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Definition of Terms

1. **Laundry process**. The procedure employed to enable articles to be sent to the consumer in a clean, hygienic, aesthetic and physically acceptable condition.

2. **Linen and Apparel**. Linen is any article (e.g. bed linen, table linen, a mat) that is normally laundered. The term “apparel” particularly pertains to clothing to include patients’ gowns, pajamas, robes, O.R. gowns and the like.

3. **Clean linen** is linen that has not been used. Linen complying with the requirements of this Standard.

4. **Used / Soiled linen** are articles soiled by use.

5. **Contaminated / Infected linen** are linen which contain (or potentially contain) high numbers of microorganisms from body substances, including blood, stool, urine, vomitus, and other body tissues and fluids. Such definition applies whether linen is used or unused.

6. **Healthcare Facility** refers to a facility that provides healthcare services, such as hospitals, outpatient clinics, and specialized centers (e.g., dialysis units, wellness centers, birthing clinics)

7. **Sorting** is a step in the linen processing that enables identification, counting and marking necessary items.

8. **Decontamination** refers to the removal of moist body substances from items as part of reprocessing and the sanitizing of items so that they are safer for handling before cleaning and disassembly by personnel.

9. **Disinfection** refers to the process that eliminates many or all pathogenic microorganisms on inanimate objects with the EXCEPTION of bacterial spores.

10. **Sterilization** refers to the reduction in microorganisms of more than 99.9%, or a decrease in microbial load, achieved by physical, chemical or mechanical methods or by irradiation.

11. **Healthcare-associated infections** refer to infection acquired in the hospital or healthcare facility.
Definition of Terms

12. **Healthcare worker** refers to any person working in a healthcare facility, e.g., medical officer, nurse, physiotherapist, cleaners, psychologist.

13. **Auxiliary healthcare worker** refer to all support staff in the healthcare establishments aside from those in the ancillary services, i.e., institution workers, nursing attendants, dental aides, laboratory aides, etc.

14. **Personal Protective Equipment (PPE)** refers to a protective barrier, provided whenever necessary by reason of the hazardous nature of the process of the environment, chemical or radiological, or other mechanical irritants or hazards capable of causing injury or impairment in the functions of any part of the body through absorption, inhalation or physical contact. PPE reduces the risks of infection if used correctly. It includes gloves, mask, long sleeved cuffed gown, plastic apron, protective eyewear, and cap.

15. **Hand hygiene** refers to a general term that applies to hand washing, antiseptic hand wash, antiseptic hand rub, or surgical hand antisepsis.

Workplace Requirements and Engineering Controls

1. The workplace should comply with the requirements of the Code on Sanitation in the Philippines.

2. The laundry facility in a health-care setting (in-house or off-site) should be designed for efficiency in providing hygienically clean textiles, fabrics, and apparel for patients and staff.

3. Recommended engineering controls include the following:
   - A laundry facility is partitioned into two separate areas - a “dirty” area for receiving and handling the soiled laundry and a “clean” area for processing the washed items. Ideally, soiled and cleaned linen areas should be separated by a physical barrier or clearly defined. The partition (barrier wall) made of a non-porous material, should be from floor to ceiling, preventing air/dust contaminating the clean area.
Recommended engineering controls include the following, cont.

- A transit zone should be provided between dirty and clean areas of the laundry, where hand washing/drying and change of outer garment/PPE is carried out. A wash area should be placed in between the clean and dirty areas, where staff can wash/sanitize before proceeding to the clean area. A shower room should be readily available to workers.
- To minimize the potential for recontaminating cleaned laundry with aerosolized contaminated lint, areas receiving contaminated textiles ideally should be at negative air pressure relative to the clean areas (airflow should be from clean to dirty areas in all circumstances including prevailing wind conditions).

Personnel

a. Training and Education

1. The laundry manager shall have appropriate knowledge of the potential infectious hazards of soiled linen; regular information and education should be given to laundry staff about potential infectious hazards and techniques to prevent the spread of micro-organisms in the environment to finished linen and to themselves, as well as safe and appropriate handling procedures for soiled and clean linen. An orientation/training module designed for the laundry staff is to be implemented in the facility as part of infection control training.

2. The key staff members are fully trained in appropriate laundry skills and technology; those skills should be maintained by ongoing training and supervision; only appropriately trained personnel handle and store chemicals.

3. Instruction to staff in personal hygiene, particularly the need for hand washing after handling soiled linen or removal of protective clothing.
b. Personnel’s Health

1. Medical evaluations before placement can ensure that personnel are not placed in jobs that would pose undue risk of infection to them, other personnel, patients, or visitors. All personnel must have a medical record kept upon employment. The record should contain the following, among other pertinent data:
   a. Presence or absence of symptoms attributable to, and past history of tuberculosis, viral hepatitis, mumps, measles, rubella, varicella, sexually-transmitted infections.
   b. Presence or absence of an immuno-compromised state, e.g. Chronic steroid use
   c. Immunization history.
   d. Complete physical examination.

2. Periodic evaluations may be done as indicated for job reassignment, for ongoing programs or for evaluation of work-related problems.

