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# Hand Hygiene

## When?

### YOUR 5 MOMENTS FOR HAND HYGIENE

<table>
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<tr>
<th>Moment</th>
<th>WHEN?</th>
<th>WHY?</th>
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<tr>
<td>1. Before touching a patient</td>
<td>Clean your hands before touching a patient when approaching him/her.</td>
<td>To protect the patient against harmful germs carried on your hands.</td>
</tr>
<tr>
<td>2. Before clean/aseptic procedure</td>
<td>Clean your hands immediately before performing a clean/aseptic procedure.</td>
<td>To protect the patient against harmful germs, including the patient's own, from entering his/her body.</td>
</tr>
<tr>
<td>3. After body fluid exposure risk</td>
<td>Clean your hands immediately after an exposure risk to body fluids (and after glove removal).</td>
<td>To protect yourself and the health-care environment from harmful patient germs.</td>
</tr>
<tr>
<td>4. After touching a patient</td>
<td>Clean your hands after touching a patient and her/his immediate surroundings, when leaving the patient’s side.</td>
<td>To protect yourself and the health-care environment from harmful patient germs.</td>
</tr>
<tr>
<td>5. After touching patient surroundings</td>
<td>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.</td>
<td>To protect yourself and the health-care environment from harmful patient germs.</td>
</tr>
</tbody>
</table>
How to Handwash?

WASH HANDS WHEN VISIBLE SOILED! OTHERWISE, USE HANDRUB!

- Duration of the handwash (steps 2-7): 15-20 seconds
- Duration of the entire procedure: 40-60 seconds

1. Wet hands with water;
2. Apply enough soap to cover all hand surfaces;
3. Rub hands palm to palm;
4. Right palm over left dorsum 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;
9. Rinse hands with water;
10. Dry hands thoroughly with a single use towel;
11. Use towel to turn off faucet;

Your hands are now safe.
Central sterile supply department (CSSD) is a service unit in a hospital that processes, issues, and controls the sterile stores supply to all departments of the hospital.

**Workflow in the CSSD:**

![Workflow Diagram](image)

| Table 1 – Minimum cycle times for dynamic-air-removal steam sterilization cycles |
|----------------------|----------------------|----------------------|
| **Item**             | Exposure time at 132°C (270°F) | Exposure time at 135°C (275°F) | Drying Times |
| Wrapped instruments  | 4 minutes             | 3 minutes             | 16 minutes    |
| Textile packs        | 4 minutes             | 3 minutes             | 5-20 minutes  |
| Wrapped utensils     | 4 minutes             | 3 minutes             | 3 minutes     |
| Unwrapped nonporous items (e.g., instruments) | 3 minutes | 3 minutes | NA |
| Unwrapped non porous and porous items in mixed load | 4 minutes | 3 minutes | NA |
Flow of Instrument through CSSD

The cleaning (or dirty) zone
- This is the area in which reusable instruments are collected, registered, cleaned and dried.
- The dirty zone should be easily accessible from the operating, obstetric and surgical emergency departments to facilitate the reception of reusable instruments. It must also be located next to the clean zone.

The packaging (or clean) zone
- This is the area for checking/inspecting instruments, reassembling instrument sets, high-level disinfection, packaging and storage of packages ready to be sterilized
- It should be located between the dirty zone and the sterile zone

The autoclaving (or sterile) zone
- This is the area in which the instruments ready to be sterilized by steam sterilization in an autoclave are registered.
- It is important to ensure that there is enough space on all sides of the autoclave for safe use and maintenance.

The storage and distribution zone
- This is the area in which sterile packages are stored until distributed.
- It should be located next to the autoclaving zone, in a separate room.
Bio Medical Waste Management

- Bio-medical waste means any waste generated during diagnosis, treatment or immunization of human beings or animals.
- Management of healthcare waste is an integral part of infection control and hygiene programs in healthcare settings. These settings are a major contributor to community-acquired infection, as they produce large amounts of biomedical waste.
- Biomedical waste can be categorized based on the risk of causing injury and/or infection during handling and disposal.

