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1. Purpose:

1.1 This policy aims to provide evident based guidance on the best practices for antiseptic techniques for surgical/interventional procedures.

1.2 This policy will cover all patients undergoing any procedure within settings that will require the preparation of skin for a surgical/interventional procedure. It is acknowledged that under certain clinical emergencies this process may be missed/ modified if there is a deemed threat to life.

2. Policy Statement:

2.1. Infection is still one of the most frequent causes of morbidity and mortality following surgical interventions. In the era of multi drug - resistant organisms, it is essential that all surgeons, and physicians performing interventions (that penetrate the body's barriers -e.g. skin- into its cavities, vessels or organs) have a clear understanding of the techniques used to prevent surgical /intervention related infections.

2.2. Antiseptic and aseptic techniques play a key role in the reduction of surgical/intervention related infections. Patient, surgeon and environmental factors all contribute to surgical-site infections (SSIs).

2.3. Standard infection control precautions (SICPs) are the basic infection prevention and control measures necessary to reduce the risk of transmitting infectious agents from both recognized and unrecognized sources of infection.

2.4. As ensuring the standard infection control precautions involves all health care providers involved (physicians, nurses, technicians etc.) in the respective intervention, it is paramount to establish a policy that standardizes and organizes the procedures of infection control precautions in all settings and among the different involved health care practitioners.

2.5. Heads of respective departments whose physicians or HCP (e.g. nurses) perform or assist in surgical/ interventional procedures, are to ensure members of their departments have been informed, educated and trained appropriately for adherence to the policy set here, in the standard infection control precautions, monitoring/ensuring compliance, and reviewing any reports, audits or incidents and taking the necessary rectifying actions or recommendations.

2.6. Health care practitioners/providers performing or assisting in surgical/ interventional procedures (or their set up), should adhere to the policy set here and the standard infection control precautions.

2.7. Standard infection control precautions are to be applied by all staff, in all care settings, at all times, for all patients, regardless of whether infection is known to be present, to ensure the safety of patients, staff and visitors in the care environment. (Refer to the MOH Infection Control Directorate issued policies titled **"Standard Infection Control Precautions Policy code A-IC-P-003 and The Transmission Based Precautions Policy code A-IC-P-004).**

2.8. **The most senior physician performing a procedure maintains overall responsibility** for the preparation of a patient's skin prior to the procedure (or should ensure a suitable individual is assigned the task).

2.9. The Infection Control department/team of the HCF is to:

2.9.1 Monitor adherence of the respective departments to the standard infection control precautions.

2.9.2 Monitor infection rates and report regularly to the respective departments and the quality assurance council of the HCF, for review, inquiry and necessary action.

2.10. The Quality Assurance Council is to review incidents, performance and adherence of the respective departments and support implementation of recommendations from the infection control unit to the respective departments regarding performance, adherence to the policy or lack of compliance.

3. Definitions:

3.1. **Disinfection:** describes a process that eliminates many or all pathogenic microorganisms, except bacterial spores, on inanimate objects.

3.2. **Sterilization**: describes a process that destroys or eliminates all forms of microbial life, including bacterial spores and prions and is carried out in health care facilities by physical or chemical methods.

3.3. **Antisepsis:** refers to the use of solutions for disinfection.

3.4. **Asepsis:** is defined as the prevention of contact with microorganisms.

3.5. **Aseptic techniques:** The method of handling, preparing and storing medications, injection equipment, supplies (e.g. syringes and needles) catheters and other devices that enter body cavities to prevent microbial contamination and infection and eliminate all infectious microorganisms during procedures.

3.6. **Antiseptic:** A substance that prevents or arrests the growth or action of microorganisms by inhibiting their activity or by destroying them. The term is used especially for preparations applied topically to living tissue.

3.7. **HCP**: Health Care Provider; Generally, refers to any individual including but not limited to physicians, nurses, and technicians who, in the course of their professional activities, may directly or indirectly recommend, administer and/or determine the medical and/or related services for the patient.

3.8. **HCF**: Health Care Facility.

3.9. **MOH**: Ministry Of Health.

3.10. **MRP**: **Most Responsible Physician (MRP):** The designated most responsible physician. Generally, it refers to the physician or other regulated health care professional, who has overall responsibility for directing and coordinating the care and management of a patient at a specific point of time.

3.11. **Attending**: Any Physician of the rank of Specialist and above.

3.12. **Intervention**: Any procedure (diagnostic, reconstructive or curative) performed on a patient, by a specialized/competent physician, in which the skin barrier is violated intentionally to gain access into a part of the body (cavity, solid organs, hollow viscus, vascular, neurological etc.).

3.13. **Donning**: putting on personal protective equipment.

3.14. **Doffing**: taking off personal protective equipment.

3.15. **CHG**: Chlorhexidine Gluconate.

3.16. **PPE**: Personal Protective Equipment.

3.17. **CSSD**: Central Sterile Services Department.

3.18. **SSIs**: Surgical Site Infections.

3.19. **MR**: Medical Record.

4. Equipment / Forms Required:

4.1. Sterile gloves, surgical masks, caps, sterile drapes, 2%CHG with 70%alcohol, sterile gowns, alcohol-based hand rub and Antimicrobial soap.

5. Procedure:

5.1. Antiseptics, Preparation Application and Handling Guide:

5.1.1 Antiseptics must be used in accordance with the manufacturer's instructions and Control of Substances Hazardous to Health.

5.1.2 Alcohol solutions are deemed more efficient than aqueous solutions.

5.1.3 2% chlorhexidine gluconate (CHG) in 70% alcohol is the preoperative skin prep of choice for surgery (sometimes available in ready to use form in 10 ml and 26 ml sticks.).

5.1.4 2% CHG in 70% alcohol (ChloraPrep) should be used for all intact skin preparation without fanning, or wiping. It should be air dried.

