Guidelines on Infection Control Practice in the Clinic Settings of Department of Health

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Content

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INTRODUCTION

The Department of Health (DH) has been providing a wide-variety of health services such as outpatient clinics and outbreak investigation of infectious diseases to the general public. Health care workers (HCW) who have potential contact with patients, their blood or body substances are at risk of acquiring or transmitting infections to others. Thus, infection control programme must be in place to ensure the well-being of both HCW and general public.

The following guidelines are written for staff working in outpatient settings or in healthcare settings where could have potential contact with patients, their blood or body substances. Advice is given on the standard infection control practice to be observed whilst on duty. They should be read in conjunction with other infection control guidelines/recommendations promulgated by the Department.

INFECTION CONTROL PROGRAMME AND NETWORK IN OUTPATIENT SETTING

I. Department of Health (DH) Infection Control Committee

Infection Control Committee, formed by Service Heads from some services of DH, will hold meetings on a yearly basis or whenever necessary to discuss infection control issues in DH Services.

II. DH Infection Control Network

Meetings of DH Infection Control Network will also be held yearly with Service representative from clinical services to discuss infection control issues in DH Services. The roles of these members are to:

- Collect the issues related to infection control from the Services and discuss in the meetings.
- Contribute opinions related to infection control.
- Coordinate with infection control coordinators for implementation and monitoring of infection control measures in the Services.
- Disseminate the information related to infection control that has been discussed in the meeting to the staff in the Services.

III. Infection Control Coordinator

Each outpatient clinic should have a designated Infection Control Coordinator to be responsible for the followings:

- Oversee and monitor the implementation of infection control practices in the clinic.
- Ensure all new staff including medical, nursing, clerical and workmen are familiar with infection control practices. Update existing staff on proper infection control practices periodically.
- Maintain/monitor various records e.g. sterilisation process records, physical, chemical and biological monitoring records, accident records, staff sickness records, staff fit test record and staff infection control (including DH infection control refresher training) training record.
- Ensure infection control audits to be conducted regularly.
- Recommend changes needed in infection control practices.
- Report to Service Head in case of clustering of illnesses suggestive of infection originated from staff or clients.
- Coordinate with members of DH Infection Control Network on current infection control practices.

IV. Infection Control Communication

Infection Control Coordinators of individual clinics are encouraged to hold meetings to discuss any infection control related problems with their frontline colleagues periodically, and they may refer their problems to members of DH Infection Control Network if necessary.

V. Infection Control Training

Infection control training should be provided to staff to ensure appropriate infection prevention and control practices are followed. The training should be provided upon induction, at any time when information has been updated or revised, and repeated at regular intervals. The content should include but not limited to infection prevention and control policy, infection control basic principles and related work practices, incident management, and role of staff in preventing the spread of infections.

VI. Infection Control Audit

Infection control audit facilitates thorough assessment on the compliance against infection control standards and ensure the maintenance of proper infection control measures in the outpatient settings.

An infection control checklist is used as an audit tool (Appendix II). The checklist should be monitored quarterly in each outpatient clinic. Infection control coordinators should be responsible to initiate corrective measures in response to the revealed problems.

VII. Surveillance and Disease Reporting

The Prevention and Control of Disease Ordinance (Cap. 599) requires all registered medical practitioners to notify the Central Notification Office (CENO) of Centre for Health Protection (CHP) of all suspected or confirmed cases of the statutory notifiable communicable diseases specified in the First Schedule. For the latest list of statutory notifiable diseases and the case definitions, please refer to CENO On-line website at https://cdis.chp.gov.hk/CDIS_CENO_ONLINE/index.html.

PRINCIPLES OF INFECTION CONTROL IN OUTPATIENT SETTINGS

There are two tiers of precautions to prevent transmission of infectious agents: Standard Precautions and Transmission-Based Precautions. The first tier Standard Precautions are the minimum infection prevention practices that apply to all patient care in all healthcare settings, regardless of their diagnosis. The second tier Transmission-Based Precautions are extra steps to follow for illnesses that are caused by certain germs. In addition,

- adherence to basic infection control measures;
- development and implementation of systems (e.g. Triage) for early detection and management of potentially infectious patients at initial points of entry; and
- prompt placement of such patients into a designated room and a systematic approach to transfer when appropriate

are of utmost importance to prevent spread of infections in outpatient settings.

I. Standard Precautions

Standard Precautions define all the steps that should be taken to prevent spread of infection from person to person or from contaminated environmental surfaces/healthcare items, when there is an anticipated contact with:

- Blood
- Body fluids
- Secretions
- Excretions, such as urine and faeces (not including sweat) whether or not they contain visible blood
- Non-intact skin, such as an open wound
- Mucous membranes, such as the mouth cavity

Standard Precautions are designed to reduce the risk of transmission of bloodborne pathogens and pathogens from moist body substances. They are applied to all patients regardless of their diagnosis or presumed infection status. The application of Standard Precautions during patient care is determined by the nature of contact/interaction with the patient and the extent of anticipated blood, body fluid exposure which includes:

- hand hygiene
- use of personal protective equipment (e.g. gloves, gowns, masks)
- safe injection practices
- safe handling of potentially contaminated equipment or surfaces in the patient environment, and
- respiratory hygiene/cough etiquette

II. Transmission-Based Precautions

Since the infecting agent often is not known at the time of encounter in out-patient clinic, Transmission-Based Precautions are used empirically, according to the clinical syndrome and the likely etiologic agents at that time. Systems should be in place for early detection and management of potentially infectious patients (which include prompt separation and transfer as appropriate) at initial points of entry to the facility. There are three categories of Transmission-Based Precautions include: (1) Airborne Precautions, (2) Droplet Precautions, and (3) Contact Precautions. For some diseases that may have multiple routes of transmission, a combination of Transmission-Based Precautions may be used. Whether used singly or in combination, Transmission-Based Precautions are always used in addition to Standard Precautions.

(A) Airborne Precautions

Apply to patients known or suspected to be infected with a pathogen that can be transmitted by airborne route. Airborne precautions prevent diseases that are transmitted by airborne droplet nuclei (5 micrometres or smaller in size) containing microorganisms that can remain suspended in the air for long period of time or dust particles containing the infectious agent. Microorganisms carried in this manner can be dispersed widely by air current within a room or over a long distance. Special air handling and ventilation should be considered. Examples of airborne infections are pulmonary tuberculosis, chickenpox and measles. Airborne precautions should also be taken into consideration when performing procedures that have been reported to be aerosol-generating and associated with a documented increased risk of pathogen transmission.

(B) Droplet Precautions

Apply to patients known or suspected to be infected with a pathogen that can be transmitted by droplet route. Droplet precautions prevent the spread of organisms that are transmitted by large droplet particles (larger than 5 micrometres in size). These particles do not remain suspended in the air for extended periods of time, and usually do not travel beyond several feet (usually 1 metre or lesser) from the patient. These droplets are generated when the patient coughs, talks, or sneezes. Examples of infections transmitted by droplet route include influenza, Group A streptococcus, pertussis and rubella.

(C) Contact Precautions

Apply to patients known or suspected to be infected or colonized with epidemiologically important microorganisms that can be transmitted through direct patient contact (hand or skin-to-skin contact that occurs during patient-care activities) or indirect contact of contaminated environmental surfaces or healthcare items. Examples of infections transmitted by contact route include scabies, norovirus, methicillin resistant *Staphylococcus aureus* (MRSA), vancomycin-resistant enterococci (VRE) and

Clostridium difficile.

INFECTION CONTROL MEASURES

I. Hand Hygiene

Good hand hygiene is critical to reduce the risk of spreading health care-associated infection including multi-drug resistant organisms (MDROs). The DH has adopted the WHO Guidelines on Hand Hygiene in Health Care for implementation of hand hygiene in DH clinical services. Evidence showed that use of alcohol-based handrubs at the point of care (e.g. blood taking trolleys or station, consultation desks, triage station, at bedside) facilitates hand hygiene, increases compliance and irritates hands less. Clinics should also implement strategies and programmes to enhance and sustain hand hygiene compliance.