**Steps of Bio Medical Waste Management**

1. Segregation
2. Collection and storage
3. Transportation
4. Treatment and disposal

**Segregations should be done as in following categories:**

<table>
<thead>
<tr>
<th>Category</th>
<th>Type of Container</th>
<th>Colour coding</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Human anatomical waste</td>
<td>Plastic bag</td>
<td>yellow</td>
</tr>
<tr>
<td>2. Animal waste</td>
<td>Plastic bag</td>
<td>yellow</td>
</tr>
<tr>
<td>3. Microbiology and Biotechnology waste</td>
<td>Plastic bag</td>
<td>yellow/red</td>
</tr>
<tr>
<td>4. Waste sharp</td>
<td>Puncture proof container</td>
<td>Blue/white</td>
</tr>
<tr>
<td>5. Discarded Medicines and cytotoxic waste</td>
<td>Plastic bag</td>
<td>Black</td>
</tr>
<tr>
<td>6. Solid soiled waste</td>
<td>plastic bag</td>
<td>yellow/red</td>
</tr>
<tr>
<td>7. Solid waste</td>
<td>plastic bag</td>
<td>blue(all disposable plastics)</td>
</tr>
<tr>
<td>8. Liquid waste</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>9. Incineration ash</td>
<td>plastic bag</td>
<td>black</td>
</tr>
<tr>
<td>10. Chemical waste (solid)</td>
<td>plastic bag</td>
<td>black</td>
</tr>
</tbody>
</table>
• **Locations of Containers:** Containers should have different colour bags and should be located at the point of generation of waste

• **Bags:** Should ensure that waste bags are filled up to three fourth capacity & tied securely and removed from point of waste generation

• Certain categories of waste may need pre treatment at the site of generation such as plastic and sharp materials etc.

• No untreated BMW should be stored beyond 48 hrs.

**Categories of waste and their method for Disposal**

**Yellow Bags**  
- Infectious Non sharp waste
  - Soiled bandages
  - Dressings cotton etc.
  - Human blood/tissue

**Red Bags**  
- Plastic, Disposable Items
  - Used gloves
  - Catheters and IV sets.

**Blue Bags**  
- Sharp edged
  - Glass Vials, Used Slides
  - Needles, lancets
  - Broken Glass, etc.

**Black Bags**  
- General Non-infectious
  - Food/ kitchen Waste
  - Paper, cardboard, box etc.

**Steps for Disposal**

- Autoclave
- Incinerate
- Deep burial in soil

- Autoclave
- Shred to Recycle
- Deep Burial in soil

- Autoclave
- Secure Landfill

- Dispose according to BMW rules

Chemical and Liquid Waste are disposed in to Sewer after Neutralizing and Disinfecting.

Blood should be disinfected by Autoclaving before final disposal.
Medical Asepsis

Prevention

- The most effective preventive measures are avoiding catheterization and removing catheters as soon as possible.
- Optimizing aseptic technique and maintaining a closed drainage system also reduce risk.
- Intermittent catheterization carries less risk than use of an indwelling catheter and should be used instead whenever feasible.
- Antibiotic prophylaxis and antibiotic-coated catheters are no longer recommended for patients who require long-term indwelling catheters.

Key Points

- Long-term use of indwelling bladder catheters increases risk of bacteriuria, although bacteriuria is usually asymptomatic.
- Symptomatic UTI may manifest with systemic symptoms (e.g., fever, altered mental status, decreased BP) and few or no symptoms typical of UTIs.
- Do urinalysis and urine culture if patients have symptoms or are at high risk of sepsis (e.g., because of immune compromise).
- Treat similarly to other complicated UTIs.
- Whenever possible, avoid use of catheters or remove them at the first opportunity.

Summary of guidelines for preventing infections associated with the insertion and maintenance of Catheters.

1. Selection of catheter type
   - Use a single-lumen catheter unless multiple ports are essential.
   - For total parenteral nutrition, a dedicated CVC or lumen should be used exclusively.
   - Use an implantable or tunneled catheter for long term (>30 days) use.
   - Consider the use of an antimicrobial impregnated catheter for patients at high risk of CRBSI.

2. Selection of catheter insertion site
   - Balance risks of infection against mechanical risks of insertion.
   - Use the subclavian route unless contraindicated.
   - Consider the use of peripherally inserted catheters as an alternative to CVCs.

3. Aseptic technique during insertion
   - Use optimum insertion technique including sterile gown, gloves and drapes.
   - Clean the insertion site with alcoholic chlorhexidine gluconate solution (or alcoholic povidone iodine) and allow to dry.