5.1.5 Exceptions to using CHG:

5.1.5.1 The area involved is or next to mucous membranes.

5.1.5.2 CHG 2% should be avoided when operating on the eye or middle ear.

5.1.5.3 The patient is sensitive/allergic to CHG. (refer to Table 1).

5.1.6 Povidone iodine may be used close to the eye and middle ear.

5.1.7 For prepping/disinfecting area of the eyelid skin the following may be used:

5.1.7.1 Tincture of iodine 2%.

5.1.7.2 Povidone iodine.

5.1.7.3 Iso-prep.

5.1.7.4 Alcohol.

5.1.7.5 Cetrimonium bromide.

5.1.8 Skin preparation solutions must be stored in a locked cupboard and flammable solutions must be stored in accordance with regulations.

5.1.9 Where possible antiseptics should be sourced and supplied in ready to use, single use containers or sachets, as there is an increased risk of contamination from using multiple use containers.

5.1.10 Skin solutions must be checked by the scrub and circulating practitioner/nurse to ensure they are on date and sterile.

5.1.11 Antiseptic solutions must be poured into a container at the edge of the sterile field, from a height of approximately 10 cm, to avoid contamination of the sterile area (in a separate skin preparation trolley and to be removed directly after disinfection).

5.1.12 Care must be taken to avoid spillage of antiseptic solutions onto the sterile area.

5.1.13 When multi-dispensing containers have to be used, practitioners must be mindful of the following:

5.1.13.1 The edge of the skin solution container should be considered contaminated after the cap is removed and therefore the sterility of its contents cannot be guaranteed once the cap is replaced.

5.1.13.2 Closed system is the optimal, where the injection or contrast, should be drawn directly from the vial/bottle under aseptic conditions into a sterile syringe and then injected into the patient or through a sterile tubing system into the injector - not to be poured into an open container first.

5.1.13.3 When antiseptic multiple use containers are used, they must not be refilled and must be dated and discarded after one week.

5.1.13.4 Open systems for injectables - including gallipots, moulded plastic containers and open procedure trays - must not be used for preparation or administration of injectable materials.

5.1.13.5 In situations where closed systems (e.g., vials, ampoules, prefilled syringes, closed injection systems) are unavailable due to resource limitations, and where procedural delays would pose a greater risk to the patient's safety, open systems may be used only if all of the following conditions are met:

5.1.13.5.1 Limitation in resources, where the closed system for injectables are lacking and the risks of procedural delays outweigh the benefits of infection control.

5.1.13.5.2 Sterility of the container/system used.

5.1.13.5.3 Protection/coverage of the container/system with sterile barriers from the atmosphere (e.g. sterile lid, sterile drape, towel etc.) to reduce airborne contamination.

5.1.13.5.4 Labelling and segregation of containers/systems where they are clearly labelled and placed away from surrounding contaminants and LASA (look-alike sound-alike) materials/supplies.

5.1.13.5.5 Designation of a dedicated area in which the container/system is positioned in a sterile field, separate from other instruments, patient

contact areas, or biological specimens/tissues (preferably on a dedicated sterile tray).

5.1.13.5.6 Limitation of use of the container/system by shortening the duration of use of the container/system to one hour, discarding after 1 hour from initial opening/use. If ongoing use is required beyond 1 hour, a new sterile container and fresh injectable is prepared, provided and used, with provision of new sterile containers and new injectables administered for each extended hour, if deemed possible, from resources and medical supplies.

5.1.13.5.7 The source of the dispensed injectable (e.g. contrast bottle may be reused within a 24 hours period as seal is maintained.

5.1.13.5.8 This exception should be documented, justified, and monitored as part of infection prevention audits, with the aim of transitioning to closed system use as soon as feasible..

5.1.13.6 Used sponges, holders and basins (especially those containing antiseptic solutions) must be discarded, after each application, by the HCP/nurse responsible for preparing the table/asepsis preparation, (not to be kept on the instrument table during the procedure). Once all applications are complete, the area should be allowed time to air dry naturally through evaporation.

5.1.14 The surgical site must be cleansed with antiseptic agents such as chlorhexidine gluconate or iodine, applied in a circular motion from the incision site outward using sterile technique.

5.1.15 All solutions used for the procedure should be labelled after opening.

5.1.16 Do not transfer solutions (refill) to other bottles, aim to keep them in original bottles.

5.1.17 **Look-Alike Sound-Alike (LASA) Material Safety Measures ,**to minimize material, contrast media errors due to similar names or packaging ,should be applied as follows:

5.1.17.1 **Label Reading**: Staff must read labels thoroughly before dispensing or administering agents, avoiding LASA agents in the same setting unless deemed necessary and labelled clearly.

5.1.17.2 **Storage Guidelines**: LASA materials, agents should be stored separately as per store-approved lists — different shelves, drawers, containers, and not alphabetically.

5.1.17.3 **Use Tallman lettering** (e.g., *HydroxyZine* vs. *HydrOXYzine*) to distinguish look-alike names and include both **generic and brand names** on labels.

5.1.17.4 **Apply yellow LASA alert stickers with bold black font** in all storage areas.

5.1.17.5 **Error Monitoring**: Report and analyze near misses and LASA-related incidents to improve systems.

5.2. **Intraoperative skin preparation:**

5.2.1 Ensure the patient's hygienic needs are met.

5.2.2 Bathing and cleaning should be encouraged prior to surgery if feasible.

5.2.3 Hair removal at the surgical site must be conducted preferably using hair clippers instead of razors to prevent micro-abrasions and preserve the skin's integrity.

5.2.4 Skin preparation should be carried out using an aseptic and non-touch technique using sponge holders. A non-touch technique will prevent contamination of sterile gloves. Sponges should be positioned on the holder in such a way that the end of the holder cannot traumatise patients' skin.

