



# Laundry Services in Healthcare Facilities Guidelines

Second Edition/2025



Sultanate of Oman

Ministry of Health

Center for Disease Control and Prevention

Department of Infection Prevention and Control

<b>Document Title</b>	Laundry Services in Healthcare Facilities Guidelines
<b>Document Type</b>	Guidelines
<b>Directorate/Institution</b>	Center for Disease Control and Prevention
<b>Targeted Group</b>	All Healthcare Institution
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<b>Release Date</b>	October 2025
<b>Review Frequency</b>	Five years

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Date	November 2025	Date	November 2025

## Acknowledgement

We are pleased to inform that our Laundry Services Management policy and procedures have been updated and restructured into guidelines. This change reflects our commitment to ensuring clarity, practicality and adaptability in our processes while maintaining compliance with best practices and standards. This achievement would not have been possible without the dedication and expertise of the team members in Central Department for Infection Control and Prevention and other stakeholders for their continuous support and contributions.

We extend our heartfelt appreciation to everyone on their dedication, valuable input, and collaborative efforts have been instrumental in enhancing the clarity, efficiency, and overall quality of our procedures.

### Our special thanks to:

- Ms. Najla Al Zadjali -DIPC Headquarters
- Ms. Muna Al Jabri -DIPC Headquarters
- Ms. Asma Al Ghammari -DIPC Headquarters
- Ms. Buthaina Al Hasmi -DIPC Headquarters
- Ms. Buthaina Al Habsi -DIPC Headquarters
- Ms. Nouda Al Zadjali -DIPC Headquarters
- Dr. Omaira Al Omairi -Royal Hospital
- Dr. Munira Al Hashmi -DG for Private Health Establishments

We would also like to express our gratitude to the first task force who first initiated and wrote the initial policy and procedures. Their foundational work has paved the way for continuous improvement and excellence in our department.

- Dr. Amal Maani- Center for Disease Control and Prevention
- Mr.Noel S.Gonzaga - Center for Disease Control and Prevention
- Dr.Khalid Said Alharthi - Center for Disease Control and Prevention
- Dr.Nasser Suliman Alsalmani - Quality Assurance Centre
- Ms.Zayana Abdullah Albarwani - General Directorate of Nursing
- Ms.Ahlam Muhammed Alraisi - General Directorate of Nursing
- Mr.Jabir Saif AlSooti - Center for Disease Control and Prevention
- Mr.Rashid Muhammed Albadi- General Directorate of Khoula Hospital

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## Acronyms

<b>CSS</b>	Central Sterilization Services
<b>DIPC</b>	Department of Infection Prevention and Control
<b>DG</b>	Directorate General
<b>GHS</b>	Global Harmonized System of Classification and Labeling of Chemicals
<b>HCT</b>	Healthcare Textiles
<b>IPCD</b>	Infection Prevention and Control Department
<b>MoH</b>	Ministry of Health
<b>OPIM</b>	Other potentially infectious materials
<b>PPE</b>	Personal Protective Equipment
<b>SDS</b>	Safety data sheets

## Definitions

- Contaminated or infectious textiles: are fabrics which are soiled with body substances, including blood, skin, stool, urine, vomitus, other body fluids and other potentially infectious materials (e.g. textiles used by patients in isolation rooms).
- Cytotoxic contaminated laundry: is defined as washable textiles which has been contaminated during administration of cytotoxic drugs or with body substances, including urine, feces, vomitus, bile, and fluids drained from body cavities of patients receiving cytotoxic therapy.
- Hamper trolleys: Movable covered trolleys, made of steel or sturdy plastic frames in appropriate size used to hang the color coded hamper bags.
- Healthcare textiles: are fabrics that have been used or not by the patients
- Private Medical Laundry: is an outsource laundry services company contracted by any healthcare institution outside the healthcare facilities that undergo with the process of licensing from its regional and local municipality
- Red hampers bag: are bags made of nylon/cotton cloth which can be tied when full, where the water soluble bags that contained infectious textiles is place; with biohazard symbol.
- Soiled textiles: are fabrics used by the patients but are not categorized as infectious textiles.
- Standard precaution: is a set of infection control practices used in healthcare settings to prevent the spread of infections. They are applied to all patients, regardless of their infection status.
- Thick plastic bag or container (40-50 microns): Used to place wet textiles that present likelihood of soak-through or leakage. This is used for noninfectious waste.

- Transport carts: four wheeled vehicle used to deliver and collect HCTs, closed system, preferably with shelves, easy to maneuver, easy to clean and disinfect, and no sharp edges
- Universal precautions: An infection prevention that considers healthcare textiles products being sent to the laundry are contaminated. All color coded bags, white and red are transported and laundered in the same manner.
- Water soluble bags: a primary containment bag made plastic used to contain infectious textiles. Completely soluble to water in certain temperature.
- White hamper bags: a bag made of nylon/cotton cloth which can be tied when full to contain soiled textiles.

## Chapter 1 Introduction:

Most of the Ministry of Health (MoH) regional healthcare facilities have onsite laundry services. The laundered healthcare textiles (HCTs) in these facilities are hygienically clean but not sterile, except for surgical textiles, which should be sterilized in the Central Sterile Services Department (CSSD) prior to use. After laundering, the textiles are delivered and stored in the clinical wards. However, some wards are storing the textiles unpacked in storage rooms with other medical items on inappropriate shelves, exposing them to dust. Additionally, some wards without designated clean storage rooms are storing these textiles in uncovered shelves in the corridors, unpacked. These challenges, along with improper practices, raise concerns about the potential contamination of HCTs in healthcare facilities.

Evidence from around the globe indicates that laundered HCTs have been found to be contaminated prior to use. There is a high possibility of microorganisms accumulating due to improper laundering processes, contact with patients, environmental factors, and any items that come into contact with the textiles. This is especially concerning for immunocompromised patients, who are at higher risk of acquiring healthcare-associated infections from HCTs.

### Purpose:

- To standardized the healthcare textiles laundry process inside the healthcare facilities.
- To minimize the contribution of contaminated HCTs to the incidence of healthcare-associated infections.
- To provide laundering specifications to Private Medical Laundry to be contracted by healthcare facilities.

### Scope:

This guideline is applicable to all the MoH and a reference for non-MoH healthcare facilities and private healthcare institutions, which are laundering HCTs onsite and other private medical laundry that are providing the laundering services to any healthcare facilities.

### Structure:

This is the updated version of the initial policy and procedure, which has been expanded into guidelines containing several chapters. Chapter 1 covers the introduction, purpose, and scope.

Chapter 2 describes the procedures step-by-step in clinical areas/wards and laundry areas. Chapter 3 covers the other requirements in laundry services and responsibilities of the stakeholders involved in executing the process. Chapter 4 includes the annexes, document history, version control table, and references.