4. Catheter and catheter site care
   - Before accessing the CVC, disinfect the external surfaces of the catheter hub and connection ports with an aqueous solution of chlorhexidine gluconate or povidone iodine (unless against manufacturer's recommendations).
   - Use sterile gauze or transparent dressing over the insertion site.
   - Catheter flush solutions should contain anticoagulant.

5. Replacement strategies
   - Do not routinely replace non-tunneled CVCs as a method of CRBSI infection.
   - Guide wire exchange is acceptable for malfunctioning catheters if there is no evidence of infection.
Guidelines for the Management of Intravascular Catheter-Related Infections

Management points for a patient with bloodstream infection and a tunnelled central venous catheter (CVC) or an implantable device (ID).

Verification of infection:
- Luminal colonization?
- Contamination?
- Infection?

Catheter-related infection?

Complications:
- Persistent bacteremia?
- Septic thrombosis?
- Retinitis?
- Endocarditis?

- Fever or chills
- Likely pathogen (Figure 4)
- ≥1 blood culture (+)
- Peripheral & CVC/ID
- No other source of fever

- Site or tunnel infection
- Likely pathogen
- Quantitative CVC/PBC >5:1
- Differential CVC/PBC time to positivity, >2 h (see text)
- No other source for (+) blood culture

- Blood culture (+) on therapy
- Doppler venogram (+)
- Fundoscopic exam (+)
- TEE or TEE (+)
What can you do to PREVENT sepsis?

1 Get **vaccinated** against the flu, pneumonia, and any other infections that could lead to sepsis. Talk to your doctor for more information.

2 **Prevent infections** that can lead to sepsis by:
   - Cleaning scrapes and wounds
   - Practicing good **hygiene** (e.g., hand washing, bathing regularly)

3 If you have an infection, **look for signs like**: fever, chills, rapid breathing and heart rate, rash, confusion, and disorientation.

Approach to the management of a patient with a tunneled central venous catheter (CVC)—or a surgically implanted device (ID)—related bloodstream infection
Surgical Asepsis

WOUND CARE

- Your surgical wound may need to be cleaned and the dressing changed on a regular basis.
- Remove the old bandage and packing. You can shower to wet the wound, which allows the bandage to come off more easily.
- Clean the wound.
- Put in new, clean packing material and put on a new bandage.

To help some surgical wounds heal, you may have a wound VAC (Vacuum Assisted Closure) dressing. It increases blood flow in the wound and helps with healing.

- This is a negative pressure (vacuum) dressing.
- There is a vacuum pump, a foam piece cut to fit the wound, and a vacuum tube.
- A clear dressing is taped on top.
- The dressing and the foam piece are changed every 2 to 3 days.

### Table 1: Best practice for managing incisions pre- and intraoperative care (based on NICE, 2008)

<table>
<thead>
<tr>
<th>Preoperative care</th>
<th>Intraoperative care</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assess patients to identify risk factors. Patient should be screened for MRSA according to local guidelines</td>
<td>Disinfect skin with an antiseptic agent before the incision is made (skin flora such as <em>Staphylococcus aureus</em> are responsible for the majority of SSIs (HPA, 2011))</td>
</tr>
<tr>
<td>Patient should shower (or bath/wash if unable to shower) preoperatively using soap. Do not use hair removal routinely to reduce the risk of surgical site infection</td>
<td>Use an aseptic technique during surgical procedures and maintain body temperature above 35°C</td>
</tr>
<tr>
<td>Give antibiotic prophylaxis to patients before clean surgery involving the placement of a prosthesis or implant, clean-contaminated surgery and contaminated surgery (Brandler and Honig, 2004; Bentzler and Hunt, 2006)</td>
<td>Consider giving a single dose of antibiotic prophylaxis intravenously on starting anaesthesia. However, give prophylaxis earlier for operations in which a tourniquet is used</td>
</tr>
</tbody>
</table>

Clean Technique for Surgical Asepsis

1. Preparation
   - Prepare patient for procedure by providing analgesia and tailoring if required, hand wash as appropriate for these procedures.
   - Disinfect chosen working surface such as dressing trolley, tray, or bedside table with 70% alcohol wipe.
   - Gather equipment.
   - Position patient and screen for privacy.
2. Hand hygiene
   - Wash hands or use alcohol gel.
   - Apply disposable plastic apron if dressing pack does not contain one.