5.2.5 When using alcohol-based solutions, it is imperative that the skin is allowed to dry completely after every application by evaporation, before placing the drapes and prior to applying electrocautery or laser treatment. Spontaneous combustion can occur when flammable solutions are exposed to an ignition source when oxygen is present.

5.2.6 Swabs used for skin preparation should be discarded before skin incision and should not be included in the swab count.

5.2.7 The ready-to-use sticks should be discarded after disinfecting the skin immediately and not to keep it back on the sterile field for reuse.

5.2.8 To maintain dignity and needless heat loss, unnecessary exposure of the patient should be avoided. However, the area exposed must be sufficient to comply with recognized skin preparation guidelines and surgical preference.

5.2.9 Skin solutions must not be allowed to seep or pool under the patient running onto diathermy electrode plates, electrocardiogram (ECG) leads and tourniquets to avoid chemical burns. This should be ensured by HCP involved in the procedure and care (i.e. nurse and HCP or physician performing the procedure/intervention).

5.2.10 To prevent seepage or pooling, only sufficient antiseptic solution must be applied.

5.2.11 Absorbent or sterile towels can be placed under the patient. These must be removed if they become wet, as this may cause unnecessary skin irritation, even if the solution used is non-irritating.

5.2.12 Skin preparation must proceed from clean to dirty areas. Cleansing must begin at the incision site and continue outwards to the periphery in a circular motion. This will prevent any micro-organisms being returned to the incision site. This process should be repeated several times with a clean sponge each time. Discard each sponge after use.

5.2.13 An adequate area of skin surface must be prepared in order to allow for safe extension of the incision, placement of drains and for any possible movement of the drapes.

5.2.14 In cases where a contaminated area is within the area to be prepped, skin preparation must start at the surrounding skin.

5.2.15 Areas which are considered to be heavily contaminated such as the perineum, anus, vagina and axilla must be prepped last. The umbilicus must be prepared first to prevent dirty solutions running onto clean skin. Special care must be taken to avoid pooling of skin preparation within the umbilicus.

5.2.16 Skin ulcers and draining sinuses are also considered heavily contaminated areas and should be prepped last.

5.2.17 Multiple incision sites must be prepped separately.

5.2.18 Additional care should be given to prepping malignant areas to prevent potential spread of cancer cells.

5.2.19 Traumatic wounds may require large amounts of irrigation in addition to skin preparation to remove larger amounts of dirt or debris. Do not use wound irrigation to reduce the risk of SSIs.

5.2.20 Stomas must be sealed with adhesive drapes. If a stoma is within an area to be prepped, it can be covered with a sterile swab and the area around it must be prepared first. Once the surrounding area is cleansed, the swab can be removed, and the stoma cleaned.

5.2.21 Delicate areas such as the eyes and ears may require special diluted solutions.

5.2.22 Solutions should not be allowed to pool in the patient's eye.

5.2.23 Skin preparation of wound sites following the removal of casts or dressings may require soaking with sterile solutions to remove skin squames or adherent dressings.

5.2.24 During preparation of limbs, additional personnel or equipment may be required to hold the limb securely thus allowing the whole circumference to be cleansed safely.

5.2.25 Graft and donor sites are prepared separately to prevent cross-contamination from one site to another. The donor site is prepared first. Colorless antiseptic solutions allow the surgeon to evaluate the vascularity of the graft.

5.2.26 If a **patient is allergic to chlorhexidine**, then povidone-iodine is typically used. For most procedures, **alcohol-based chlorhexidine** is recommended by the CDC, WHO, and NICE guidelines (unless contraindicated by allergy or proximity to mucous membranes / eyes / ears).

5.2.27 For areas where chlorhexidine is not safe (e.g., around the eyes, inside ears, or in some mucosal areas), **povidone-iodine** is used.

5.2.28 If an antiseptic solution needs to be reapplied, the same type of antiseptic must be used, but not the same stick or swab.

5.2.29 Hydrogen peroxide 3% solution can be used to cleanse dirty and infected wounds.

5.2.30 Methylene blue 1% can be used to mark or stain the skin.

5.2.31 Sodium chloride 0.9% can be used for wound irrigation and to clean the skin immediately after surgery.

5.2.32 Sterile water/Normal saline can be used to clean instruments throughout the surgical procedure.

5.3. **Hand Hygiene:**

5.3.1 Use of alcohol-based hand rub is the preferred method for routine hand hygiene in clinical care.

5.3.2 All nurses must perform a thorough hand hygiene with alcohol-based sanitizers or handwashing procedure using antimicrobial soap and water when indicated.

5.3.3 Health care providers should follow the "5 Moments of Hand Hygiene" protocol.

5.3.4 For surgical hand scrub, hands must be scrubbed following the step-by-step technique outlined by the Infection Control Directorate, starting with fingernails and fingertips, progressing to hands and arms up to the elbows. Dry hands using sterile towels after surgical hand scrub. (All operating team members should remove hand jewelry before scrubbing into an operation with natural nails being kept short and clean).

5.3.5 Use alcohol-based rub (20-30 sec) or soap and water (40-60 sec) depending on visible dirt and availability.

5.3.6 Surgical Scrubbing consists of the following: 5 minute scrub for the first procedure of the day and 3 minute scrubs for subsequent procedures during the day, using sterile towels to dry-one half per arm-and keeping the hands elevated above elbows.
(Refer to the "Hand Hygiene Policy in Health care settings" by the MOH Infection Control Directorate" for further details and step by step guidance).

5.4. **Surgical Attire:**

5.4.1 All HCPs must wear clean masks and headgear to prevent contamination. Facial hair (beard) should be covered and the head gear should fully cover the hair. The masks should not be touched or adjusted by the HCP, him/herself, during a procedure, and should be changed between procedures.