## Chapter 2 Procedure:

### Step 1: Handling of Textiles in Clinical area/ Wards

- Perform hand hygiene before wearing and after removal of PPE to be performed on each steps
- Use PPE e.g. gloves and aprons when handling contaminated textiles (See Appendix 2)
- Remove the textiles one by one and place it inside the hamper bag that is hanged in hamper trolleys.
- Avoid shaking the textiles during removal to minimize agitation and prevent contamination of the environment and personnel.
- Collect soiled textiles in such a way as to keep the heavily soiled portion contained in the center by folding the soiled spot into the center to prevent leakage.
- Ensure that all non-textile items, including instruments, needles and incontinence pads are removed from the textiles to prevent damage to laundry equipment and needle stick injuries.
- Ensure that the patient's personal items (e.g., dentures, eyeglasses, and hearing aids) are not left in the textiles.

### Step 2: Segregation of Textiles in Clinical area/ Wards

Table 1: Color-coded hamper bags, materials and its usage

Color and Signs	Materials	Usage
<b>White hamper bag</b>	Cloth	for non- infectious textiles
<b>Water soluble- red</b>	Water soluble Plastic	for contaminated/infectious textiles and cytotoxic contaminated linen
<b>Red hamper bag- with biohazard signs</b>	Cloth	for contaminated or infectious textiles to be washed onsite or offsite
<b>Purple hamper bag with cytotoxic signs</b>	Cloth	for minimally contaminated cytotoxic materials and body substances
<b>Thick transparent bag</b>	Plastic (40-50 microns )	for heavily wet and dripping for non-infectious HCTs before placing it inside the hamper bag

- Provide color-coded hamper bags in the clinical areas in appropriate hamper trolleys (See table 1).
- Follow the segregation table 1 for classification of contamination and color coded hamper bags:



- Place the infected contaminated textiles in the water-soluble bags and place it inside the red hamper bag.
  - Place the soiled textiles inside the white hamper bag.
- Tie off when it  $\frac{3}{4}$  full and place in the dirty utility room or in a designated area for pickup.

### Step 3: Temporary storage in dirty utility room

- Store the full hamper bags in short period of time
- Keep the hamper bags 8 to 10 inches above of the floor in the appropriate hamper trolleys. Do not allow them to lie on the floor.

### Step 4: Collection and Transportation to laundry area

- Use appropriate PPE (non-sterile disposable gloves, plastic aprons and mask)
- Do not hold bags close to the body to prevent the possibility of sharps injury from forgotten items in the textiles.
- Collect at least daily or as needed.
- Use dedicated closed carts for the soiled and contaminated laundry. Label the carts used to transport contaminated textiles with biohazard symbols or warning statement in both English and Arabic.
- Identify the time and route of collection of dirty textiles. If possible, use different route or time for food delivery.
- Deliver the collected healthcare textiles to the 'soiled' area.

### Step 5: Sorting in laundry area

- Wear appropriate PPE (See Annex 2 PPE and activities)
- Prevent wearing artificial nails, including bonding, extensions, tips, and nail polish
- Use heavy-duty gloves, aprons and mask in sorting area.
- Be careful for sharp objects while sorting. If found, sharps must be disposed of appropriately in sharp container and if staff got injured notify the infection control (IC) department.
- DO NOT sort infectious textiles
- Sort the NON infectious textiles according to the required washing manufacturers recommendation e.g. temperature, compatibility of washing chemicals
- Sort the textiles according to the classification: Infectious, non-infectious, and housekeeping materials (microfibers mop heads and cloths)
- Use PPE appropriately and remove the physical bulk solids (e.g., feces) before the wash/dry cycle by using disposable paper towels or scoop. Dispose properly as per local policy.

### Step 6: Washing and rinsing in laundry area

- Follow fabric-care instructions and special laundering requirements for items.
- Load the textiles in the washing machines following the manufactures instructions.
- Use designated washing machines for housekeeping materials as per the general services contract and follow washing procedures according to the manufacturers recommendations

- Do not overload the machines.
- Use disinfectant on a case-by-case basis, depending on the origin of the soiled textiles (e.g., textiles from an area on contact precautions).
- Use only low temperature laundry cycle for heat sensitive items
- Contaminated with hazardous chemicals (e.g., chemo drugs) – first wash should be separate with other laundries and the second wash can be joined with soiled laundries prior to drying. Follow hospital healthcare waste policy if textiles are considering as waste.
- Ensure that the laundering process can remove soil and render the textiles clean.
- Use laundering chemicals as per manufacturers recommendation of the textiles
- Optimize the process e.g. the mechanical action of the equipment, the water flow, the water temperature, the timing (cycles), and drying.
- Establish the load size (weight) for each textile classification and for each type of equipment used. Daily log the following:
  - Cycle time: Pre-wash, wash, rinse, and final rinse times
  - Temperature: Wash cycle, bleach cycle and rinse cycle temperatures
  - Chemical usage: Chemical types and usage levels for each step in the wash process
- Ensure that the laundry cycles are monitored:
  - High temperature: at least 71°C (160°F) for 25 minutes or according to textile manufacturer, for all except for heat sensitive
  - Low temperature: at 22°C-50°C (71°F-77°F) for heat sensitive; follow the manufacturers recommendations for: time cycle, volume of bleach and detergent
- Monitor and control the amount of residual chlorine (bleach) if used between 50 and 150 ppm.
  - Chlorine bleach becomes activated at water temperatures of 135°F–145°F (57.2°C–62.7°C). Not recommended for laundering flame-retardant fabrics, textiles, and clothing because its use diminished the flame-retardant properties of the treated fabric
  - Chlorine alternatives (e.g., activated oxygen-based laundry detergents) should be MoH approved.
- Ensure last series of rinse cycles is the addition of a mild acid (i.e., sour) to neutralize any alkalinity in the water supply, soap, or detergent.
  - The rapid shift in pH from approximately 12 to 5 is an effective means to inactivate some microorganism

#### Step 7: Drying of textiles

- Ensure to dry the healthcare textiles properly preserving the integrity of the textiles, and should not be damp to minimizes microbiological growth
- Dry the textiles in controlled, and monitored process for each textile classification to ensure appropriate drying
- Ensure appropriate drying by following textiles manufacturer's recommendations.
- Cool-down hot dry loads to enable staff handle the textiles comfortably and to minimize wrinkling.

### Step 8: Ironing of textiles

- Ensure ironers are maintained in good operating condition, so that they adequately iron dry, and fold the textiles without excessive heat, pressure, or mechanical damage.
- Ensure equipment maintain a temperature appropriate for the type of fabric being processed and based on the equipment manufacturer's manual and recommendations, if available.
- Maintain and keep records of daily temperatures of ironing machine and monthly preventive maintenance.

### Step 9: Folding and Stacking

- Ensure dry folding equipment in good operating condition to properly fold the textiles without damage.
- Ensure the folding and stacking process is maintained in the same hygienically clean state as was achieved after washing.
- Rewash, if any textiles become soiled.