A. Hand Hygiene Technique

Hand hygiene can be achieved by rubbing hands with 70-80% alcohol-based formulation or washing hands with soap and water.

Handrubbing with 70-80% Alcohol-based Handrub (ABHR):-

- Apply a palmful of ABHR (~3-5ml) and cover all surfaces of the hands including palms, back of hands, between fingers, back of fingers, thumbs, finger tips and wrists (Appendix I).
- Rub all hand surfaces for at least 20 seconds until hands are dry.

Handwashing with Soap and Water:

- Wet hands with water and apply enough amount of soap necessary to cover all hand surfaces.
- Rub all surfaces of the hands for at least 20 seconds before rinsing under running water.
- Dry hands thoroughly with disposable paper towel.
- The whole procedure usually takes about 40-60 seconds.
- Avoid using hot water for handwashing because repeated exposure to hot water may increase the risk of dermatitis.

B. Indications for Hand Hygiene

- Preferably use ABHR for routine hand-antisepsis if hands are not visibly soiled.
- Wash hands with soap and water when visibly dirty or visibly soiled with blood or other body fluids or after using the toilet.
- If exposure to potential spore-forming pathogens is strongly suspected or proven, including outbreaks *Clostridium difficile*, or after contacting patients with hand-foot-mouth disease or diarrhoeal diseases (e.g. norovirus infection), hand washing with soap and water is the preferred means.

- Soap and ABHR should not be used concomitantly.

C. Other Aspects of Hand Hygiene

- Do not wear artificial fingernails or extenders, rings or other jewellery when having direct contact with patients.
- Do not add soap to a partially empty soap dispenser. This practice can lead to bacterial contamination of soap. If reusable soap container is used, it should be washed and dried thoroughly before refilling.

WHO “My 5 moments for Hand Hygiene” in outpatient

Moment	When	Why	Examples
Moment 1. **Before touching a patient**	Clean your hands before touching a patient.	To protect the patient against harmful germs carried on your hands.	Before taking pulse, blood pressure, chest auscultation, physical examination, applies skin antiseptic to injection site.
Moment 2. **Before clean/aseptic procedure**	Clean your hands immediately before performing a clean/aseptic procedure.	To protect the patient against harmful germs, including the patient’s own, from entering his/her body.	Before oral /dental care, giving eye drops, secretion aspiration, wound dressing, injection, vaccination, catheter insertion, preparation of medication
Moment 3. **After body fluid exposure risk**	Clean your hands immediately after a procedure involving exposure risk to body fluids (and after glove removal).	To protect yourself and the health-care environment from harmful patient germs.	After contact with body fluids or excretions, mucous membranes and non-intact skin, e.g. oral/dental care, giving eye drops, secretion aspiration, wound dressing, specimen collection, clearing up urines, faeces, vomit, handling waste, cleaning of contaminated and visibly soiled instruments or areas. Moving from a contaminated body site to another body site during care of the same patient
Moment 4. **After touching a patient**	Clean your hands after touching the patient at the end of the encounter or when the encounter is interrupted.	To protect yourself and the health-care environment from harmful patient germs.	After taking pulse, blood pressure, chest auscultation, physical examination.
Moment 5. **After touching patient surroundings**	Clean your hands after touching any object or furniture in the patient surroundings, when a specific zone is temporarily and exclusively dedicated to a patient even if the patient has not been touched.	To protect yourself and the health-care environment from harmful patient germs.	After changing bed linen, perfusion speed adjustment, handling of oxygen tubing, holding a wheelchair/stretcher. After cleaning the trolley, couch and removes gloves.

II. Personal Protective Equipment (PPE)

The use of PPE provides a physical barrier between micro-organisms and the user. It reduces exposure risk but does not eliminate the infectious hazard. Besides, it does not replace basic infection control measures such as hand hygiene. Selection of PPE should be based on risk assessment. PPE should be stored in appropriate area free from dampness, sunlight and dirt. They need to be examined for the expiry date and checked regularly to ensure integrity. Summary of recommended PPE usage in Standard Precautions and Transmission-Based Precautions is attached in Appendix III. Hand hygiene should be performed according to the steps of PPE donning and doffing.

(A) Use of PPE

(i) Gloves

- Should be worn when there is an anticipated risk that hands would be contacted with
  1. blood or body fluids, secretions, excretions, non-intact skin, mucus membrane and potentially infectious material;
  2. patients who are colonized or infected with pathogens transmitted by contact route, e.g. VRE, MRSA;
  3. handling or touching visibly or potentially contaminated patient care equipment and environmental surfaces.
- Use of gloves does not replace the need for hand hygiene
- Remove gloves after caring for a patient. Do not wear the same pair of gloves for the care of more than one patient.
- Change gloves between tasks and procedures on the same patient after contact with material that may contain a high concentration of microorganisms.
- Remove gloves promptly after the procedure, before touching non-contaminated items and surface, e.g. handling telephones or performing office work.
- Perform hand hygiene immediately after removal of gloves.
- Selection of **powder free** gloves is recommended since this avoids interactions with the alcohol-based handrub and also the gritty feeling on hands.
- Do not reuse disposable gloves.
- Sterile gloves should be used for surgical/aseptic procedures.
- Appropriate gloves sizes and types should be readily available.

(ii) Gowns

- Should be worn to protect skin and clothing during procedures or activities that are likely to generate splashes or sprays of blood, body fluids, excretions and secretions.
- Should be worn by staff when applying Contact Precautions.

(iii) <u>Face protection: masks, goggles, face shields</u>

- Use of mouth, nose and eye protection during procedures that are likely to generate splashes or sprays of blood or other body fluids.

(a) <u>Surgical Masks</u>

- Should be worn by staff
  - to protect themselves from contact with infectious material from patients, e.g. respiratory secretions and sprays of blood or body fluids;
  - when engaged in procedures requiring sterile technique to protect patients from exposure to infectious agents carried in a HCW's mouth or nose.
  - working within 3 feet (1 metre) of patients on droplet precautions.
- Placed on coughing patients to limit potential dissemination of infectious respiratory secretions from the patient to others (i.e., Respiratory Hygiene/Cough Etiquette)

(b) <u>N95 respirator</u>

- Should be worn by staff
  - for potential exposure to infectious agents transmitted via airborne route
  - performing aerosol generating procedures e.g. nasopharyngeal aspiration, endotracheal intubation.
- Staff should have **fit test** to ensure appropriate respirator selection and use.
- Education on respirator use, especially on how to don and doff the specific brand and model of respirator that staff is using.
- A **seal check** (formerly called a fit check) should be performed by the staff **each time** when a N95 respirator is donned to minimize air leakage around the facepiece.

(c) <u>Goggles and Face Shields</u>

- Should be worn by staff to protect the mucus membrane of the eye, nose and mouth during procedure that may generate splashes or sprays of blood, body fluids, excretions and secretions.
- Personal eyeglasses and contact lenses are NOT considered adequate eye protection

(B) <u>Principles of PPE Removal</u>

- Doffing of used PPE is a high-risk procedure and requires strict adherence to PPE doffing procedure to protect healthcare worker from contamination.
- PPE should be removed before leaving patient care room except respirators which should be removed after exiting the room. *(Used PPE should be treated as contaminated and should not be worn out of the workplace into non-clinical areas.)*
- Remove PPE in designated doffing area that prevents other persons from getting contaminated.
- Do not doff together in close proximity to another person. PPE should be doffed slowly and deliberately in the correct sequence.
- Perform hand hygiene according to steps of PPE doffing, or when hands get contaminated during doffing of PPE.
- Change PPE and wash skin thoroughly with soap and water without delay whenever having substantial splashing or contamination by blood or body fluids.
- Disposable PPE should be discarded in lidded waste receptacles properly after use.
- Reusable PPE should be properly decontaminated after use and maintained.