5.4.2 Separate shoes are to be designated for use in sterile areas to minimize contamination risks.

5.4.3 Sterile gowns will be considered sterile only in the front from mid-chest to waist, and sleeves from 2 inches above elbow to cuff.

5.4.4 Back and underarms are **not** sterile.

5.4.5 Gowns should be intact, fluid-resistant, and lint-free.

5.4.6 Gloves should be sterile and donned using closed cuff technique.(consider wearing 2 pairs of sterile gloves when there is a high risk of glove perforation e.g. lengthy procedures or handling sharp instruments).

5.4.7 Change gloves if contaminated, damaged, or when switching between sites.

5.4.8 Please refer to the infection control and sterilization directorate policy for surgical attire in restricted and semi restricted operating/procedure areas in health care facilities code ICS-P-D4-1

5.5. **Sterility during surgery/procedure:**

5.5.1 Verification of the sterility of all surgical/interventional instruments and materials by the scrub and circulating nurse including inspection for intact packaging, expiration dates, and sterility indicators should be ensured prior to receipt of the patient and the commencement of the procedure.

5.5.2 All sterile supplies and sterile sets should be stored in separate clean allocated places to avoid any contamination.

5.5.3 Ensure sterile items remain covered and untouched until their intended use.

5.5.4 Sterile drapes should be used to create a designated sterile area. Nurses must vigilantly monitor this field for any breaches.

5.5.5 Sterile items that are dropped or otherwise contaminated must be removed immediately and replaced with sterile alternatives.

5.5.6 Sterile drapes should be used to separate the anaesthesia area from the surgical field.

5.5.7 Instruments and items on/in the sterile field should be handled using proper aseptic practices.

5.5.8 Cross-checking of contents with count sheets, and verification of sterility and completeness is to be ensured by the scrub and circulating nurse.

5.5.9 Use sterilization indicators and complete counts with circulating nurses.

5.5.10 The scrub nurse must oversee and prevent contamination by surgical team members during the procedure.

5.5.11 No one should enter the sterile area/field without scrubbing and sterile PPE.

5.5.12 All HCP shall maintain the masks covering the nose and mouth.

5.5.13 Correct count of items should be maintained by the surgical team, scrub nurse and circulating nurse to avoid retention of items in the patients' body (which may lead to infection).

5.5.14 Contaminated items should be removed from the sterile field and handed over to the circulating nurse.

5.5.15 Restrict unnecessary movement within the operating room to prevent disruption of the sterile field (consider keeping the operation/intervention/procedure room door shut during the procedure).

5.6. **Environmental Setup:**

5.6.1 The operating room/ procedure room must be cleaned and prepared according to infection control policies. This includes disinfection of machines, surfaces, and equipment.

5.6.2 Ventilation requirements should be fulfilled. Proper airflow systems, such as HEPA filters, must be operational to limit airborne contamination.

5.6.3 Restrict non-essential personnel and reduce unnecessary movement within the room to maintain a sterile environment.

5.6.4 Keep doors closed and limit entry to essential personnel only.

5.6.5 Any other person/HCP or relative of the patient should not be allowed inside the operating room.

5.6.6 The leadership of the HCP involved in interventional procedures should consider setting rules on the required and acceptable number of relevant personnel allowed in the interventional settings.

5.6.7 If standards restricting personnel in the interventional setting are applied, the circulating nurses must enforce the rules regarding the number of persons allowed in the room during the procedure.

5.6.8 Patients ,planned for intervention, suffering communicable/transmissable infections (e.g. MRSA, *C.diff* etc.) , should be aimed to be done at the end of elective lists if deemed clinically possible with the necessary precautions taken as per the infection control policy (with the infection control department made aware).

5.6.9 HCP designated to teams or settings involved in interventional/surgical procedures, set up or setting suffering any infectious/communicable disease should be reported to their respective leadership and hospital infectious control department and refrain from working at the respective patient care area until cleared otherwise.

5.6.10 All members of the surgical team must adhere to aseptic principles (e.g. avoiding contact with unsterile surfaces, equipment, or personnel).

5.6.11 The circulating nurse should ensure compliance and provide immediate feedback in case of breaches.

5.7. **Antibiotic Prophylaxis:**

5.7.1 Confirm identity, consent, allergies, and antibiotic prophylaxis when indicated in the Operation Theater/interventional suite reception or intervention setting.

5.7.2 Administer prescribed antibiotics within the specified timeframe (usually within 60 minutes before incision), as directed by the treating physician, recording the timing and dosage given.

5.7.3 Give antibiotic prophylaxis for clean surgeries involving placement of prosthesis, or implants, (or redos/patients with high infection risks) clean contaminated surgeries, and contaminated surgeries.

5.8. **Instrument Sterilization:**

5.8.1 Used instruments must undergo thorough pre-cleaning in a designated dirty utility area before sterilization to remove any residual debris by the respective designated nurse. (Refer to Environmental Cleaning And Disinfection Policy A-IC-P-030).

5.8.2 Used instruments thereafter are to be sent to CSSD by the respective designated nurse(s) and follow established sterilization protocols to ensure readiness for subsequent procedures.

5.8.3 Separate accesses for the transfer/transport of dirty and clean items to and from the CSSD to the intervention settings should be ensured and maintained by the respective setting nursing leadership (e.g. a designated dirty lift in a back corridor for transport of dirty items to C.S.S.D and a clean separate lift to receive sterile items from C.S.S.D).

5.8.4 Disposable sterile covers/sheaths should be used for items which cannot be sterilized (e.g. laparoscopy camera, ultrasound probe etc.).

5.8.5 **Room Cleaning:** The operating room must be thoroughly disinfected after each surgical procedure, including all surfaces, furniture, and equipment providing an appropriate time frame supervised by the designated nursing staff.

5.8.6 Subsequent cases on a list should not be allowed into the interventional/surgical setting until after proper cleaning and disinfection of the area is achieved and ensured.