### Step 10: Packing and storage in the laundry area

- Pack the clean textiles in a clean area separated from potential sources of contamination
- Prevent soiling or contamination during packing.
  - Wrap individual bundles of clean textiles in plastic or other suitable material and sealing or taping the bundles.
  - Label the plastic bags with the packing date. Use first in and first out method (FIFO).
  - If unwrap, place the textiles into fluid-resistant covered carts away from dust, remain covered at all times until delivered to the wards or other designated location in the healthcare facility.
- Store packed textiles in open and clean shelves provided the integrity of the package is not compromised.
- Close the room at all times, provide access only to authorized staff.
- Label the storage area in both English and Arabic.
- Reprocess, if the textiles are contaminated during packing and storage.
- Store textiles in clean shelves approximately:
  - (1-2) inches from the wall for accessible cleaning
  - Must be 6-8 inches from the floor
  - Must be 12-18 inches below the ceiling

### Step 11: Transport and delivery of clean textiles to the wards

- Transport in dedicated covered carts that have been cleaned and disinfected before it is subsequently used.
- Transport and store in such a way as to ensure its cleanliness.
- Pack to protect it from dust and soil during loading, transport and unloading.
- Reusable textile covers materials (e.g., liners) must be washed before the next use.
- If the cart does not have a solid bottom, it must be lined with heavy plastic or impervious materials before placing clean textiles inside.
- Ensure that carts are maintained in good working order with wheels free from strings or other debris that impairs functioning or collects dirt.

### Step 12: Storage of clean textiles in the wards

- Store the packed textiles in the wards inside the appropriate storage room, covered with lock dust free and clean storage area in a cabinet or shelves, if available.
- If unpacked, ensure it is stored in appropriate covered cabinet for dust protection and use the First in –First out method (FIFO).

## Chapter 3: Requirements and responsibilities:

### Reusable surgical textiles considerations

- Inspect new surgical textiles for appropriate labels and accompanying manufacturer's instructions.
  - It shall contain information such as manufacturer, product type, and lot code numbers. Labels with lot code information must remain intact throughout the effective life of the textile.
- Wash the reusable surgical textiles and isolation gowns according to the manufacturers recommendation.
- Develop tracing system manually or electronic to tract the number of surgical laundry washes (ex., via barcodes, radio-frequency identification (RFID) chips, or grid labels affixed to gowns that are manually marked with indelible marker)
- Inspect the surgical textile integrity and quality with the use of light illumination for the presence of:
  - stains, residue, physical defects, chemical or thermal damage, and foreign debris, and to ensure that appropriate labels are in place
- Follow the hospital policy to condemn or recycling if available for textiles which have unacceptable stains or residues (e.g., medicines, lubricants, adhesives, blood and/or body fluids, hard surfaced or foreign matter of unknown composition, and raised or tactile residues) are not successfully remove.
- Inspect for physical defects (i.e., loose threads, loose or missing ties/ attachments, damaged/missing snaps, cuts, tears, and holes). It must be reported and replaced if needed.
- Inspect for evidence of chemical and/or thermal damages (usually apparent as discoloration, stiffening, or compromised structural integrity holes)
- Surgical textiles with chemical and/or thermal damage must be condemned or removed from service or send for recycling if available according to MOH policy.
- Ensure that surgical textiles must be free of foreign debris (e.g., lint, hair, loose fibers, fibrous pills, other particulates) prior to assembly into packs.
  - Foreign debris must be removed with an appropriate method (e.g., a de-linting roller or sticky tape) as approved by the textile manufacturer
- Follow the manufacturers IFUs for effective life of surgical textiles, according to the number of uses/washes for surgical textile barrier products.
- Consult textile manufacturers for directions on barrier properties (e.g., repellent finish, deterioration of coatings or film), absorbency, strength, drapeability, physical defects, and signs of textile aging.
- Fold reusable surgical textiles properly and consistently each time they are processed in accordance with the stakeholder's requirements.
- Deliver to the stakeholders maintaining their hygienic integrity, avoiding contamination during handling.

### Cytotoxic contaminated linen management:

- Place the grossly contaminated textile (with cytotoxic drugs or cytotoxic contaminated body substance) in cytotoxic waste bag and place in the bin. Follow the national guidelines for healthcare waste management.
- Laundry the textiles which shows minimal contamination or there is no visible soiling.
- Wear appropriate PPE (apron and double gloves) when handling the textiles
- Place in double bags. First in water soluble bag, and then in a labelled hamper bag that is identified as cytotoxic.
- Prevent sorting or manual handling
- Wash separately from other items on the longest running cycle capacity for two wash and rinse cycles.
- Combine with other non-contaminated items for further laundry procedures.

### Equipment operation and water quality:

#### **Specifications of washing machine:**

- Washers extractors
- Continuous batch washers
- With monitoring device for temperature and cycles
- Automatic detergent dosing systems to reduce human error and ensure consistent chemical concentrations
- Chemical disinfection compatibility for cycles using chlorine-based or oxygen-based disinfectants
- Stainless steel inner drum & outer casing for corrosion resistance and easy cleaning.
- Self-cleaning and decontamination cycles to flush biofilms and residues
- Heavy duty
- Energy and water efficient

#### **Calibration:**

Perform periodic (annually) calibration (by personnel trained and/or certified in calibration specified by the manufacturer) and document the following:

- The scale for weighing load size and water volume
- The chemical delivery system
- The design and size of water heater equipment must be appropriate for the provider's needs at peak operating times and to maintain the specified heated water temperature per desired cycle.

#### **Preventive maintenance (PPM)**

- Preventive maintenance records shall include replacement of worn expendable parts, lubrication, and calibrations
- Keep and maintain record on file for each piece of equipment. The following information shall be recorded:
  - Service details (e.g., date for request and completion, reason for service, repair)
  - Equipment details (e.g., type, model, serial number, and location of the equipment)

- Parts and repair details (e.g., parts, repair descriptions)
- Personnel involved (e.g., provider authorization, service technician name).

### **Water Quality:**

Monitor the water used in the laundry process meets an acceptable range for:

- Hardness, alkalinity, pH, iron and other heavy metals so that wash operations of the laundry can achieve the result of hygienically clean and appropriate chemistry balance as per the manufacturers IFUs.