(C) <u>Suggested Sequence of PPE Removal</u>

In order to keep mucosal protection intact throughout, the suggested sequence of PPE removal in designated room or after performing high risk nursing procedure is as follows:

1. Remove gloves
2. Perform hand hygiene
3. Remove gown
4. Perform hand hygiene
5. Remove disposable cap
6. Perform hand hygiene
7. Remove eye protection
8. Perform hand hygiene
9. Remove mask/N95 respirator
10. Perform hand hygiene

(Remarks: The sequence may vary slightly according to local practice without jeopardising the general infection control principles)

III. Respiratory Hygiene / Cough Etiquette

The following infection control measures should be implemented at the first point of contact with patients (and accompanying family members or friends) with undiagnosed transmissible respiratory infections, and applies to any person with signs of illness including cough, congestion, rhinorrhea, or increased production of respiratory secretions when entering a healthcare facility and continuing throughout the duration of visit. They include:

(A) Education of healthcare facility staff, patients, and accompany persons

- The importance of infection prevention measures to contain respiratory secretions to prevent the spread of respiratory pathogens when there are signs and symptoms of a respiratory infection.
- Health care facilities should provide resources for performing hand hygiene and cough manner in or near waiting areas.
    - Provide lidded waste receptacles for disposed of used mask and tissue paper.
    - Provide conveniently located dispensers of ABHR; where sinks are available, ensure that supplies for handwashing (i.e., liquid soap and disposable paper towels) are consistently available and function well.

(B) Visual alerts

Post visual alerts such as posters and banners in conspicuous positions (e.g.at the entrance), in language(s) appropriate to the population served, to remind patients and their companions to practice cough manner. They should also report to staff if they have respiratory symptoms/infection.

(C) Source control measures and hand hygiene

- Cover mouth and nose when coughing or sneezing.
- Use tissue paper to contain respiratory secretions and dispose of them in lidded receptacles.
- Perform hand hygiene after hands have been in contact with respiratory secretions.
- Offer surgical masks to persons with respiratory symptoms, especially during epidemic periods.

(D) Spatial separation

- Instruct persons with respiratory symptoms to sit away from others (ideally >3 feet (1 metre)) in designated waiting area.

IV. Patient Triage and Placement

A high index of suspicion is needed for identifying potentially infectious individuals. Specific triage policies such as provision of visual alert to remind patient to inform staff for fever or respiratory symptoms should be developed for early detection and isolation, so as to minimize transmitting communicable diseases to other patients and HCWs in outpatient setting. During patient triage, the following should be observed:

- HCWs should assess patients for conditions that require additional precautions (i.e. transmission-based precautions) and prioritize those who may require urgent consultation and isolation.
- Patients with high suspicion of infectious risk should be accommodated and registered in designated area to minimize cross infection.
- Provide a surgical mask for patients identified with respiratory symptoms.
- Minimize the stay of infectious patients in outpatient clinics, arrange consultation soon within their arrival time and facilitate early departure from clinics.

V. Patient Care Equipment

Decontamination of reusable patient care instruments is necessary to prevent transmission of organisms between patients. Disinfection is used to eliminate many or all pathogenic microorganisms, except bacterial spores, on inanimate objects. Sterilisation is used to destroy or eliminates all forms of microbial life. Standard Precautions should be applied when handling used instruments.

- Centres/clinics should establish policies and procedures for containing, transporting, and handling equipment that may be contaminated with blood or body fluids.
- Manufacturer's instructions for reprocessing any reusable medical equipment in the facility (including point-of-care devices such as blood glucose meters) should be readily available and used to establish clear and appropriate policies and procedures.
- Before disinfection and sterilisation, thorough cleaning is essential because inorganic and organic materials that remain on the surfaces of instruments interfere with the effectiveness of these processes.

(A) Cleaning

Cleaning is the removal of visible soil (e.g., organic and inorganic material) from objects and surfaces and normally is accomplished manually or mechanically using water with detergents or enzymatic products. It is an essential and important step before processing to disinfection and sterilisation.

- Instrument should be rinsed off gently under running water; or soaked in a solution of lukewarm water (not more than 45℃) or any presoaking solutions including enzymatic, disinfectants, or detergents (in accordance with the instructions from device manufacturers) to prevent coagulation of proteinaceous substances and remove

gross soil. Appropriate PPE should be worn when cleaning instruments to minimize occupational exposure. Care should be taken not to produce splashes. (Please refer to "Infection Control Measures: II (A) Use of PPE".)

(B) <u>Disinfection and Sterilisation Methods</u>

Instruments should be categorized according to the risks they pose for patients.

- Critical items confer a high risk for infection if they are contaminated with any microorganisms. Objects that enter sterile body areas or the vascular system must be sterile because any microbial contamination could transmit disease.
- Semi-critical items are devices that come into contact with mucous membranes or non-intact skin, which require high-level disinfection*. These medical devices should be free from all microorganisms; however, small number of bacterial spores is permissible. Cleaning followed by high-level disinfection should eliminate enough pathogens to prevent transmission.
- Non-critical items are those come into contact with intact skin. Intact skin acts as an effective barrier to most microorganisms; therefore the sterility of items coming in contact with intact skin is not critical. These items can be divided into noncritical patient care items and noncritical environmental surfaces. Low-level disinfection is generally sufficient.

*(*Follow manufacturer's instructions on proper dilution and contact time.)*

Spaulding' s Classification provides an outline to classify medical devices into three categories and to classify the way of reprocessing such devices by either disinfection or sterilisation. It is listed in the following table for reference. Nevertheless, the required level of reprocessing will depend on the intended use of the device and the associated risk of infection. Recommended methods of decontamination for commonly used items may refer to Appendix IV.

Cleaning, Disinfection and Sterilisation Methods according to Devices Categories – Spaulding's Classification

Classification	Device Examples	Level of Processing/Reprocessing	Methods (examples)
Critical Device Enter sterile body cavity or vascular system	• Surgical instruments • Biopsy instruments • Implants	**Cleaning** followed by: **Sterilisation** *Sterilisation is a process that completely eliminates or kills all microorganisms & spores*	**Sterilisation** • Steam Sterilisation • Hydrogen peroxide gas plasma • >2.4% glutaraldehyde-based formulations, • 0.95% glutaraldehyde with 1.64% phenol/phenate, • 7.5% stabilized hydrogen peroxide, • 7.35% hydrogen peroxide with 0.23% peracetic acid, • 0.2% peracetic acid, and • 0.08% peracetic acid with 1.0% hydrogen peroxide
Semi-critical Device Contact mucous membranes, or non-intact skin but do not penetrate them	• Respiratory therapy equipment • Anaesthesia equipment • Tonometer • Ultrasound endocavity probes: transvaginal/ transrectal • Cryosurgical probes • Endoscopes, • Laryngoscope blades • Proctoscope • Vaginal speculum	**Cleaning** followed by: **High-Level Disinfection** *High level disinfection eliminates all microorganisms, except for small number of bacterial spores* (Sterilisation is preferred)	**High-Level Disinfection** • Glutaraldehyde • Hydrogen peroxide solution • *Ortho*-pathalaldehyde (OPA) • Washer-disinfector that has a high-level disinfection cycle
Noncritical Device Contact intact skin	• ECG machines • Oximeters • Bedpans, urinals, commodes • Blood pressure cuffs • Stethoscopes	**Cleaning** followed by: **Low-Level Disinfection** (in some cases, cleaning alone is acceptable) *Low level disinfection kills most bacteria, some fungi, and inactivates some viruses but it cannot be relied on to kill resistant microorganisms*	**Intermediate and Low-Level disinfection** • Alcohol • Diluted sodium hypochlorite solution • Hydrogen peroxide • Water-disinfector

(i) <u>Sterilisation</u>

Bench-top steam sterilisers (Autoclaves)

Critical Instruments which are not heat sensitive can be sterilised reliably by steam under pressure using steam sterilisers. The followings have to be observed when using sterilisers:

- Sterilisers should be located in treatment room/specific room away from traffic and they should not discharge steam/vapour into waiting area.
- Sterilisers must be operated only by staff who has been adequately instructed in their use. The operating persons should record the details of each load and the mechanical indicators as listed below in a log book specifically kept for this purpose.
- Recognized minimum exposure periods for sterilisation of wrapped healthcare supplies are 30 minutes at 121 ^{o}C in a gravity displacement steriliser or 4 minutes at 132 ^{o}C in a dynamic air removal sterilisers (prevacuum) steriliser. Minimum cycle times for steam sterilisation cycles as recommended by Centers for Disease Control and Prevention (CDC) and Association for the Advancement of Medical Instrumentation (AAMI) are

Type of steriliser	Item	Exposure time at 121℃	Exposure time at 132℃	Drying time
Gravity displacement	Wrapped instruments	30 min	15 min	15-30 min
	Unwrapped nonporous instrument		3 min	0-1 min
Dynamic-air-removal (e.g., prevacuum)	Wrapped instruments		4 min	20-30 min

  - At constant temperatures, sterilisation times vary depending on the type of item (e.g., metal versus rubber, plastic, items with lumens), whether the item is wrapped or unwrapped, and the steriliser type.
  - It is important to refer to the manufacturer's instructions for operation, since exposure times can vary according to the design of the particular steriliser.
  - A standard operation chart for the correct exposure periods of all supplies should be prepared and posted for easy daily reference
- The ability of the steriliser to reach physical parameters necessary to achieve sterilisation should be monitored by mechanical, chemical, and biological indicators. All the results should be documented and recorded.
  - Mechanical indicators record cycle time, temperature, and pressure as displayed on the steriliser gauges for each instrument load.

- External chemical indicators such as autoclave tape are affixed on the outside of each instrument pack to show that the package has been processed through a sterilisation cycle. An internal chemical indicator should be placed inside the packs to verify sterilant penetration.
- Biological indicators should be tested at least weekly with spore vials placed on the bottom shelf in the area above the chamber drain. The results of spore test should be entered into a record.
- When dynamic air removal steriliser is used,
  - Steam penetration test such as Bowie-Dick test should be performed before the first processed load of the day.
  - Vacuum/air leak test should be performed weekly.

- In case of unsatisfactory test result, Electrical and Mechanical Services Department (EMSD should be notified. Steriliser should only be reused when test indicates satisfactory performance.
- Steriliser should be serviced regularly at yearly intervals and as necessary.
- After new installation, relocation, sterilisation failure and major repairs, steam steriliser should be tested by biological and chemical indicators. 3 consecutives empty cycles with indicators should be run, one right after the other. For dynamic air removal sterilisers, the Bowie-Dick test pack should also be run with each test demonstrating sufficient air removal. The steriliser is not put back into use until all biological indicators are negative and chemical indicators show a correct end-point response
- Some more points to note:
  - Traditional table top steam sterilisers (gravity displacement) without vacuum extraction cycle are primarily used to process nonporous articles whose surfaces have direct steam contact. Unwrapped instruments must be used at point of care after autoclaving.
  - Type of water to be filled and the schedule of changing/refill in the water tank of the steriliser should follow the recommendations by product manufacturer.

  (N.B. When purchasing sterilisers, please note the requirements of BS 3970: the steriliser should have a preset automatic cycle, both temperature and pressure gauges and a thermocouple entry port.)

Shelf-life of sterilised items

- The shelf life of a packaged sterile item is event-related and depends on the quality of the packaging material, the storage conditions, and the conditions during transport, and the amount of handling.
- Instructions of the manufacturer should be followed.
- A label including the expiry date of the sterilised packages and other information,

such as the package contents, identification of the steriliser and cycle number, initials of the staff who prepared the package and date sterilized, should be affixed on every item.

- Sterilised items should be stored preferably in an enclosed and well-ventilated area (Temperature should be less than 24◦C and relative humidity should be kept below 70%) to provide protection against dust, moisture, and temperature and humidity extremes.
- Maintain an effective stock management system i.e. stock should be rotated according to the principle "first in, first out" so that sterile items are used before expired
- Instrument should be repackaged and re-sterilised before use if it is expired or if there is any sign of damage of the package.

(ii) Chemical disinfection

Chemical disinfection could be an alternative for heat labile semi-critical and non-critical instruments. However, they have many drawbacks such as materials compatibility, variability in the bactericidal effect, inactivation and different exposure times of respective disinfectants (refer to Appendix V for properties of various chemical disinfectants).

When using chemical disinfection, the followings should be observed:

- The containers used for disinfection should be kept covered during use to avoid contamination and also the occupational hazard such as release of irritant chemical vapour.
- Do not top up the prepared solution with fresh solution.
- The container should be washed, rinsed and dried when the solution is changed.
- The containers should be clearly labelled with contents, recommended concentration for soaking and exposure time required and expiry date.
- Follow manufacturer's instructions, which include contact time, concentration/dilution, water requirement and rinsing method of the selected disinfectant.
- Different disinfectants should not be mixed or used in combination.
- Use appropriate disinfectants in accordance with the recommended practice as specified in appendix IV.
- Health and safety precautions such as adequate ventilation to evacuate the released chemical vapour and use of appropriate PPE should be followed.

(iii) Education and Training

Staff and supervisors who are involved in the decontamination process should have demonstrated knowledge of the processes and infection control principles. They

should supervise and arrange related training to any persons involved in cleaning, disinfection and sterilisation process, and infection prevention and control principles.

(iv) Occupational Health and Safety

Supervisors should review any protocols or guidelines for cleaning, disinfection and sterilisation process to ensure personnel involved in the processes can handle appropriately.

VI. Environmental Control

(A) Ventilation

A substantial proportion of the infections seen in the outpatient clinics are viral respiratory infections and probably carry with them risks of transmission similar to the risks of transmission in the community. Therefore, special air handling and ventilation are usually not required. It is unnecessary to restrict subsequent use of examination rooms after patients with these infections are seen.

Susceptible persons may come in contact with tuberculosis (TB) patients in outpatient clinic, most probably in TB and chest clinics and may get infected via inhalation of the suspended droplet nuclei containing *Mycobacterium tuberculosis* for a sufficiently extended time. To minimize the risk of infections, it is advisable that:

- Plenty of fresh air should be continuously introduced into all the rooms in the clinics.
- Direction of air flow should be adjusted such that air flows from clean areas to less clean areas, then to dirty areas.
- Filters of the air-conditioners are cleansed once bi-monthly or as recommended by the centre in-charge when they are visually dirt.

Patients with high suspicion of airborne infection should be placed in airborne infection isolation rooms (AIIRs) or designated room to minimize cross infection. In TB and chest clinics, there should be at least one room that meets the requirement for an airborne infection isolation rooms (AIIRs).

i) Airborne infection isolation rooms (AIIRs)

It is desirable to maintain

- a minimum ventilation rate of 12 air changes per hour (ACH) for renovated rooms and new rooms. For existing AIIRs, a minimum of 6 ACH is acceptable.
- air supply and exhaust rate sufficient to maintain a 2.5 Pa (0.01-inch water gauge) negative pressure difference with respect to all surrounding spaces; and
- air exhausted directly to outside away from air intakes and traffic or exhausted after HEPA filtration prior to recirculation.
- Install self-closing devices on all AIIR exit doors are also recommended.

ii) Designated rooms

A portable room-air recirculation units with HEPA filters (also called portable air cleaners), can be used to filter infectious droplet nuclei from the air when

i) a room has no general ventilation system. (*General ventilation system refers to (1) dilute and remove contaminated air, (2) control the direction of airflow in a health-care setting, and (3) control airflow patterns in rooms.*)
ii) the system cannot provide adequate ACH (i.e.12 air changes per hour (ACH) for renovated rooms and new rooms and a minimum of 6 ACH for exiting room). Newly installed portable room-air recirculation units with HEPA filters should achieve the equivalent of ≥12 ACH.
iii) increased effectiveness in airflow is needed.

- Effectiveness depends on the ability of the portable room-air recirculation unit to circulate as much of the air in the room as possible through the HEPA filter.
- A regularly scheduled maintenance programme is required to monitor filters for possible leakage and filter loading. To achieve optimal performance, filters require monitoring and replacement in accordance with the manufacturer recommendations.