5.9. **Specific considerations for prostheses / implantables / insertable medical supplies (e.g. stents, drains, catheters, meshes and prosthetics)**

5.9.1 **Rules:**

5.9.1.1 Devices should be inserted only when clinically indicated.

5.9.1.2 Aseptic technique must be maintained throughout the procedure.

5.9.1.3 The risk of infection is highest at the time of insertion; therefore, maximal barrier precautions must be applied.

5.9.1.4 Devices should be maintained properly and removed as soon as no longer clinically required.

5.9.2 **Careful Handling:**

5.9.2.1 Prostheses, implantables and insertable medical supplies should be handled with sterile gloves and instruments, by all involved/handling HCP, to prevent contamination.

5.9.3 **Proper Storage:**

5.9.3.1 Prostheses, implantables and insertable medical supplies should be stored in their unopened, sterile packaging until ready for use.

5.9.3.2 The designated nursing staff should ensure sterilized prostheses, implantables and insertable medical supplies are stored in a way that maintains their sterility until they are used.

5.9.3.3 The HCP performing an intervention should confirm sterility status/integrity of the prostheses, implantables and insertable medical supplies with the scrub/circulating nurse prior to use.

5.9.4 **Inspection:**

5.9.4.1 Before implantation of the prostheses, implantables and insertable medical supplies should be inspected by the scrub/circulating nurse and HCP performing the procedure to ensure they are free from damage or contamination (with the use-by date should be checked before use).

5.9.5 **Responsibilities**

5.9.5.1 Health care providers involved in the procedure should ensure availability of the required sterile supplies and equipment and perform the insertion in accordance with aseptic principles set in this policy.

5.9.6 **Procedure:**

5.9.6.1 **Pre-Procedure Preparation:**

5.9.6.1.1 Confirm clinical indication and obtain informed consent.

5.9.6.1.2 Screen for active infection; postpone elective procedures if infection is present if clinically possible and sound.

5.9.6.1.3 Ensure the patient has, or has been, bathed/showered prior to major implant procedures, when deemed possible or applicable, using either antimicrobial or nonantimicrobial products.

5.9.6.1.4 Remove hair at insertion site with clippers (no razors).

5.9.6.1.5 Prepare patient and setting in a clean, designated environment.

5.9.6.1.6 Administer preoperative antimicrobial agents only when indicated based on clinical practice guidelines and timed to ensure a bactericidal concentration in the serum and tissues at the time of the incision.

5.9.6.1.7 For patients with a high risk of infection undergoing surgeries/procedures (e.g. orthopedic or cardiothoracic) it should be aimed to reduce the bacterial load to prevent surgical site infections using mupirocin nasal ointment and chlorhexidine body wash targeting MSSA and MRSA.

5.9.6.2 **Staff Preparation:**

5.9.6.2.1 Perform surgical hand scrub (for major implants) or antiseptic hand hygiene (for minor insertions).

5.9.6.2.2 Wear appropriate sterile protective attire (gloves, gown, mask, cap, and eye protection as required and set in this policy).

5.9.6.3 **Equipment/ trolley Preparation:**

5.9.6.3.1 The scrub/circulating nurse, and HCP performing the procedure, should verify the device packaging integrity and expiry date.

5.9.6.3.2 Assemble equipment on a sterile field using aseptic technique (No touch technique).

5.9.6.3.3 Use only sterile instruments and consumables.

5.9.6.4 **Surgical/ insertion Site Preparation:**

5.9.6.4.1 Clean insertion/implantation site with the recommended antiseptic solution (preferably 2% chlorhexidine in 70% alcohol, or povidone-iodine if contraindicated).

5.9.6.4.2 Allow antiseptic to dry fully before proceeding.

5.9.6.4.3 Drape the patient with sterile barriers (full body drape for central lines/implants; fenestrated sterile drape for smaller procedures).

5.9.6.5 **Insertion / Implantation of prostheses/ implantables / insertable medical supplies (e.g. stents, drains, catheters, meshes and prosthetics):**

5.9.6.5.1 Maintain aseptic technique at all times.

5.9.6.5.2 Handle devices only with sterile gloves / instruments.

5.9.6.5.3 Avoid unnecessary manipulation of implant / catheter.

5.9.6.5.4 Insert the prostheses / implantables / insertable medical supplies in accordance with general/international standard, guidelines, and product instructions.

5.9.6.5.5 Confirm correct placement by clinical assessment and/or imaging as appropriate.

5.9.6.6 **Post-Insertion:**

5.9.6.6.1 Secure device with sutures, fixation device, or sterile dressing.

5.9.6.6.2 Apply sterile CHG or transparent dressing or gauze dressing if oozing (central line) over insertion site where applicable.

5.9.6.6.3 the procedure including (date, time, type of implantable or insertable used, batch/lot number if implantable, name of the operator, product name, and brand used, size , product code number or sticker if applicable or set so by leadership) should be documented in the MR.

5.9.6.6.4 The assisting/scrub or circulating nurse/HCP should document in a log the consumables, insertables or implantables used (documenting instrument name, brand name, size, code and or sticker).

5.9.6.6.5 Monitor patients immediately post-procedure for complications.

5.9.6.7 **Post-Procedure Care & Maintenance:**

5.9.6.7.1 Maintain strict aseptic technique whenever accessing the device if accessible.

5.9.6.7.2 Change dressings as per protocol if applicable (e.g., central lines: every 7 days, earlier if soiled or violated; urinary catheters: per hospital guideline).

5.9.6.7.3 Inspect insertion/implantation site daily for signs of infection and document accordingly if applicable.

5.9.6.7.4 Review device necessity daily and remove promptly when no longer required (if applicable).

5.9.6.7.5 In clean and clean contaminated procedures, it is advised not to administer additional antimicrobial prophylaxis doses after the surgical incision is closed in the operating room (even with drains).