### **Environmental hygiene and safety:**

#### **Environmental Cleaning in Laundry Area:**

- Develop a cleaning schedule for e.g. environmental surfaces, machines, carts, etc., including method of cleaning and responsible person.
- Clean periodically the (walls, and ceilings, vents, and installed equipment) to minimize the buildup of dust and lint.
- Clean with soap and water the clean areas and its surfaces daily or as needed when it's visibly soiled (including floor and shelves) and if the area needs disinfection use MoH approved disinfectants e.g. in soiled and sorting areas. Clean and disinfect the dirty areas daily, shall be documented.
- Perform blow down, vacuuming, or other suitable cleaning practice when no other processing of textiles is occurring in that area and must not be performed in pack rooms
- Clean the working surfaces that become contaminated with blood or other potentially infectious material (OPIM) with MoH approved disinfectant.
- Clean washing machine (external) - after each load when its visibly soiled
- Clean laundry cart- daily or as needed when it's visibly soiled.
  - Cleaning methods (e.g. steam, with a detergent and water and using MoH approved disinfectant or alternative method of disinfection such as UV systems)

#### **Pest control:**

- Ensure that the laundry areas are free from pest
- Follow the procedures in the General Services contract and conduct the daily checklist inspection

#### **Management of Hazardous Materials:**

- Provide designated storage room for hazardous materials and label the door
- Keep and maintain safety data sheets of all the chemicals being used
- Classify and label the hazardous material according to GHS
- Segregate the hazardous materials when storing
- Follow the standard policy and procedure for healthcare waste management

**Contingency Planning Protocol:**

- Develop a contingency plan that provide for uninterrupted operations and services in the event of any occurrence potentially leading to serious disruption of the provider's operations
- The Contingency Plan shall include the following components:
  - A list of backup laundry facilities
  - Transportation contingency protocol
  - Call chain
  - A backup source of textiles, if needed.

**Blood and body fluid exposure:**

- Follow national guidelines for Blood and body fluids exposure

**Vaccination:**

- Vaccinate all the staff working in laundry services as per national guidelines for healthcare worker vaccinations.

**Private Medical Laundry:**

Ensure laundry outsource services follows the applicable requirements and procedures listed herein.

**Vehicles requirements:**

- Ensure that the vehicle have a water proof physical barrier between clean and dirty textiles, if there are no separate dedicated vehicles.
- Ensures that interiors have smooth, plain, impervious surfaces with as few interspatial, which might harbor bacteria as possible
- Provide gloves and aprons in case the personnel need to handle contaminated textiles
- Clean daily the interior with soap and water daily and disinfect at least once a day for designated dirty vehicles and once a week for designated clean vehicles with MoH approved disinfectants, and rinse if needed and must be documented
- Provide hand sanitizer and gloves for use in all delivery trucks. Staffs must be trained on proper hand hygiene.
- Provide biological spill kits for use when necessary

**Delivery of clean textiles:**

- Wrap individual bundles of clean textiles in plastic or other suitable material and seal or tape the bundles to prevent dust and contamination during loading, delivery and unloading
- Anchor the textiles hamper bags that it may prevent the spill in the containers
- Transport in a clean designated vehicle
- Clean and disinfect the vehicles and covers at least daily or as necessary.

**Quality Control/Process monitoring**

Conduct process monitoring to verify that ongoing operations are producing clean textiles. The checklists shall include, but are not limited to:

**Chemical supplies:**



- Verify with the manufacturer and chemical supplier that laundry chemicals are appropriate in accordance with the equipment manufacturer, textile classifications, and water temperatures being used.

**Titration:**

- Perform monthly for the correct wash chemistry according to the formula for each major classification of soil.

**Equipment:**

- Provide PPM documents for equipment that directly impacts hygienically clean textiles (such as ironers, dryers, presses, washers, etc.)

**Ironer:**

- Temperatures shall be based on the equipment manufacturer's manual and recommendations appropriate for the type of fabric being processed.

**Finished products:**

- Use a variety of process monitors e.g.:
  - Rewash rates of stained textiles it contributes to the life of textiles
  - pH spot tests- (5.5-6.5) perform after extraction on damp textile. Too low pH may cause skin irritation and textiles damage
  - Residual chlorine spot tests. - (50-150 ppm) check after the drain by titration or paper strips method. High chlorine level can cause skin irritation and yellowing color of the textiles

**Related required documents:**

- Cleaning of laundry machines
- Preventive maintenance for laundry machines
- Calibration documents including temperature gauges, flow controllers
- Log of temperatures during cycles
- Quality of water
- Cleaning schedules of laundry areas
- Room pressure (positive and negative), humidity and temperatures, air changes per hour
- Vaccinations of staff
- Trainings, competency and qualifications
- Safety Data Sheets (SDS) and list of all chemicals used in the unit.

**Microbiological Samples:**

- It is only done if there is epidemiologic evidence suggesting a role of textiles in disease transmission in health care facilities, it should be done in consultation with infection control department.



## Responsibilities:

### **Clinical staff:**

- Adhere proper segregation of textiles e.g. infectious and non-infectious textiles.
- Liaise with laundry department e.g. for materials to be used in the wards, collection and delivery etc.
- Adhere to safe handling procedure as part of standard precautions.
- Implement the procedure in this guideline intended for clinical staff.

### **Laundry supervisor:**

- Liaise with clinical staff, housekeeping, pest control, engineering & maintenance, and facility IPC to maintain open communication.
- Ensure that all the laundry staffs are aware and comply with the procedure in the guideline.
- Supervise the daily activities related to laundry services
- Ensure each laundry staff is properly trained and competent on how to operate and maintain the machines, attend the required trainings before assigning them on their job, and the refresher courses are provided in routine basis.
- Ensure hospital approve supplies are available in the wards (e.g. water soluble bags, color coded hamper bags, and HCTs).
- Keep the required staff qualification certificates, vaccination records, and blood and body fluids post exposure records.
- Keep the list of chemicals used in the area and the SDS.
- Keep or have access to the records of the preventive maintenance and monitoring results documents.

### **Laundry Staffs:**

- Read and affix signature that they understand the procedure in this guideline before starting the job
- Implement this guideline.
- Participate in the refresher training courses and competency testing.

### **Engineering and Maintenance team:**

- Provide and implement the appropriate physical design requirements and labels.
- Monitor and keep the records of temperature and HVAC (heating, ventilation and air-conditioning) system.
- Conduct periodic preventive maintenance and repairs and keep records as quality assurance program.
- Conduct the quality process monitoring and keep the documents
- Clean and wash exhaust filters periodically, if applicable

### **Infection Prevention, Control, and Health, Safety and Environment (HSE) team:**

- Lead the establishment of facility-specific quality benchmarks and other strategies to prevent textiles contamination and collaborate with general services, engineering and maintenance, administration, healthcare staff, and laundry supervisors.
- Supervise the laundry services ensuring the proper implementation of these guidelines.
- Conduct unit specific (laundry services) infection prevention and control education in routine basis.

- Liaise with the laundry services and participate in reviewing and approving of the products and materials to be used in laundry services minimizing infection risk
- Oversee the in house sub-contractor company is in compliance with occupational health measures as per the hospital policy for post –exposure prophylaxes as well as of PPE for laundry staff, screening and vaccination.
- Conduct periodic audit using the checklist and identify process for improvements as per the healthcare facilities need assessment.
- Collaborate with the local and regional municipality for assessment of private medical laundry
- Collaborate with contract and tender department on revising the local periodic contract for laundry services management.