3. Open pack
   - Check for damage to the pack and expiry date.
   - Open pack onto work surface.
   - Use the corners of the sterile field to spread it out onto the working surface.

4. Dropping on
   - Open dressings and other equipment so that they fall untouched onto the middle of the field.
   - If the dressing pack contains an apron apply it, it will be presented first, so that you can pick it up without touching the other sterile contents.
8. Cleaning wound
   - Clean wound according to good wound care principles (i.e. only if there is loose necrotic tissue of slough, excess exudate or faecal contamination, or the presence of foreign bodies).
   - Clean surrounding skin so it is free of exudate, skin scale, dressing residues, urine or faeces.
   - Gently dry surrounding skin and apply skin sealants if required.

9. Redressing
   - Redress and bandage as required.

10. Clearing away
    - Dispose of any sharps directly to sharps bin at bedside.
    - Fold up field around any remaining materials and place into waste bag.
    - Return any reusable items to sterile supply department.
    - Remove gloves and apron to waste bag.
    - Discard bag into appropriate waste stream depending on your location (hospital or community) according to local policy.
    - Clean up any spillage on work surface with detergent wipes.
    - Disinfect work surface with 70% alcohol wipe.
    - Wash hands or use alcohol hand gel.
**Housekeeping**

10-Step Occupied Room Cleaning Process

1. Hello
   Knock, enter room and cheerfully greet patients, using names

2. Empty waste can/trash

3. High dust

4. Sanitize

5. Spot clean walls

6. Clean bathroom

7. Dust mop

8. Inspect your work

9. Damp mop

10. Exit
   Thank patient and say “Goodbye”

**Duty Checklist**

10-Step Discharge Cleaning Process

1. Log into patient room per hospital’s SOP

2. Remove soiled linen and trash

3. High and low dust

4. Sanitize bed

5. Sanitize all horizontal surfaces

6. Sanitize all vertical surfaces

7. Sanitize the restroom

8. Inspect room

9. Microfiber mop room

10. Correct
CLEANING AND DISINFECTION OF INPATIENT WARDS

1. The cleaning of a patient’s wards will be performed once during each shift. Housekeeping staff with emphasis on patient touch areas such as bed, bed rails, door knobs, handles, monitoring equipment, buttons/controls, cables.

2. After a patient is discharged all used disposable items like IV bags and tubing’s, suction catheters and tubing’s will be discarded by nurses.

3. Soiled linen is removed by Housekeeping Staff.

4. Clean the bed surface including under the mattress with disinfectant.

5. Toilet cleaning, bathrooms, sinks, showers should be cleaned every six hourly or as when required. Soap and clean towel would be provided and will be refilled as needed.

Task Involved in providing Housekeeping Services
FUNCTIONS OF LAUNDRY DEPARTMENT

Functional flow chart of activities in Laundry is as follows:

- Receipt of Articles
- Cleaning & Disinfection
- Washing
- Inspection and Assembly
- Distribution

PROCESS FLOW OF MECHANIZED OR IN HOUSE LAUNDRY

The layout of the Laundry should be done in such a way that there is a unidirectional flow of materials so that mixing up of the dirty linen and clean linen is avoided. It has following areas:

- Reception and Receiving Area
- Sluicing & Disinfection Area for Soiled and Infected Linen
- Machine Area (for Washing)
- Drying Area (For Dryer)
- Sorting Table for torn Clothes
- Folding and Pressing Area
- Tailoring Room
- Clean Storage Area
- Distribution Area
Diagrammatic representation of General Laundry system