(B) Cleaning and Disinfection of Environmental Surfaces

General Principles:

- Schedule of cleaning, operational manual and training of staff should be established and followed.
- Ensure an adequate supply of appropriate cleaning equipment is available.
- Prepare fresh disinfectant solution according to manufacturer's instructions.
- Work from clean to dirty area and from high to low areas of the room/area.
- Visibly dirty surfaces should first be cleaned with a detergent prior to disinfection.
- Active damp scrubbing to avoid creation of aerosols or splashing, or dust dispersion.
- All cleaning equipment (e.g. cloth, towel, mop and bucket) should be decontaminated with detergent and water / appropriate disinfectant. Store all equipment in a well-ventilated environment that prevents the retention of moisture and facilitating of drying.
- Clean and disinfect the room used by patients with symptoms suggestive of infectious diseases after patient is discharged.
- Recommend to use disposable cleaning cloth/towel for patients with infectious diseases.

Furniture, Other Fixtures and Fittings

- Furniture in the waiting rooms should be cleaned regularly or when visibly dirty with detergent and water /disinfectant, depending on the nature of the surface and the type and degree of contamination. Examination tables and couch should be cleaned daily or when it is visibly soiled or contaminated.
- Other structural surfaces, fixtures and fittings require regular cleaning as recommended by centre in-charge.

Floor

- Clean the floor daily by detergent and water or more frequently consistent with the need in the facilities.
- Cleaning should start in the clean areas and progress to the dirty areas (including the toilets, which should be the last).

Cleaning Spills of Blood and Body substances

- Spills of blood and body fluids should be decontaminated promptly.
- Alert signage placed at the nearby areas to alert others there is spill of blood or body fluids on the floor.
- Wear appropriate PPE when handling the spills of blood and body fluid or when splashing is anticipated (refer to above point II).
- Use strong absorbent disposable paper towels to wipe away the blood, secretions, vomitus or excreta.
- Put the used absorbent disposable paper towels in a waste bag carefully without contaminating oneself / the environment.
- Disinfect the surface and the neighbouring area with appropriate disinfectant.
    - If places are contaminated by secretions, vomitus or excreta, use 1 part of household bleach containing 5.25% sodium hypochlorite to 49 parts of water, leave for 15-30 minutes, rinse with water and wipe dry afterwards.
    - If places are contaminated by blood, use 1 part of household bleach containing 5.25% sodium hypochlorite to 4 parts of water, leave for 10 minutes, rinse with water and wipe dry afterwards.
    - Floor mop or other cleaning utensils should be treated properly after each use. Disinfect such utensils by immersing in 1 part of household bleach containing 5.25% sodium hypochlorite to 49 parts of water for 30 minutes, then wash with detergents and water. Re-use after drying out.
- Dispose of all contaminated waste materials into appropriate plastic waste bag.
- Perform hand hygiene after the procedure.

VII. Safe Injection Practices

Staff should adhere to basic principles of aseptic technique for the preparation and administration of parenteral medications

- Use of a sterile, single-use, disposable needle and syringe for each injection.
- Use of single-dose vials is preferred over multiple-dose vials, especially when medication will be administered to multiple patients.
- Implement engineering controls that include sharps disposal containers and needles and other sharp devices with an integrated sharps injury prevention feature.
- Contaminated needles and other contaminated sharps should not be bent, recapped, manipulated or removed unless such action is required by a specific procedure.
- If needles need to be recapped, use recapping devices or one-handed scoop technique. Used needles and sharps shall be discarded into sharps box.
- Sharps box is recommended to be placed in a convenient place near to where the sharps are used.
- Do not overfill sharps box. Dispose sharps box when the disposable sharps reach the warning line (70-80%) for maximum volume.
- Secure sharps box in an upright position or placed in the rack for sharps box.
- Seal up sharps box and discard into red plastic waste bag with international biohazard sign for proper disposal.
- Prevention is important. The guidelines: "Prevention of Sharps Injury and Mucocutaneous Exposure to Blood and Body Fluids in Healthcare Settings" should be circulated to colleagues regularly
  http://www.chp.gov.hk/files/pdf/prevention_of_sharps_injury_and_mucocutaneous_exposure_to_blood_and_body_fluids.pdf

VIII. Textiles and Laundry

- Soiled textiles, including bedding, towel and patient clothing may be contaminated with pathogenic microorganisms. Standard precautions should be applied when handling all used laundry.
- PPE should be worn when handling used laundry (Please refer to Infection Control Measures II (A) Use of PPE.).
- Used laundry should be handled as little as possible and with minimal agitation to avoid contamination of air, surfaces and persons.
- Sorting or pre-rinsing of used linen in patient care areas is not recommended.
- Contain all used linen in a laundry bag or designated bin.
- Infected linen should be placed in leak resistant bag, e.g. plastic bag and labelled as 'INFECTED LINEN' before sending to laundry.
- Designated trolley/carts should be used for internal collection and transportation, and it

should be decontaminated regularly

- Clean laundry should be handled, transported and stored separately from used laundry.

IX. Waste Management

Waste which arises from outpatient settings should be segregated at the sources of arising. Lidded waste receptacles, preferable with foot-pedal, should be used in clinical areas. Management of clinical waste and chemical waste should follow the guidance provided by Environmental Protection Department (EPD), i.e. the "Code of Practice for the Management of Clinical Waste" (Government clinics are classified as "major clinical waste producers", please refer to: http://www.epd.gov.hk/epd/clinicalwaste/file/doc07_en.pdf); "A Guide to the Chemical Waste Control Scheme" (http://www.epd.gov.hk/epd/sites/default/files/epd/english/environmentinhk/waste/guide_ref/files/guide_e.pdf) and the "Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes" (http://www.epd.gov.hk/epd/sites/default/files/epd/english/environmentinhk/waste/guide_ref/files/chemw_e.pdf)

(A) Types of Waste:

(i) Domestic Waste

Wrapping paper, office paper and other items should be placed in black plastic waste bags and disposed of in the same manner as domestic waste.

(ii) Clinical Waste

Used or contaminated sharps; dressings and all other waste dripping and caked with blood or containing free flowing blood; infected waste from patients with infectious pathogens (e.g. Ebola virus, severe acute respiratory syndrome coronavirus (SARS-CoV)) and any materials contaminated by the above infectious materials, should be placed in red plastic bags with international biohazard sign. Human and animal tissues should be put into yellow plastic bags with international biohazard sign. Appropriate PPE should be used when handling clinical waste. (Refer to point II for details)

(iii) Chemical Waste

Unused or partially used cytotoxic drugs with a significant residual volume (which means more than 3% volume of the container filled with the drugs), and pharmaceutical products should be disposed of as chemical waste. Appropriate PPE should be used when handling of chemical waste. (Please refer to Infection Control Measures II (A) Use of PPE).

(B) Waste Disposal

- Waste bags should be securely fastened when reaching the warning line for maximum volume is 70-80% full. Domestic waste should be disposed of daily. Sealed red plastic bags

should be stored in a designated location with a visibly clear warning sign, and protected from water, rain and rodents. They should be secured from unauthorized persons.

- Waste should be segregated, labelled, stored and disposed.
- Chemical waste should be properly packaged, labelled, stored and disposed. Please refer to the "Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes" issued by EPD. (http://www.epd.gov.hk/epd/sites/default/files/epd/english/environmentinhk/waste/guide_ref/files/chemw_e.pdf)

X. Specimen Handling

- Adherence to Standard Precautions and hand hygiene is crucial during specimen collection. Transmission-Based Precautions may be required according to the nature of disease of the patients.
- Samples should be taken correctly and placed in a leak-proof specimen container. The cap should be securely closed.
- The outside of specimen containers should not be contaminated.
- Specimen tray should be thoroughly cleaned and disinfected periodically (i.e. at least daily or when contaminated).
- Refrigerator used for specimen storage should be clearly labelled and should not be used for food, drinks or medications.
- Specimens should be kept upright as far as possible to prevent leakage during transport to the laboratory.
- Specimens should be transported in individual leak-proof bags marked with "BIOHAZARD". Request forms should be placed outside the plastic bag.
- Perform hand hygiene after taking any specimen.
- Specimen courier should be instructed on how to handle spillage.
- Spillage kit should be available in the transport van.