#### **General Services team:**

- Liaise and monitor the proper operation in laundry services
- Ensure the implementation of this national guidelines
- Develop tracking mechanism system to track the number of washes for surgical textiles as per manufacturers IFU
- Provide written housekeeping schedule and ensure the general environment in the laundry area is clean and free from lint.
- Ensure that the routine pest control procedure and daily inspection is implemented, and application of pesticides are coordinated with health and safety personnel, if available.
- Establish written requirements to rewash, replace and condemn textiles as necessary to maintain all kinds of HCTs hygienic standards.
- Ensure that laundry staff are qualified and competent through education, training or level of prior experience, and immunized. Follow guidelines for MoH healthcare worker's immunization requirements.
- Ensure availability of written contingency plan and its proper implementation in case of natural disasters or shut down of laundry system.

#### **Private Medical Laundry:**

- Comply with the laundry process and requirements mentioned in this guidelines
- Ensure that their staff undergo trainings on the topics mentioned in this guidelines from any private institution either local training centers accredited by Ministry of Labor or international training centers from recognized global organization
- Use laundry solutions approved by MoH
- Provide documents that the company met the requirements as a medical laundry from local or regional municipality.

#### **Medical Store department:**

- Provide manufacturers information of use including effective life of surgical textiles to the healthcare facilities
- Ensure the healthcare and surgical textiles supplies are good quality according to the specifications.
- Liaise with General Service's department/unit in healthcare facilities for open communication regarding the textiles.

**Facility administration:**

- Ensure the proper implementation of this guideline in the healthcare facility.
- Designate responsible staffs to implement penalty system for non-compliance as per contract.

**Infection Control in Headquarters**

- Write and revise this guideline every 5 years
- Oversee the proper implementation of laundry services guideline in the healthcare facilities by conducting periodic audit as per the need assessment, and report.
- Collaborate with Contract and Tender Department for revision of the periodic national contract and agreement of laundry services.
- Collaborate with other stakeholders for the product evaluation and approval of laundry solutions

**Department of Environment Health and Occupational Health**

- Conduct product evaluation for toxicity and environmental safety of the products used in the laundry process.
- Collaborate with Infection Control section for any process improvement recommendations

**Contract and Tender Department**

- Collaborate with infection control and health and safety to be involved in revising the periodic contract of laundry services both national and local level.
- Follow up the healthcare facilities the proper implementation of penalty system according to the contract.
- Conduct awareness on the penalty system if needs arises.
- Consider the Infection Prevention and Control compliance assessment report and the recommendations

**CHAPTER 4: Document history and Annexes****Document History and Version Control**

Version	Description	Review Date
1	Initial Release	Dec 2020
2	Version 2	November 2030

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## Annexes:

### Annex 1: Physical Structure requirements

- Separate with physical barriers the areas, for dirty area such as in sorting and processing of soiled textiles, from the clean areas for ironing, folding, packing, and storing clean textiles.
- Labelling and signage:
  - Label each area following the one-way traffic
  - Post signage on the door of laundry services area “off limits for unauthorized personnel”
  - Post biohazard signs to the areas which contain other potentially infectious materials textile e.g. in soil, sorting areas and dirty trolleys and carts
  - Post signage in central storage room “Textile storage room”
  - Post hand hygiene reminders by posting posters at each procedure areas or in the handwashing sink
- Provide administrative & supporting areas, changing room for employees, supervisor’s office lockers, janitorial rooms and supplies.
- Provide washing area for dirty trolley and carts with:
  - With good source of water,
  - Impermeable floors
  - Functional and closed drainage system.
- Provide hand hygiene facilities and supply (soap, water, paper towels, or alcohol hand rub, antiseptic hand cleanser and dispensers) in or around all work areas and in personnel support areas
- Have a door that remains closed at all times
- Provide PPE in strategically located and available in work areas where potentially contaminated textiles are stored or sorted
- Provide separate room for surgical linen inspection, folding and packing
- Provide mending and repair room
- Provide safety features (e.g.,
  - emergency lighting
  - emergency eyewash shower system
  - fire alarms, fire extinguisher and blankets
  - door accessibility and egress
  - Safety perimeter for equipment guards, etc.

- **Floors:** Provide floor that are smooth, non-slip, and non-porous, with no depressions or cracks to prevent fluid settlement and tolerate regular cleaning and disinfection.
- **Walls:** Provide walls that are smooth and of non-porous surfaces without projections or gaps to avoid accumulation of dust and HCTs lint, and it should tolerate cleaning & disinfecting agents. To avoid settling and accumulation of fluids, the angles between walls and floor must be round. ▪
- **Ceilings:** Provide ceiling should be at least 4.5-meter height, solid, smooth, and non-porous surfaces without projections or cracks to prevent collection or building up of HCTs lint and dust.
- **Ventilation, Humidity & Temperature Control in laundry areas:**

Area	Ventilation	Minimum outdoor AEH	Minimum Total AEH	Humidity	Temperature
<b>Dirty: Receiving and Sorting</b>	Negative pressure with exhaust to outside	Not required	10	30-60 %	21°C to 24°C.
<b>Clean: ironing folding packing</b>	Positive pressure relative to dirty area	2	Not required		20°C to 25°C.
<b>Central storage room</b>	Positive pressure	Not required	2		

\*AEH - Air exchange per hour

- Laundry area must be properly ventilated to prevent the accumulation of dust and lint
- Laundry exhaust vents should be provided with filters to capture dust and textiles lint. These filters should be repeatedly cleaned and washed by the maintenance staff with supervision of infection control personnel.
- Portable fans must not be permitted in the surgical pack assembly room

#### **Central storage room requirements:**

- Provide physical barrier from other areas
- Should be free of pest, dust and lint, without obvious moisture contamination.
- Be free from drains or hot water pipes, pest and lint
- Prevent use of any porous material (e.g., cardboard, paper, etc.) as a shelf liner
- Absence of sewage apertures or water pipes.
- Storage shelves should be 15-20 cm above the floor 2.5-5 cm away from walls, and 25 cm below ceiling.

- To be used only for storage of clean textiles.
- The door of the storage area should always be closed.