3. The staff need to report all infections such as gastroenteritis, dermatitis, pustules, skin lesions and boils and seek immediate medical attention.

4. Occupational exposures including needlestick injuries should be immediately reported to the supervisor and/or to the Infection Control officer of the facility. A sharps container should be available in the sorting and wash area. Occupational exposures protocol should be available.

5. Immunization requirements for linen and laundry personnel are based on the immunization recommendations for Filipino Healthcare Workers.
b. Personnel’s Health cont...

<table>
<thead>
<tr>
<th>Category</th>
<th>Vaccine Type</th>
<th>Route</th>
<th>Schedule</th>
<th>Contraindications/Precautions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly</td>
<td>Tetanus, Diphtheria, Acellular Pertussis Vaccine</td>
<td>IM</td>
<td>3 doses in this schedule; 0, 1, 6-12 months (1 dose every 3 years)</td>
<td>Severe allergic reactions to vaccine components or following prior dose; Moderate to severe illness</td>
</tr>
<tr>
<td>Recommended</td>
<td>Hepatitis B Vaccine</td>
<td>IM</td>
<td>3 doses at 0, 1 and 6 months. Alternate: 4 doses at 0, 1, 2 and 12 months (after anti-HBsAg screening) Booster is not routinely recommended.</td>
<td>Severe allergic reactions to vaccine components or following prior dose</td>
</tr>
<tr>
<td></td>
<td>Influenza Vaccine</td>
<td>IM</td>
<td>1 dose annually (preferably from January to July)</td>
<td>Severe allergic reactions to vaccine components or following prior dose; Moderate or severe acute illness; History of severe acute illness; Guillain-Barré syndrome</td>
</tr>
<tr>
<td></td>
<td>Varicella Vaccine*</td>
<td>SC</td>
<td>2-doses at 4 weeks interval * indicated for First line Healthcare Worker</td>
<td>Severe allergic reactions to vaccine components or following prior dose; Moderate or severe acute illness; Pregnancy; Intravenous injection; Recently received a blood product; Unintended active Tuberculosis; Acquired on aspirin therapy</td>
</tr>
<tr>
<td></td>
<td>Measles, Mumps, Rubella Vaccine*</td>
<td>SC</td>
<td>2-doses at 4 weeks interval * indicated for First line Healthcare Worker</td>
<td>Severe allergic reactions to vaccine components or following prior dose; Moderate or severe acute illness; Pregnancy; Intravenous injection; Recently received a blood product; Thrombocytopenia; ITP</td>
</tr>
<tr>
<td>Recommended</td>
<td>Pneumococcal Polyvalentary Vaccine</td>
<td>IM</td>
<td>Single dose</td>
<td>Severe allergic reactions to vaccine components or following prior dose; Moderate or severe acute illness; Pregnancy (safety is unknown); If indicated give before pregnancy</td>
</tr>
<tr>
<td>Recommended for</td>
<td>Rabies Vaccine</td>
<td>IM/ID</td>
<td>Primary: 3-dose series (IM or ID) at Days 0, 7 and 21 or 28. Booster: single dose IM or ID every 5 years</td>
<td>Severe allergic reactions to vaccine components or following prior dose; Moderate or severe acute illness</td>
</tr>
<tr>
<td>Selected HCW</td>
<td>Menitococcal Vaccine</td>
<td>IM</td>
<td>Single dose</td>
<td>Severe allergic reactions to vaccine components or following prior dose; Moderate or severe acute illness; Guillain-Barré syndrome</td>
</tr>
<tr>
<td></td>
<td>Varicella Vaccine*</td>
<td>IM</td>
<td>Single dose. Booster every 2-3 years</td>
<td>Severe allergic reactions to vaccine components or following prior dose; Bleeding disorder</td>
</tr>
<tr>
<td></td>
<td>Varicella Vaccine*</td>
<td>IM</td>
<td>2-dose schedule at 0 and 6-12 months</td>
<td>Severe allergic reactions to vaccine components or following prior dose</td>
</tr>
</tbody>
</table>

6. Include Ergonomics/ Physical or Rehabilitation Medicine service in the evaluation and training of personnel.
Personal Protective Equipment

1. Personal protective equipment, commonly referred to as "PPE", is equipment worn to minimize exposure to a variety of hazards.

2. Recommended Personal Protective Equipment in the Workplace:
   a. Personnel assigned to area/s where used or infected linen is processed should wear a cap, mask, gown, gloves (preferably heavy-duty utility gloves), and non-slippery sole footwear/booties. When anticipating splashing, protective barrier or apron made of impervious material and face shield or goggles should be worn.

   b. PPE worn in the dirty area should not be worn in the clean area.

   c. In area/s where clean linen is sorted, pressed, folded, and packed, personnel should wear cap or hairnet, mask and gloves. Clean protective cotton gloves may be used when handling flatwork ironer and automatic folder.