5.9.6.8 **Surveillance and Audit:**

5.9.6.8.1 The Infection Control Team is to monitor device-associated infection rates (e.g., CLABSI, CAUTI, prosthetic joint infections, cardiac device infections).

5.9.6.8.2 Compliance audits of aseptic technique is to be performed periodically by the Infection Control Team and designated leadership or personnel.

5.9.6.8.3 Feedback to staff provided regularly to ensure continuous improvement by the Infection Control Team and designated leadership or personnel.

5.9.6.9 **Post-operative wound care:**

5.9.6.9.1 Maintain aseptic technique when changing wound dressings.

5.9.6.9.2 Inspect wounds daily for signs of infections.

5.9.6.9.3 Educate patients on wound care and recognition of signs of infection.

5.9.6.9.4 Document wound assessment findings in the MR.

6. References:

6.1 Nursing Services Administration (2024). Manual of nursing procedures (Vol. 1, pp. 204–222). State of Kuwait, Ministry of Health.

6.2 Nursing Services Administration (2024). Manual of nursing procedures (Vol. 3, pp. 317-318). State of Kuwait, Ministry of Health.

6.3 Hand Hygiene Policy in Health care settings, Ministry of Health Infection Control Directorate. Revised November 2022.

6.4 Guidelines for Isolation Precautions: Preventing transmission of infectious agents in Health care settings, Ministry of Health Infection Control Directorate. Revised September 2022.

6.5 Policy for Surgical attire in restricted and semis restricted operating/procedure areas in Health care Facilities, Ministry of Health Infection Control Directorate. Revised October 2022.

6.6 CDC. Guideline for the Prevention of Surgical Site Infection (2023 update).

6.7 WHO. Global Guidelines for the Prevention of Surgical Site Infection (2018).

6.8 NICE. Surgical site infections: prevention and treatment (NG125, 2019).

6.9 Hospital Infection Society 2002.

6.10 NICE guidance (2019).

6.11 AfPP Principles of Safe Practice in the Perioperative Environment (2015) NICE Guideline (2019) surgical site infection: prevention and treatment.

6.12 WHO Guidelines on Hand Hygiene in Health Care.

6.13 CDC Guidelines for the Prevention of Intravascular Catheter-Related Infections.

6.14 NICE Clinical Guidelines for Preventing Health care-Associated Infections.

6.15 Infection control and sterilization directorate policy for surgical attire in restricted and semi restricted operating/procedure areas in health care facilities code ICS-P-D4-1, October 2022.

7. Attachments:

Table 1:

Allergy Status	Preferred Skin Prep	Key Notes / Exceptions
No allergy	**Alcohol-based chlorhexidine** (e.g., 2% CHG in 70% isopropyl alcohol)	Avoid CHG on mucous membranes, eyes, ears, or open meninges. Use sterile saline if these areas are involved. *Aqueous prep if alcohol is contraindicated (e.g., neonates <2 months, large open wounds).*
Allergic to chlorhexidine	**Povidone-iodine** (aqueous or alcohol-based)	Use with caution in patients with thyroid disorders or neonates if prolonged exposure. Verify CHG allergy (rare).
Allergic to both iodine and chlorhexidine	Sterile **alcohol** (70%) or sterile **saline** (site-specific)	Rare case — consult infection control & surgeon for the safest alternative.

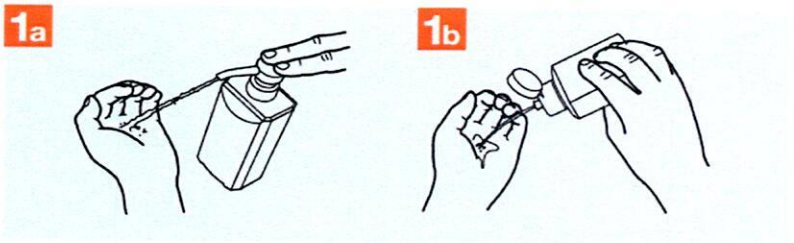
Table 2:

When	Choice of antiseptic skin preparation
First choice unless contraindicated or the surgical site is next to a mucous membrane	Alcohol-based solution of chlorhexidine
If the surgical site is next to a mucous membrane	Aqueous solution of chlorhexidine
If chlorhexidine is contraindicated	Alcohol-based solution of povidone-iodine
If both an alcohol-based solution and chlorhexidine are unsuitable	Aqueous solution of povidone-iodine

How to Handrub?

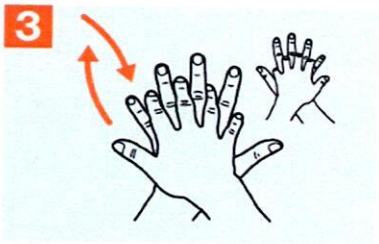
RUB HANDS FOR HAND HYGIENE! WASH HANDS WHEN VISIBLY SOILED

Duration of the entire procedure: 20-30 seconds

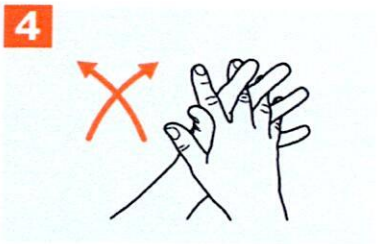


Apply a palmful of the product in a cupped hand, covering all surfaces;

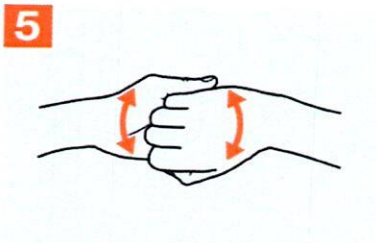
Rub hands palm to palm;