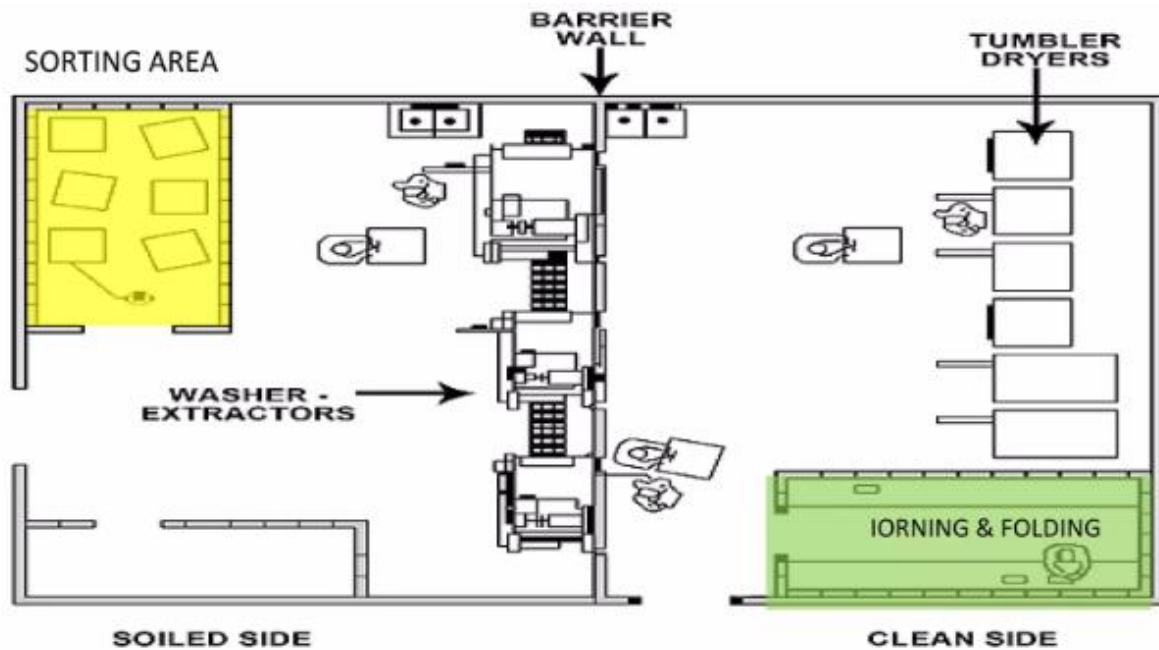


Image: Example of physical structure in hospital laundry services

## Annex 2: PPE, activities and materials:

Provide PPE to personnel in the workplace. Reusable PPE (e.g., aprons or overalls) penetrated by blood or OPIM must be removed immediately or as soon as feasible and be laundered. The PPE must be changed if moving from an area where soiled operations were performed into an area where clean operations are performed. All PPE must be removed and placed in an appropriate receptacle prior to leaving the work area.

PPE	Activities	Staff	Materials
<b>Gloves</b>	Sorting	Laundry	Heavy duty
	Collecting textiles from patient beds	Clinical	Disposable
	Laundry collection in the wards	Laundry	Disposable
<b>Apron</b>	Collecting textiles from patient beds	Clinical	Disposable and Water resistant
	Collection of used textiles	Laundry	
<b>Mask</b>	if there is a potential risk of aerosol exposure	Clinical	Disposable
	Sorting	Laundry	
<b>Face Shield</b>	If there is a potential risk of splash of blood and body fluids	All staff	Disposable
<b>Boots</b>	Laundry area when there is a risk of water exposure	Laundry	Reusable Water resistant, heavy duty
<b>Arm covers</b>	Ironing, folding and packing	Laundry	Disposable or clean reusable materials
<b>Beard covers</b>			
<b>Head covers</b>			