XI. Personal Hygiene

(A) Staff

- Wear surgical mask when having respiratory symptoms. Exclude from duties and seek medical advice immediately when having fever or other symptoms suggestive of infectious diseases.
- Wear uniform properly, fastened and keep it apart from outdoor clothing.
- White coat/uniform should be worn within clinic boundary only.
- Comply with "5 moments for Hand Hygiene"
- Perform hand hygiene often and always before leaving the clinics.
- Always perform hand hygiene before eating and drinking.
- Never eat and drink in the clinical areas

- Perform hand hygiene before and after contact with eyes, nose or mouth.
- Cover wounds with water-proof dressings.

(B) Patients

- Strictly adhere to respiratory hygiene/cough etiquette.
- Perform hand hygiene before leaving clinic.

XII. Employee Health

(A) Staff Sickness Reporting and Record

- All staff should report to supervisor / infection control coordinator when having fever or other symptoms suggestive of infectious diseases and seek medical advice immediately. Supervisor / infection control coordinator should document the reported sickness in Staff Sickness Record.
- All staff, particularly those who have frequent contact with tuberculosis patients, should seek medical evaluation promptly whenever they develop symptoms which may be suggestive of tuberculosis

(B) Immunisation

Optimal use of vaccines can prevent transmission of vaccine-preventable diseases. Immune status of individual HCW should be assessed at the same time of initial employment or upon first taking up work which involves potential contact with patients, their blood or body substances. A full vaccination history should be obtained and with documentation. DH follows the recommendations stated in the "Summary Statement on Vaccination Practice for Health Care Workers in Hong Kong" issued by the Scientific Committee on Vaccine Preventable Disease in September 2017 as below:

(i) Hepatitis B

HCW should be immune to hepatitis B and post-vaccination serological status should be ascertained.

(ii) Measles and Rubella

HCW should be immune to measles and rubella, by either vaccination or medical evaluation.

(iii) Varicella

HCW should be immune to varicella. HCW with negative or uncertain history of receiving two doses of varicella vaccines or disease of varicella or herpes zoster should be serologically tested. Vaccines should be offered to those without varicella zoster antibody.

(iv) Seasonal influenza

HCW should receive seasonal influenza vaccination annually once the vaccine is available.

The work nature of HCW (type of contact with patients and their environment), and the characteristics of the patient population being cared should also be taken into consideration when deciding about which vaccines are required.

(C) Accidents and Near Miss

- All staff should be instructed to notify accidents and near-miss incidents related to infection prevention and control especially sharps injury to supervisor / infection control coordinator in the clinic, according to local policy e.g. "Manual for the Reporting and Surveillance System of Sharps Injury and Mucocutaneous Exposure to Blood and Body Fluids in Department of Health".
- All notified accidents and near-miss incidents should be recorded in a log book specifically kept for this purpose. They should be reviewed and monitored so that corrective and preventive actions can be taken.

(D) Post-Exposure Management

- First aid is of great importance after exposure to blood or body fluids.
- In case of sharps related injury, wound should be thoroughly washed with liquid soap and water before disinfected and dressed.
- For mucosal contact e.g. spillage into the eyes, the exposed part should be washed immediately and liberally with running water.
- The exposed person should seek medical advice for risk assessment and proper post-exposure management as follow the advice in "Recommendations on the Management and Post-exposure Prophylaxis of Needlestick Injury or Mucosal Contact to HBV, HCV and HIV".
  (http://www.chp.gov.hk/files/pdf/recommendations_on_postexposure_management_and_prophylaxis_of_needlestick_injury_or_mucosal_contact_to_hbv_hcv_and_hiv_en_r.pdf)

Appendix I


1
手掌 Palms
2
手背
Back of hands
3
指隙
Between fingers
4
指背
Back of fingers
5
拇指 Thumbs
6
指尖
Finger tips
7
手腕 Wrists
Hand Hygiene Technique Rub hands for 20 seconds
潔手技巧 搓手20秒
CHP
衛生防護中心
Centre for Health Protection
衛生署
Department of Health

Appendix II

Infection Control Checklist for the Department of Health of Hong Kong

Service: _____ **Infection Control Coordinator:** **Signature:** _____

Name (in block letters): _____

Rank: _____

March		**June**		**September**		**December**	
Review date:	_____	Review date:	_____	Review date:	_____	Review date:	_____
Checked by		Checked by		Checked by		Checked by	
Signature:	_____	Signature:	_____	Signature:	_____	Signature:	_____
Rank & Name		Rank & Name		Rank & Name		Rank & Name	
(in block letters):	_____	(in block letters):	_____	(in block letters):	_____	(in block letters):	_____
	_____		_____		_____		_____
External auditor*:	Yes / No	External auditor*:	Yes / No	External auditor*:	Yes / No	External auditor*:	Yes / No

Remarks:

- Based on the Infection Control Guidelines, apart from continuous monitoring, the officer or designated staff has to complete the checklist at three-monthly intervals. Individual service could add in items specific to their service by using a supplementary list.
- *One of the four checking should be performed by external auditors such as staff of another clinic.

Index: Y=Yes N=No NA=Not applicable O = Assess by Observation A = Assess by Asking

Area	March			June			Sept			Dec			Remark/recommendation/follow-up action
	Y	N	NA	Y	N	NA	Y	N	NA	Y	N	NA	
1. <u>Patients Triage</u> 1A) - A triage area is available to identify potentially infectious patients - Visual alerts such as posters/banners are displayed at the entrance of clinics and triage area to alert patients: i. to report fever / respiratory symptoms / infection promptly to clinic staff ii. to wear surgical mask and perform hand hygiene if having respiratory symptoms													
1B) Designated area is assigned to patients with infectious symptoms to minimize cross infection if applicable													
1C) A designated room is available for consultation of patients with suspected (specified) infectious diseases													
1D) The triage area is equipped with: i) Handwashing facilities / Alcohol-based handrub													
ii) Surgical masks													

Area	March			June			Sept			Dec			Remark/recommendation/follow-up action
	Y	N	NA	Y	N	NA	Y	N	NA	Y	N	NA	
2. <u>Personal Protective Equipment (PPE)</u> 2A) Surgical mask is worn when client / staff present with respiratory symptoms													
2B) Surgical mask is worn by staff working within 3 feet (1 metre) of patient on droplet precautions													
2C) N95 respirator is worn by staff for potential exposure to airborne transmitted infectious diseases													
2D) Seal check is performed each time when using the N95 respirator													
2E) Goggles / face shield is worn by staff for high risk or splashing procedure													
2F) Gown is worn by staff for procedures likely to generate splashes / spray of blood or body fluids, or when contact of patient that required contact precautions.													
2G) Gloves are worn when contact with blood, body fluid, mucous membranes, non-intact skin or other potentially infectious materials is anticipated													

Area	March			June			Sept			Dec			Remark/recommendation/follow-up action
	Y	N	NA	Y	N	NA	Y	N	NA	Y	N	NA	
2H) Gloves are changed between tasks and procedures on the same patient after contact with material that may contain a high concentration of microorganisms													
2I) Gloves are changed after contact with each patient													
2J) Designated area is identified for PPE removal													
2K) Used PPE items are discarded properly after use													
2L) PPE items (including surgical mask, N95 respirator, goggles, face shield, cap, gown and gloves) are available and accessible													
2M) PPE items are stored properly in dry and clean place													
2N) Posters of "PPE donning and doffing sequence" is posted in appropriate place for staff's reference													
3. <u>Respiratory Hygiene/cough Etiquette</u> 3A) Visual alerts for respiratory hygiene / cough etiquette such as posters are displayed at the entrance of clinic													