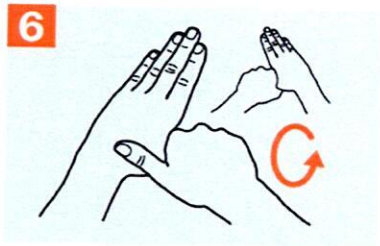
Right palm over left dorsum with interlaced fingers and vice versa;



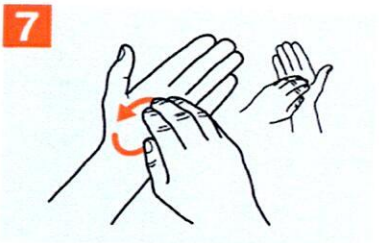
Palm to palm with fingers interlaced;



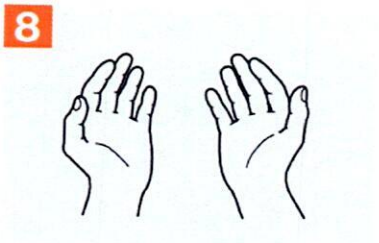
Backs of fingers to opposing palms with fingers interlocked;



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



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



Once dry, your hands are safe.

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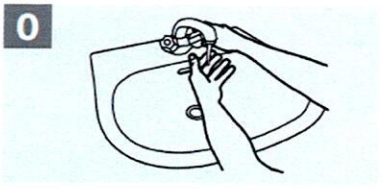
May 2009

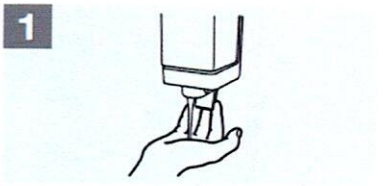
How to Handwash?

WASH HANDS WHEN VISIBLY SOILED! OTHERWISE, USE HANDRUB

Duration of the entire procedure: 40-60 seconds

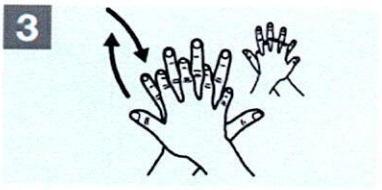


Wet hands with water;

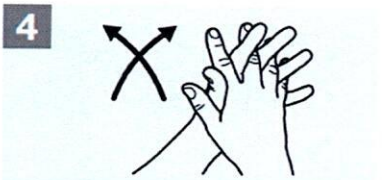


Apply enough soap to cover all hand surfaces;

Rub hands palm to palm;

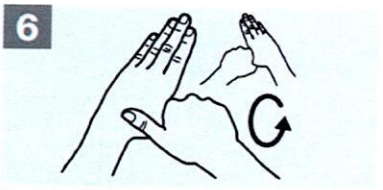


Right palm over left dorsum with interlaced fingers and vice versa;

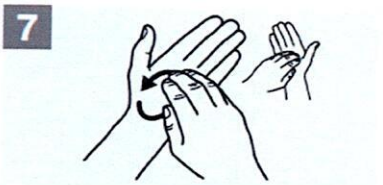


Palm to palm with fingers interlaced;

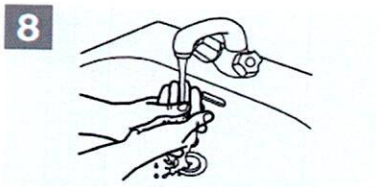
Backs of fingers to opposing palms with fingers interlocked;



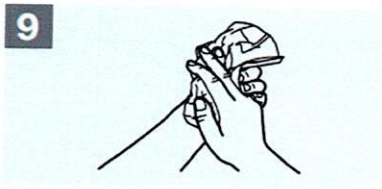
Rotational rubbing of left thumb clasped in right palm and vice versa;



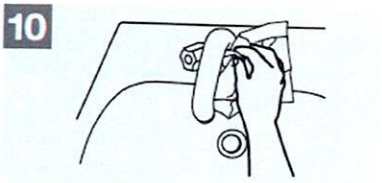
Rotational rubbing, backwards and forwards with clasped fingers of right hand in left palm and vice versa;



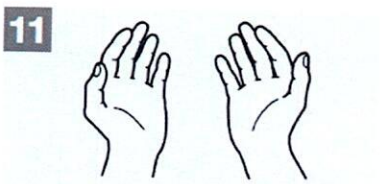
Rinse hands with water;



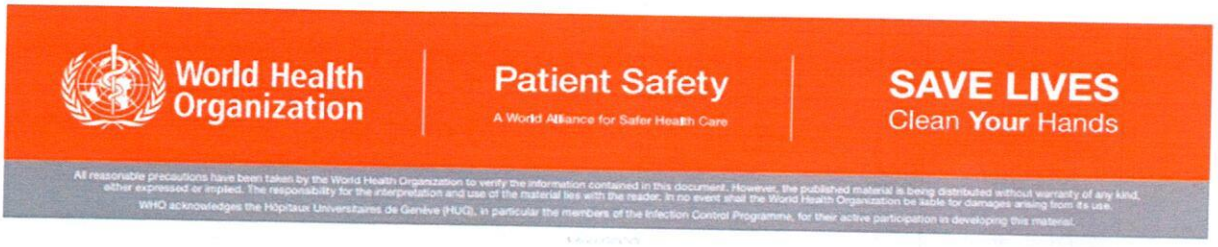
Dry hands thoroughly with a single use towel;



