to the ward, he/she should be placed either in a separate well-lit and well-ventilated room or with similar patients in a separate section of the ward, which should be equally well-lit and well-ventilated. Windows must stay open even at night in winter. Extra blankets should be provided if necessary. Windows should be screened and bed-nets used if mosquitoes are a problem. The sputum smear result should be returned to the ward within 24 hours so that the patient can be treated as soon as possible.

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 incubation
- Suctioning
- Open abscess irrigation
- Autopsy.
6. Cough hygiene should 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 transport. 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:
   - Operative procedures should be delayed until the patient is no longer infectious (two to four weeks following initiation of treatment).
   - Where surgery cannot be delayed, a negative pressure theatre should be used where available. The patient should be put at the end of the 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.

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 with either sodium hypochlorite or sodium dichloroisocyanurate (NaDCC) 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).
Section VI: Transmission-Based or Additional Precautions for Care Settings

- **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% glutaraldehyde 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 Act, that every form of TB diagnosed case should be notified to the Ministry of Health 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 cough lasting more than 3 weeks. Sputum specimens must then be examined. This is the only effective way of detecting TB early. Annual screening by X-ray and skin testing is ineffective.

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

Source: Information provided by Zimbabwe. See appropriate listing in references.
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.

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**

A. **Standard Precautions**

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

1. **Handwashing**

   - 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 changed at least daily when visibly soiled or penetrated by fluids.
Reusable protective clothing shall be washed, 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.

3. Needles and Sharp Instruments

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 needle stick 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/burned.
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 glutaraldehydes, 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
Section VI: Transmission-Based or Additional Precautions for Care Settings

- 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.
Section VI: Transmission-Based or Additional Precautions for Care Settings

- 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 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% glutaraldehyde 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 Betadine or other disinfectants useful for this purpose. The dental technician shall take precautionary measures and undertake these cleaning and disinfection procedures, while wearing gloves and goggles.
Section VI: Transmission-Based or Additional Precautions for Care Settings

- 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.

(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.