Isolation Practices
Setting Up and Carrying Out Isolation

- Securing order to begin isolation
- Food service and disposal
- Stocking isolation cart/cabinet
- Caring for linen
- Setting up an isolation room
- Monitoring blood pressure (BP)
- Educating the Patient and Family Regarding Isolation
- Filling water pitcher or ice bag
- Locating negative and positive pressure rooms
- Dressings: No-touch techniques
- Using portable HEPA filter
- Securing signatures
- Isolation and precautions labelling
- Drawing blood for laboratory
- Obtaining isolation door signs and labels
- Running an EKG on isolation patient
<table>
<thead>
<tr>
<th>Selection masks</th>
<th>Visitors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Donning gown, mask and gloves</td>
<td>Transporting isolated patients to other departments</td>
</tr>
<tr>
<td>Removing gown, mask and gloves</td>
<td>Patients on isolation leaving the isolation room</td>
</tr>
<tr>
<td>Collecting specimens from patient on isolation</td>
<td>When a patient on isolation codes or requires a code cart</td>
</tr>
<tr>
<td>Disposing of body discharges</td>
<td>Caring for patient after death</td>
</tr>
<tr>
<td>Taking temperature, pulse and respiration</td>
<td>Caring for equipment in the isolation room / bagging of articles</td>
</tr>
<tr>
<td>Administering medications</td>
<td>Terminal cleaning</td>
</tr>
<tr>
<td>Administering blood products</td>
<td>Discharging a patient on isolation / when a room can reoccupied</td>
</tr>
</tbody>
</table>

**Standard precautions**
- Hand washing and antisepsis (hand hygiene);
- Use of personal protective equipment when handling blood, body substances, excretions and secretions;
- Appropriate handling of patient care equipment and soiled linen;
- Prevention of needle stick/sharp injuries
- Environmental cleaning and spills-management; and
- Appropriate handling of waste.
- Hand washing and Antisepsis (hand hygiene)

**Contact isolation precautions**—used for infections, diseases, or germs that are spread by touching the patient or items in the room (examples: MRSA, VRE, diarrheal illnesses, open wounds, RSV).
Healthcare workers should:

- Wear a gown and gloves while in the patient’s room.
- Remove the gown and gloves before leaving the room.
- Clean hands (hand washing or use hand sanitizer) when entering and leaving the room.
- Visitors must check with the nurse before taking anything into or out of the room.

**Droplet isolation precautions**—used for diseases or germs that are spread in tiny droplets caused by coughing and sneezing (examples: pneumonia, influenza, whooping cough, bacterial meningitis).
Healthcare workers should:

- Wear a surgical mask while in the room. Mask must be discarded in trash after leaving the room.
- Clean hands (hand washing or use hand sanitizer) when they enter the room and when they leave the room.

**Airborne isolation precautions**—used for diseases or very small germs that are spread through the air from one person to another (examples: Tuberculosis, measles, chickenpox).

Healthcare workers should:

- Ensure patient is placed in an appropriate negative air pressure room (a room where the air is gently sucked outside the building) with the door shut.
- Wear a fit-tested NIOSH-approved N-95 or higher level respirator while in the room. Mask must be discarded in trash after leaving the room.
- Clean hands (hand washing or use hand sanitizer) when they enter the room and when they leave the room.
- Ensure the patient wears a surgical mask when leaving the room.
- Instruct visitors to wear a mask while in the room.
Viral Haemorrhagic Fevers Isolation Precautions

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

Steps involved:

• **Preliminary Investigation:** confirming whether an outbreak is actually taking place and if cases have a common cause
• **Early control measures:** Isolation, cohorting and cleaning
• **Clear communication:** to alert other staff and patients
• **Descriptive epidemiology:** to develop a case definition and identify as many cases as possible in order to quantify the extent of the outbreak. This should be done by means of a properly constructed questionnaire.

The outbreak should be described in terms of time, place and person to ensure that its full extent is recognised. Epidemiological assistance may be required for this.

• **Environmental health investigation:** to ensure food safety is protected and the kitchen/food and food workers are not either at risk of contamination or a source of contamination and hence prevent further cases. If a point source is suspected, epidemiological and environmental investigations should be undertaken to identify or exclude a contaminated food or water source.

• **Microbiological investigation:** to identify definitively and document the causative pathogen.
• **Analytical studies:** more complex analytical studies may be necessary to determine possible exposures and methods of transmission.
• Declaration that the outbreak is over.
• Production of a final report.

Control Measures

A. Immediate cleaning and environmental decontamination
B. Scrupulous hand washing
C. Segregation of those who are ill from those who are not
D. Limitation of movement of staff and patients
E. Exclusion of any ill staff from work for 48 hours after their last episode of vomiting or diarrhoea
F. Sensible management of visiting