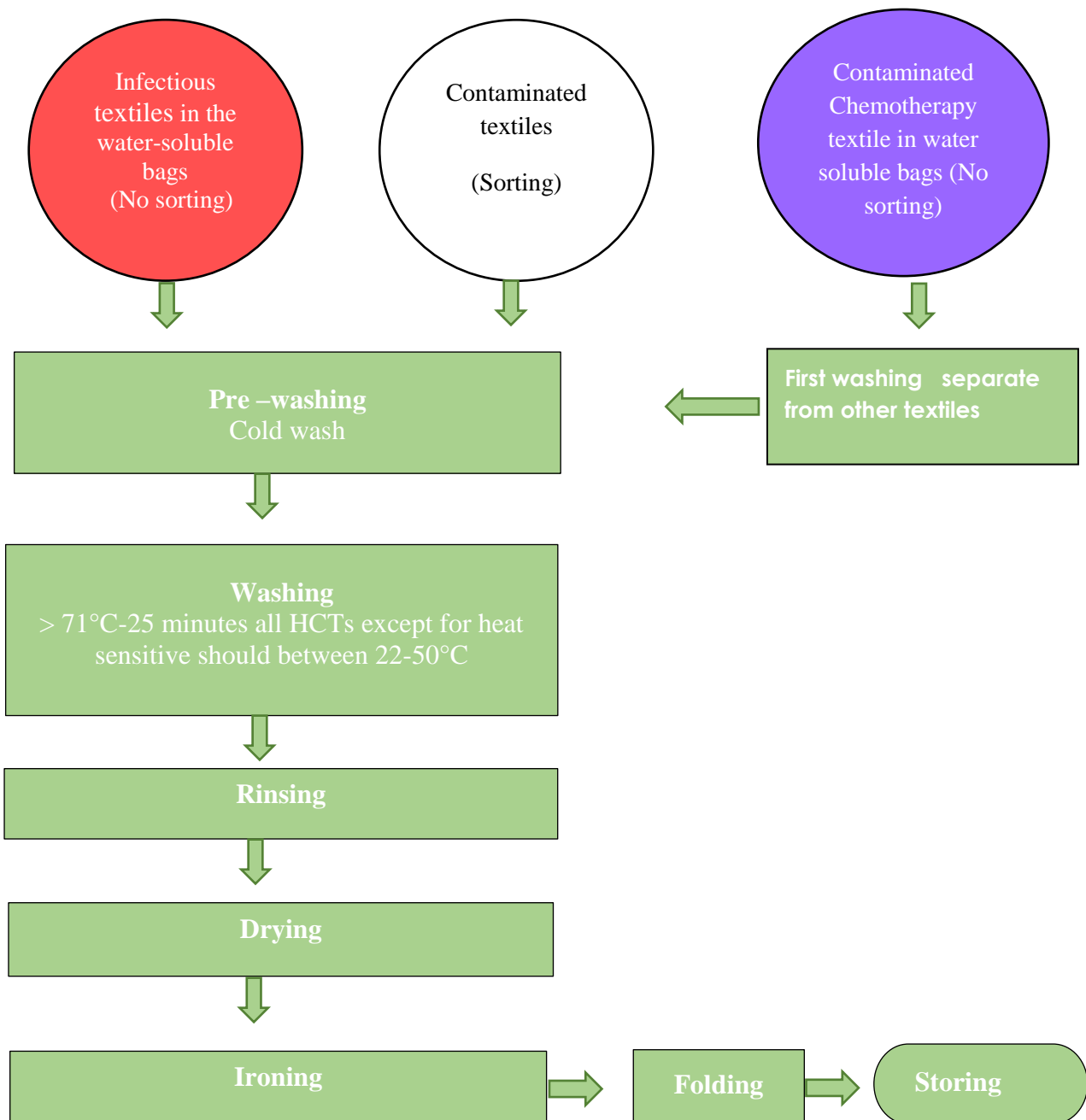


### Annex 3: Personnel Qualifications for Laundry Staff

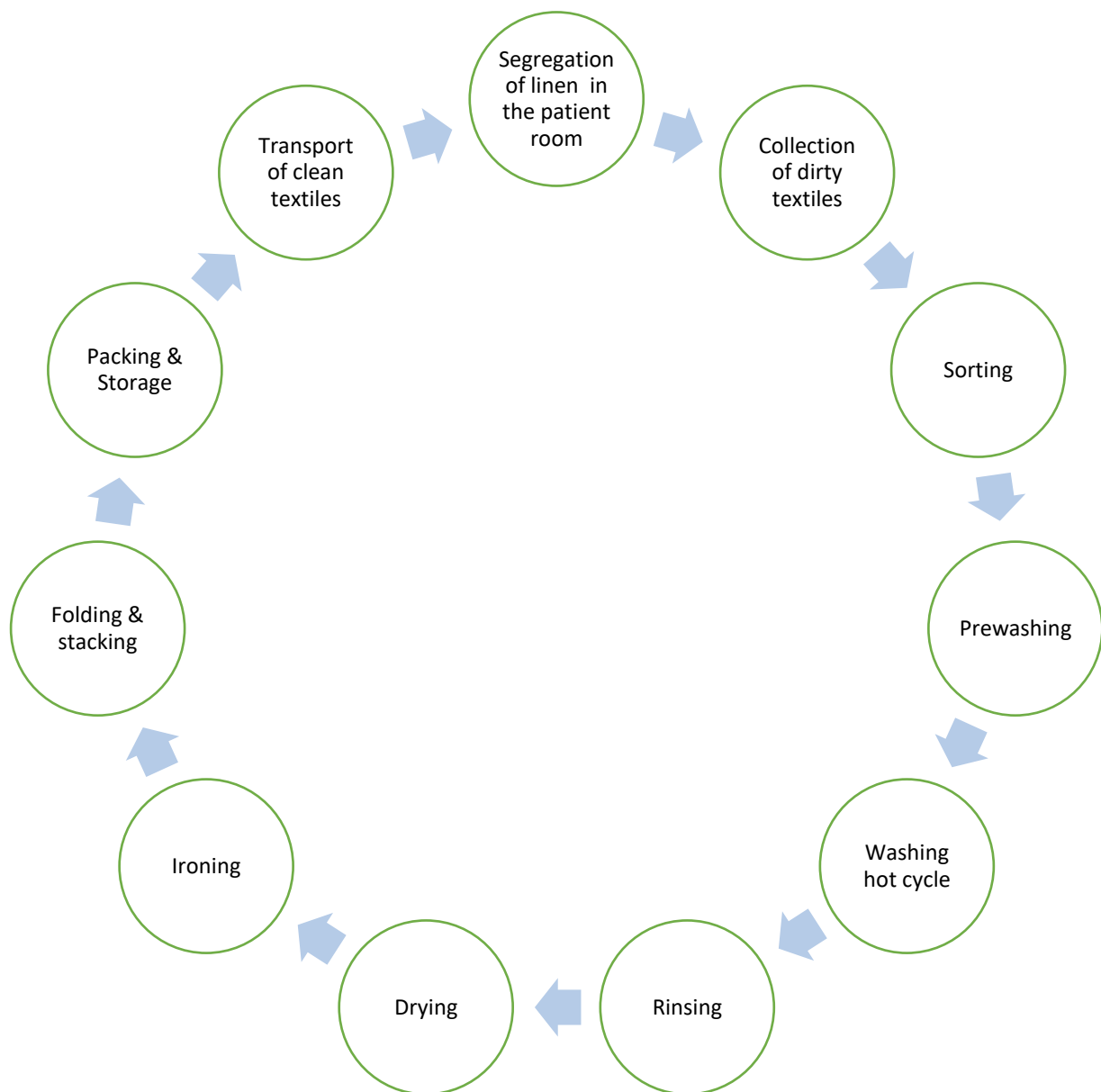
All personnel can speak English and/or Arabic and shall be qualified for their positions through education, training, or level of prior experience, and these qualifications is mentioned in the general services contract it must be documented in employee files.

Name:	Staff #:		
Name of Hospital:	Date		
Instructor:			
<b>Topics</b>	<b>Yes</b>	<b>No</b>	<b>Comments</b>
Trainings			
Laundry process including transport			
Hand hygiene			
Wearing and donning of PPE			
Standard precautions			
Chemical safety and Spill management			
Healthcare waste disposal			
Occupational health and safety			
Specific types of fabrics being processed;			
Exposure risk to textiles contaminated with hazardous substances or excreta from patients who have received hazardous substances			
Color coded and segregation of textiles			
Engineering controls and work practices to minimize the risk of exposure to blood or OPIM;			
Communications among supervisors and personnel for hazardous substance management procedures			
Orientation on the provider's Exposure Control Program			
Post-exposure procedures, including immediate action, treatment, follow-up, and record keeping			
Surgical textiles considerations			

#### Annex 4: Laundry process algorithm



## Annex 5: Laundry process cycle



## Annex 6: Inspection checklist in laundry services

N	Elements	M	PM	UM	NA
	<b>Documentation</b>				
1.	Availability of the local laundry services policy and procedures				
2.	Log book for monitoring the washing process is present e.g. temperature and cycles?				
3.	Log book for monitoring the water residual chlorine & for spot pH				
4.	Calibration records and related documents				
5.	Preventive maintenance and equipment records of the machines are present : service details, equipment details, parts and repair details , personnel involved				
6.	Water quality monitoring according to the manufacturers IFUs				
7.	Tracing mechanism tracking the number of washes (manual or electronic)				
8.	Log book for condemnation and replacement records is available				
	<b>Comments</b>				
	<b>Health and Safety</b>				
9.	Laundry staffs had serological testing for Hepatitis B prior to vaccination				
10.	The laundry staffs immunized with Hepatitis B and Tetanus and others as per national guidelines for healthcare worker vaccinations.				
	<b>Comments</b>				
	<b>Trainings and Education</b>				
11.	The laundry staffs trained and competent on the required training topics				
12.	The continuing education plan schedule is available and implemented				
13.	The trainings collaborated with IPC and HSE				
14.	Maintenance equipment personnel trainings and competencies is required				
	<b>Comments</b>				
	<b>Clinical Areas</b>				
15.	The healthcare workers wearing proper PPE when handling the contaminated HCTs (healthcare textiles)				
16.	The nurses practicing proper segregation of the HCTs				
17.	The red color bags with biohazard symbol or label are available				
18.	The water soluble bags are available				
19.	The infectious HCTs placed inside the water soluble bags				
20.	The laundries not washed in the clinical areas				