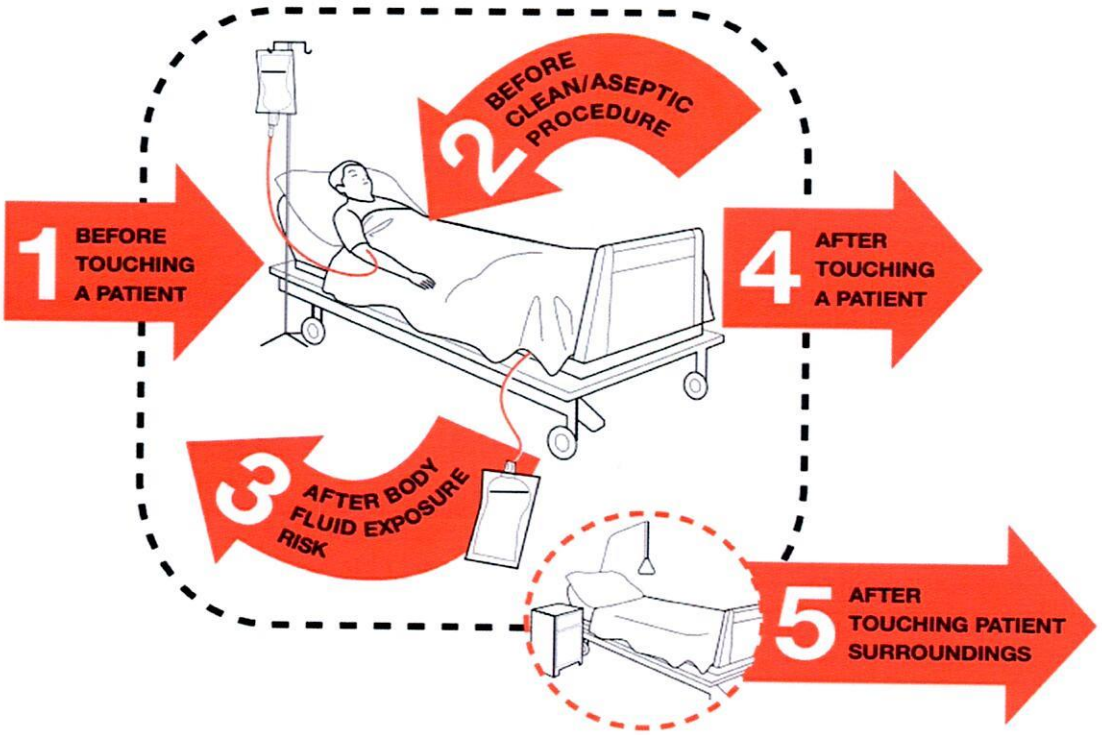
Use towel to turn off faucet;



Your hands are now safe.



Your 5 Moments for Hand Hygiene



1	BEFORE TOUCHING A PATIENT	WHEN?	Clean your hands before touching a patient when approaching him/her.
		WHY?	To protect the patient against harmful germs carried on your hands.
2	BEFORE CLEAN/ ASEPTIC PROCEDURE	WHEN?	Clean your hands immediately before performing a clean/aseptic procedure.
		WHY?	To protect the patient against harmful germs, including the patient's own, from entering his/her body.
3	AFTER BODY FLUID EXPOSURE RISK	WHEN?	Clean your hands immediately after an exposure risk to body fluids (and after glove removal).
		WHY?	To protect yourself and the health-care environment from harmful patient germs.
4	AFTER TOUCHING A PATIENT	WHEN?	Clean your hands after touching a patient and her/his immediate surroundings, when leaving the patient's side.
		WHY?	To protect yourself and the health-care environment from harmful patient germs.
5	AFTER TOUCHING PATIENT SURROUNDINGS	WHEN?	Clean your hands after touching any object or furniture in the patient's immediate surroundings, when leaving – even if the patient has not been touched.
		WHY?	To protect yourself and the health-care environment from harmful patient germs.

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Surgical Handrubbing Technique

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

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

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

3

4

5

6

7

Images 3-7: Smear the handrub on the right forearm up to the elbow. Ensure that the whole skin area is covered by using circular movements around the forearm until the handrub has fully evaporated (10-15 seconds).

8

9

10

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

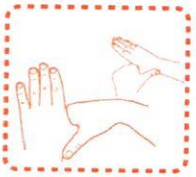
11 Put approximately 5ml (3 doses) of ABHR in the palm of your left hand as illustrated, to rub both hands at the same time up to the wrists, following all steps in images 12-17 (20-30 seconds).

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

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

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

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



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

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

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

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Appendix 3 - Surgical Scrubbing: surgical hand preparation technique using antimicrobial soap - step by step images

1

Wet hands and forearms*

2

Put antimicrobial liquid soap onto the palm of each hand/arm using the elbow of your other arm to operate the dispenser

3

Rub hands palm to palm. Steps 3 - 8 should take a minimum of 2 minutes

4

Right palm over the back of the other hand with interlaced fingers and vice versa.

5

Palm to palm with fingers interlaced.

6

Backs of fingers to opposing palms with fingers interlocked.

7

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

8

Rotational rubbing, backwards and forwards with clasped fingers of right hand in left palm and vice versa. Rinse hands between steps 8 - 9, passing them through the water in one direction only.

9

Put antimicrobial liquid soap onto the palm of your left hand using the elbow of your other arm to operate the dispenser. Use this to scrub the right arm for 1 minute using a rotational method keeping the hand higher than the arm at all times.

10

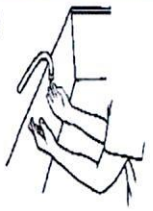
Repeat the process for the other hand and arm keeping hands above elbows at all times.

If the hand touches anything at any time, the scrub must be lengthened by 1 minute for the area that has been contaminated.

11

Repeat steps 1 to 10 to the mid forearms only.

12



Rinse hands and arms by passing them through the water in one direction only, from fingertips to elbow. Do not move the arm back and forth through the water.

13

Hold hands above the elbow. Use one sterile, disposable towel per hand and arm. Blot the skin of the hand, then use a corkscrew movement to dry from the hand to the elbow.
The towel must not be returned to the hand once the arm has been dried and must be discarded immediately.

* Nails can be cleaned using a single-use disposable nail pick if visibly dirty. Any skin complaints should be referred to local occupational health or GP.