Area	March			June			Sept			Dec			Remark/recommendation/follow-up action
	Y	N	NA	Y	N	NA	Y	N	NA	Y	N	NA	
3B) Mask is offered with education given to person with respiratory symptoms													
3C) Lidded receptacles are provided for disposal of used tissue paper													
3D) Hand hygiene facilities are available in waiting areas for patients and visitors													
4. <u>Decontamination of Patient Care Equipment</u> **4A) Cleaning** i) Appropriate PPE is worn when cleaning instruments													
ii) Rinse off blood or other substances from instruments under running water and should avoid spillage.													
iii) Instruments are immersed in a solution of lukewarm water and detergent, washed thoroughly and rinsed													
4B) Sterilisation - Bench-Top Autoclave i) Operational manual is available													
ii) The performance of the autoclave should be monitored by Mechanical, Chemical and Biological indicators by following the established schedule													

Area	March			June			Sept			Dec			Remark/recommendation/follow-up action
	Y	N	NA	Y	N	NA	Y	N	NA	Y	N	NA	
iv) Instruments can be sterilised under the following temperature: Gravity displacement sterilisers: Wrapped items: 121ºC for 30 min. 132ºC for 15 min. Unwrapped items: 132ºC for 3 min Dynamic-air removal sterilisers: 132 ºC for 4 min (Please refer to the operation manual for the temperature required for the specific model)													
iv) Bowie-Dick test performed daily before the first processed load													
v) Air leak test performed weekly for dynamic-air removal sterilisers													
vi) Spore test is performed weekly and records of test results are kept													
vii) EMSD is informed if any tests result is / are unsatisfactory and the use of the steriliser is suspended temporarily													

Area	March			June			Sept			Dec			Remark/recommendation/follow-up action
	Y	N	NA	Y	N	NA	Y	N	NA	Y	N	NA	
viii) The schedule to change the water in the water tank as recommended by the product manufacturer													
ix) Type of water used to fill in the water tank(s) of steriliser(s) following the recommendation by the product manufacturer.													
4C) Disinfection – Chemical Disinfectants i) There is no topping up of disinfectants													
ii) Disinfectants containers are clearly labelled with contents, recommended concentration / dilution, required exposure time and expiry date													
iii) Disinfectant containers are not left open													
5. <u>Environment Control</u> 5A) Domestic waste is disposed of at least daily													
5B) Lidded waste receptacles are used in the clinical areas													
5C) Filters of the air-conditioners are cleansed once bi-monthly or as recommended by the centre in-charge													

Area	March			June			Sept			Dec			Remark/recommendation/follow-up action
	Y	N	NA	Y	N	NA	Y	N	NA	Y	N	NA	
5D) Cleaning schedule is established and followed													
5E) Equipment, instrument stands, table tops, furnishings and lights are visibly free of dust, blood and body fluid spatter													
5F) Room used by patients with symptoms suggestive of infectious diseases should be cleaned and disinfected after patient discharge.													
5G) Examination tables and couches are cleaned daily and when visibly soiled or contaminated													
5H) Cleaning is started from the clean area to dirty areas													
5I) Cloth is cleaned after use in water and detergent, then rinsed and hung dry													
5J) Floor is mopped daily or more frequently consistent with the need in the facilities													
5K) Mops are cleaned after use in water and detergent, then rinsed and hung dry													
5L) Bucket is cleaned by water and detergent, rinsed and stored dry after use													

Area	March			June			Sept			Dec			Remark/recommendation/follow-up action
	Y	N	NA	Y	N	NA	Y	N	NA	Y	N	NA	
5M) Spillage: i) For spillage of blood, cleanse the visible matter with disposable absorbent material, and then disinfect the area with one part of household bleach (5.25% hypochlorite solution) to 4 parts of water, leave for 10 minutes, and then rinse with water													
ii) For spillage of other body fluid, cleanse the visible matter with disposable absorbent material and then disinfect with one part of household bleach (5.25% hypochlorite solution) to 49 parts of water, leave for 15-30 minutes and then rinse with water													
iii) Cleaning utensils should be disinfected by immersing in one part of household bleach (5.25% hypochlorite solution) to 49 parts of water, leave for 30 minutes and then wash with detergent and water. Hang dry before re-use.													

Area	March			June			Sept			Dec			Remark/recommendation/follow-up action
	Y	N	NA	Y	N	NA	Y	N	NA	Y	N	NA	
6. <u>Safe injection practice</u> 6A) Use recapping device or one-handed scoop technique if recapping of needle is unavoidable													
6B) Needles and sharps are discarded into puncture resistant containers													
6C) Sharps box is secured in an upright position and in a convenient place near to where the sharps are used													
6D) Discard the sharps box when sharps reached the warning line for maximum volume (~70-80% full)													
6E) Sharps boxes are sealed up and discarded into red plastic bags marked with international biohazard sign													
7. <u>Linen Management</u> 7A) Infected linen is placed in leak resistant bag and labelled as "INFECTED LINEN" before being sent to laundry													
7B) Wear appropriate PPE when handling used linen													
8. <u>Waste Management</u> 8A) Domestic waste (e.g. office paper and other items) is placed in black plastic waste bag for disposal													

Area	March			June			Sept			Dec			Remark/recommendation/follow-up action
	Y	N	NA	Y	N	NA	Y	N	NA	Y	N	NA	
8B) Clinical waste (e.g. used or contaminated sharps, dressings and all other waste dripping with blood, and other potentially infected waste) is placed in red plastic waste bags for disposal													
8C) Unserviceable cytotoxic drugs, and pharmaceutical products are disposed as chemical waste													
8D) Waste bags are securely fastened when reaching the warning line for maximum volume (70-80% full)													
8F) Clinical waste is placed in red plastic bag with international biohazard sign and securely fastened, labelled, stored in a designated location with visibly warning sign, and secured from unauthorized persons													
8G) Wear appropriate PPE as indicated in handling of clinical and chemical wastes													
9. <u>Specimen Handling</u> 9A) Cap of specimen container is securely closed													
9B) Specimens are placed in leak-proof bags marked with "BIOHAZARD" and in upright position during transportation to prevent leakage													

	March			June			Sept			Dec			Remark/recommendation/follow-up action
	Y	**N**	**NA**	**Y**	**N**	**NA**	**Y**	**N**	**NA**	**Y**	**N**	**NA**	
9C) Wear appropriate PPE as indicated when collecting and handling specimens													
9D) Refrigerator used for specimen storage is clearly labelled and is not used for food, drinks or medications													
10. <u>Personal Hygiene</u> 10A) Uniform or white coat is worn within the clinic boundary only													
10B) Wounds are covered with water-proof dressings													
11. <u>Employee Health</u> 11A) Report to supervisor / infection control coordinator when having fever or other symptoms suggestive of infectious disease and seek medical advice at once													
11B) HCWs are aware of the availability of Hepatitis B, Measles and Rubella, Varicella and influenza vaccination programmes for them													
11C) Sharps Injury: i) HCWs know the first aid management of sharps injury (include wash wound with soap and water, and then disinfect and dress)													

Area	March			June			Sept			Dec			Remark/recommendation/follow-up action
	Y	N	NA	Y	N	NA	Y	N	NA	Y	N	NA	
ii) The exposed staff should report to supervisor and seek medical advice for risk assessment and management													
12. <u>Training</u> 12A) Infection control training is held regularly for clinic staff and training records are available for reference													
12B) Infection Control Refresher Training every 18 months with quizzes for individual staff and records are available													

Summary:

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Appendix III

Summary of Recommended PPE Usage in Standard Precautions and Transmission-Based Precautions

Precautions \ PPE		N95 Respirator *	Surgical Mask	Goggles/ Face Shield	Gown	Gloves
Standard Precautions (SP)			Splashing procedure	Splashing procedure	Splashing procedure	Touching blood, body fluid, secretion, excretion and contaminated items
Transmission-Based Precautions	**Airborne Precautions**	When performing aerosol generating procedures	Place on the patient if transport is necessary			
	Droplet Precautions		• Within one metre of patient • Place on the patient if transport is necessary			
	Contact Precautions				Substantial contact	Touching infected materials or contaminated items