21.	The contaminated HCTs place inside the hamper bags and not lying on the floor in the dirty utility room				
22.	The HCTs transported appropriately in dedicated covered transport trolleys/carts for clean and dirty HCTs				
23.	The designated clean and covered storage shelves/cabinets requirements are followed in the wards				
24.	The HCTs are packed in plastic or other suitable material and sealing or taping the bundles if the designated clean storage shelves/cabinets do not have a cover				
	<b>Comments</b>				
	<b>Laundry Services Areas</b>				
25.	The laundry services area is clean with no dust, lint and visible pest in all areas				
26.	The PPEs are accessible to the staff and available at all times				
27.	The staffs uses PPEs according to the areas and activities				
28.	The collection carts/ trolleys for dirty HCTs labeled with biohazard symbol				
29.	The designated carts inside the washing area properly labeled and identified?				
30.	The laundry staffs avoid holding the soiled HCTs close to the body				
31.	The sharp container available in sorting area				
32.	The HCTs and textiles are sorted appropriately				
33.	The housekeeping microfiber mop heads and cloth are washed separately				
34.	The infectious laundry not sorted , pre washed in washing machine with hot water supply				
35.	The HCTs are washed at > 70°C except for heat sensitive items				
36.	The HCTs are ironed according to the manufacturer's recommendation and not touching the floor				
37.	The HCTs are dried properly before folding and stacking				
	<b>Comments</b>				
38.	Hazardous Materials				
39.	List of chemicals use and usage is available				
40.	Safety Data Sheets are available are kept and maintained				
41.	The chemicals are labeled according to its hazardous properties.				
	<b>Comments</b>				
	<b>Surgical laundry</b>				
42.	The manufactures IFUs are available				
43.	The HCTs are inspected before folding				
44.	Separated area for inspection and folding				

	<b>Comments</b>				
	<b>Physical Structure</b>				
45.	There is physical separation from dirty and clean area				
46.	Provide administrative & supporting areas, changing room for employees, supervisor's office lockers				
47.	The area is labeled for off limit of unauthorized personnel & showing the one way traffic				
48.	Documents monitoring for ventilation, humidity, and temperature in the clean and dirty areas are present				
49.	There is designated appropriate washing area for dirty carts with enough water supply, impermeable floors and good drainage system.				
50.	There is designated chemical storage room, the door with hazard warnings				
51.	There is appropriate storage room and HCT are store properly				
52.	The hands washing sinks or hand hygiene products accessible and available in designated areas				
53.	The ceilings free of cracks and water leaking marks				
54.	The drainage closed, properly maintained and clean				
55.	Availability of repair/mending room				
56.	Provide floor that are smooth, non-slip, and non-porous, with no depressions or cracks				
57.	Provide walls that are smooth and of non-porous surfaces without projections or gaps and it should tolerate cleaning & disinfecting agents.				
58.	Provide ceiling should be at least 4.5-meter height, solid, smooth, and non-porous surfaces without projections or cracks				
59.	Provide safety features (e.g., emergency lighting, eyewash, shower system, fire alarms, extinguisher and blankets)				
	<b>Comments</b>				
	<b>Housekeeping</b>				
60.	There is housekeeping room, cleaning schedule and procedure is available (it must include areas and responsible person)				
	<b>Comments</b>				
	<b>Pest Control</b>				
61.	The pest control team is using nontoxic chemicals approved by DEOH or by hospital designated department				
62.	The daily inspection checklist for integrated pest management is kept and maintained				
63.	The area is free from pest				
	<b>Comments</b>				

	<b>Knowledge</b>				
<b>64.</b>	The staffs are knowledgeable on what to do in case of sharp injury and blood and body fluid exposure				
<b>65.</b>	The staffs know what to do in case of spill (biological and chemical)				
<b>66.</b>	The staffs know how to interpret the different hazard symbols of the chemicals				
<b>67.</b>	The staffs know the:				
<b>68.</b>	Cycle time (pre wash, wash, final rinse) water level/usage				
<b>69.</b>	Chemical usage				
	<b>Comments</b>				
	<b>Total</b>				

Legend: M-Met; PM- partially Met; UM- Unmet; N/A -Not applicable

## Annex 7. Corrective action plan for Laundry Services Audit

No	Domain	Follow Up Point /Recommendation	Corrective actions	Responsible staff/Department	Time Frame	Status (on-progress, Done, Not Done)	Follow up Date	Remarks
1	Documentation							
2	Health and Safety							
3	Training and Education							
4	Clinical areas							
5	Laundry areas							
6	Hazardous Materials							
7	Surgical Laundries							
8	Physical structure							
9	Housekeeping							
10	Pest control							
11	Staff knowledge							



## Annex 8: Best Practice Procedure for Recycling (Future Implementation)

Although recycling of healthcare linens is not currently implemented in our facility, our department recognizes the importance of sustainable textile management in alignment with global best practices. Recycling of retired linens will be considered as a future initiative, once appropriate infrastructure, regulatory frameworks, and safety validations are available.

### **Purpose:**

- Support national and global sustainability goals by reducing textile waste.
- Extend the value of healthcare textiles after their primary use.
- Decrease reliance on landfill and incineration for condemned linens.
- Align with best practices from international healthcare textile management systems

### **Scope:**

- Applies to all healthcare textiles (e.g., bed sheets, gowns, drapes, blankets) deemed beyond their service life due to wear, tear, or after reaching maximum laundering cycles.
- Excludes contaminated, stained, or infectious textiles that cannot be safely processed.

### **Materials Required:**

- Designated collection bins or bags for soiled linens.
- Proper labeling materials.
- Personal Protective Equipment (PPE) for handling linens.

### **Procedure**

#### **Step 1: Identification and Segregation**

- Condemned linens are identified after quality inspection (e.g., thinning fabric, holes, loss of barrier properties).
- Segregate condemned textiles from active use

#### **Step 2: Decontamination**

- All condemned textiles intended for recycling must undergo final washing (thermal or chemical disinfection) to ensure safety before recycling.
- Maintain records of disinfection prior to release for recycling.

#### **Step 3: Safe Storage and Handling**

- Store the clean condemned textiles in designated containers, clearly labeled “For Recycling.”
- Prevent mixing with soiled textiles.

#### Step 4: Recycling Pathways

- Send to licensed textile recyclers for fiber recovery (e.g., insulation, industrial wipes).
- Explore partnerships with textile manufacturers for fiber-to-fiber recycling into new hospital textiles.

#### Step 5: Monitoring and Documentation

- Maintain a log of condemned linens recycled, disposal method, and receiving recyclers company.
- Review process annually to ensure compliance with infection control and sustainability goals.

### **Responsibilities**

#### **1. General Services**

- Ensure proper collection, segregation, and storage of linens.
- Maintain hygiene and safety standards during handling.
- Keep the records of recycling receipts and certification

#### **2. Outsourced Recycling Company**

- Collect linens as per the agreed schedule.
- Process linens in compliance with local recycling procedures and environmental, health and safety regulations.
- Provide any documents needed by healthcare facilities.