Appendix IV

Recommended Methods of Decontamination for Commonly Used Items

**** Always refer to the instructions of product manufacturer on the type of disinfectant recommended**

Item	Recommended method	Alternative method*
Auriscope nozzle	• Clean with detergent and water	
Bottle, suction	• Clean with detergent and water. • Immerse in 0.1% hypochlorite for 10 minutes • Rinse and store dry	
Bowl, plastic	• Clean with detergent and water • Store dry	
Bowl, surgical	• Clean with detergent and water. • Autoclave	
Cheatle forceps and holders	• Autoclave • Store dry	
Curette	• Clean with detergent and water • Autoclave	
Dissecting forceps	• Clean with detergent and water • Autoclave	
ECG electrodes	• Clean with detergent and water. • Store dry	
Face-shield or goggles	• Dispose after use	
Gallipots	• Clean with detergent and water. • Autoclave	
Iris scissors	• Clean with detergent and water. • Autoclave	
Knife handle	• Clean with detergent and water • Autoclave	
Laryngoscope - Blade - Bulb	• Clean with detergent and water. • Disinfected by high-level disinfection. • Store dry • Swab with 70% alcohol	• Clean with detergent and water. • Autoclave.
Magill's forceps	• Clean with detergent and water. • Autoclave.	
Mosquito artery forceps	• Clean with detergent and water. • Autoclave	

Item	Recommended method	Alternative method*
Mouth gag - Stainless steel - Stainless steel with plastic tip	• Clean with detergent and water. • Autoclave • Clean with detergent and water. • Immerse in 0.1% hypochlorite for 10 minutes • (Follow manufacturer's instructions, some brand can be autoclaved) • Rinse and store dry	• Washer-disinfector • Washer-disinfector
Nebulizer	• Dispose after use	
Nebulizer mask	• Dispose after use	
Nebulizer tubings	• Dispose after use	
Needle holder	• Clean with detergent and water. • Autoclave	
Oxygen cannula	• Dispose after use	
Oxygen mask	• Dispose after use	
Oxygen tubings	• Dispose after use	
Proctoscope	• Clean with detergent and water. Autoclave	
Pulmonary function system - Breathing tubing	• Immerse in 2% glutaraldehyde for at least 45 minutes • Rinse and store dry	
Mass flow sensor - Mouth pieces, mouth piece adaptor - Nasal clips - Support arms with clamps	For single use items: • Dispose after use • Wipe with 70% alcohol • Store dry • Clean with detergent and water. • Wipe dry	For reusable items: • Immerse in 0.1% hypochlorite for 10 minutes. • Rinse and store dry.
Pulmonary items - T-shape connector of the smokerlyzer -Oxygen concentrator/oxygen humidifier filter	• Clean with detergent and water. Wipe dry • Clean with detergent and water • Wipe dry • Change when required	• Wipe with 70% alcohol before use.

Item	Recommended method	Alternative method*
Resuscitator - Mouth piece, mask	For single use items: • Dispose after use For reusable items: • Clean with detergent and water. • Immerse in 0.1% hypochlorite for 10 minutes Rinse and store dry	
Scalpel blades	• Dispose after use	
Sponge holding forceps	• Clean with detergent and water. • Autoclave	
Stitch scissors	• Clean with detergent and water. • Autoclave	
Digital Thermometer Ear Thermometer	• Dispose single used sleeve • Wipe with 70% alcohol • Dispose single used ear plugs • Wipe with 70% alcohol. • Store dry	
Tongue depressor (wooden) Tongue depressor (stainless steel)	• Dispose after use • Clean with detergent and water. • Autoclave	• Washer-disinfector
Toothed fixation forceps	• Clean with detergent and water. • Autoclave	
Towel forceps	• Clean with detergent and water. • Autoclave	
Ultrasound nebulizer -Mouth piece - Tubing	For single use items: • Dispose after use For reusable items: • Immerse in 0.1% hypochlorite for 10 minutes Rinse and store dry For single use items: • Dispose after use For reusable items: • Immerse in 0.1% hypochlorite for 10 minutes. Rinse and store dry	
Uterine forceps	• Clean with detergent and water. • Autoclave	

Item	Recommended method	Alternative method*
Uterine sound	For single use items: • Dispose after use For reusable items: • Clean with detergent and water • Autoclave	
Vaginal speculum (plastic) Vaginal speculum (stainless steel)	• Dispose after use • Clean with detergent and water • Autoclave	• Washer-disinfectors
Vitalograph - Breathing tubes, glass bottles - Peak flow meter	• Clean with detergent and water • Immerse in 0.1% hypochlorite for 10 minutes • Rinse and store dry • Clean with detergent and water • Wipe dry. Swab with 70% alcohol	

* ***Only for those clinics where the recommended method is not feasible.***

Appendix V

Properties of Commonly Used Chemical Disinfectants

	Usual concentration	Spectrum of activity	Other properties	Recommended uses
Hypochlorites e.g. Clorox (5.25% available chlorine)	• 1% (one part of 5.25% hypochlorite solution in 4 parts of water) • 0.1% (one part of 5.25% hypochlorite solution in 49 parts of water)	• Bacteria: Good • Tubercle bacilli: Good • Spores: Good • Fungi: Good • Viruses: Good	• Inactivated by organic matter • Corrosive to metals • Diluted solutions decay rapidly and should be made up daily • Addition of ammonia or acids causes release of toxic chlorine gas	• Environmental or instrumental disinfection for selected items
Glutaraldehyde e.g. Cidex	• 2%	• Bacteria: Good • Tubercle bacilli: Good • Spores: Good but slow • Fungi: Good • Viruses: Good	• Slow penetration of organic matter • Irritate eyes, skin and respiratory mucosa • Alkaline solution requires activation and has a limited useful life (14 - 28 days)	• Disinfection of selected instruments which cannot be heat sterilised • Use only closed containers to reduce the escape of irritant vapours
Alcohol e.g. Ethanol	• 70%	• Bacteria: Good • Tubercle bacilli: Good • Spores: Poor • Fungi: Good • Viruses: Low activity against some viruses	• Rapid action but volatile • Poor penetration into organic matter • Inflammable	• Disinfection of physically clean surfaces and skin
Diguanides e.g. Hibitane (Chlorhexidine) Savlon (Chlorhexidine + Cetavlon)	• Hibitane - Aqueous 1:1000 • Hibitane - 0.5% in 70% Ethanol • Savlon - Aqueous 1:100, 1:30 • Savlon - 1:30 in 70% Ethanol	• Bacteria: Good for Gram-positive organisms • Tubercle bacilli: Poor • Spores: Poor • Fungi: Good • Viruses: Poor	• Inactivated by organic matter, soap and anionic detergents	• Skin and mucous membrane disinfection • Opened bottle of aqueous skin disinfectant should be discarded after 24 hours

Glossary

Antisepsis:

The application of compounds to skin or mucous membranes to reduce microorganism content substantially.

Cleaning:

The removal of all visible debris on surfaces.

Decontamination:

A general term to cover all methods of cleaning, disinfection or sterilisation to remove microbial contamination from medical equipment such as to render it safe.

The equipment is classified with respect to the choice of decontamination method.

(1) Critical - Comes into contact with sterile body cavity or vascular system. Requires sterilisation.

(2) Semi-critical - Comes into contact with mucous membranes or non-intact skin. Requires high level disinfection.

(3) Non-critical - Comes into contact with intact skin. Requires intermediate and low-level disinfection or cleaning.

Disinfectant:

A chemical that inactivates virtually all recognized pathogenic microorganisms but not necessarily all microbial forms, e.g. spores on inanimate objects.

Disinfection:

Disinfection is a process that eliminates many or all pathogenic microorganisms, except bacterial spores, on inanimate objects. It is classified into three levels.

(1) High-level - complete elimination of all microorganisms in or on an instrument, except for small numbers of bacterial spores.

(2) Intermediate-level - The elimination of most viruses, mycobacteria, fungi, and vegetative bacteria, but not necessarily bacterial spores.

(3) Low-level - The elimination of most vegetative bacteria, some viruses, and some fungi, but not mycobacteria or bacterial spores.

Sterilisation:

The complete elimination of all viable microorganisms including all spores.

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