Linen Processing

a. Collection, Loading, Sorting, Storage and Delivery of Linen

1. Preparation of soiled linen for collection
   a. Contaminated linen should be handled with minimal agitation to avoid contamination of air, surfaces and persons.

   b. Linen which is heavily soiled with blood or other body fluids, or other fluids which could leak and further contaminate other linen, shall be contained within suitable color-coded impermeable, water-tight bags which should be labelled and securely closed. This applies to linen transported within the facility or destined for transport to an off-site facility.

   c. The linen shall be free from foreign materials such as sharp objects (e.g. hospital sharps and glass) metal objects, food remnants and paper products (including tape and plaster). Linen should be visually inspected to ensure that it is free from these foreign materials.

   d. Linen not contaminated with blood or other body fluids may be segregated, placed into appropriate laundry bags and securely closed.
Linen Processing

2. Collection and Delivery of Linen

a. Soiled linen and clean linen should be transported in different trolleys, bins, bags or other transport means, including vans or other motor vehicles. If this is not practicable, then trolleys, bins, bags or other transport means that were used to transport soiled linen should be thoroughly cleaned and decontaminated with hospital-approved disinfectant, and dried before being used for transporting cleaned linen.

b. Bags containing soiled linen should be handled carefully to avoid damage and the release of possible contaminated aerosols into the air.

3. Unloading and storage of soiled linen at laundry premises

a. Soiled linen when unloaded shall be stored in an area separated by a barrier wall, from that where cleaned linen is stored or dispatched.

b. Soiled linen shall be processed for washing within 24 hours.

c. Pre-wash soaking with bleach/disinfectants is discouraged to prevent occupational exposure.
Linen Processing

4. Sorting of soiled linen

a. Sorting of soiled linen for washing is one of the most important operations in the linen process.

b. Sorting shall be according to soil quantity (e.g. light, heavy, foul), time taken to process (i.e. whether large or small item), nature of process (e.g. dry folded, flatwork, starched, unstarched), fiber type, fabric structure, garment structure, color, color fastness of dyes, soil type.

Linen Processing

5. Storage and delivery of clean linen

a. It is highly recommended that healthcare facilities shall maintain at least 3 par stock level: 1 set in use, 1 set in the laundry, 1 set as reserve stock.

b. Storage of cleaned linen

Cleaned linen should be stored in a clean, dry place in a manner that—

i. is distinctly separated from soiled linen;

ii. prevents contamination (e.g. by aerosols, dust, moisture and vermin); and

iii. allows stock rotation, so that the oldest stock may be used first.

iv. Laundered linen should be stored on non-porous, clean shelves and, if necessary, wrapped in a protective covering.
Linen Processing
5. Storage and delivery of clean linen

c. Unused linen shall be reprocessed after 3 months.
d. Packing and delivery

Depending on the size of the delivery and the nature of the items to be delivered, cleaned linen which is to be returned to the client should be packed (either loose or tied in bundles) into—

i. clean trolleys, bins, baskets and covered to prevent soilage; or

ii. clean bags and securely fastened.

Linen Processing
B. Decontamination, Disinfection and Washing Requirements

1. The minimum requirements for washing and disinfection are:

a. Alkali – for soil removal and suspension

b. Liquid surfactant or detergent – for removal of soil and prevents re-soilage

c. Chlorine bleach/peroxide bleach – for disinfection and whitening

d. Neutralizer – for souring/neutralizing after bleaching

e. Fabric softener (optional)
Linen Processing
B. Decontamination, Disinfection and Washing Requirements

2. The recommended wash cycle is as follows:
   a. Pre-wash
      i. Wetting (flushing)
      ii. Pre-wash 1 (alkali)
      iii. Prewash 2 (rinsing)
   b. Main wash (using detergent or surfactant) with minimum temperature and wash time (see thermal requirements)

   c. Rinsing cycle:
      i. Rinse 1 (with bleach)
      ii. Rinse 2 (water)
      iii. Rinse 3 (neutralizer and/or fabric softener)

d. Water Extraction
e. Separation
f. Drying
g. Tumble drying is preferred over other methods.
h. Ironing
Linens Processing

B. Decontamination, Disinfection and Washing Requirements

3. Thermal disinfection
   a. Soiled linen that is to be thermally disinfected shall be washed so that the temperature of the load is maintained at a minimum of 65°C for not less than 10 minutes, or at a minimum of 71°C for not less than 3 minutes. It is known that 60°C for 30 minutes kills HIV, 70°C for 10 minutes kills vegetative microorganisms and 98°C for 2 minutes kills the Hepatitis B virus.
   b. If the thermal stability of the soiled linen is such that temperatures above 71°C are permissible, the time for disinfection may be appropriately reduced.
   c. The loads used in the machines should be as specified by the manufacturers’ recommendations. The proper function of the machines such as the time and temperature of cycles should be checked regularly with calibrated instruments. Any sensing elements should be placed so that they measure the actual wash temperature (i.e., the temperature of the water in contact with the load).
   d. As it will take time for heat to penetrate the load, an allowance for mixing time and load level shall be made to ensure that the load is maintained at the correct temperature for the minimum time period. For low loading 4 minutes shall be allowed, and for high loading 8 minutes. The minimum time/temperature combinations are therefore—
      i. 65°C maintained for not less than 10 minutes; minimum cycle time 14 minutes for low loading or 18 minutes for high loading; or
      ii. 71°C maintained for not less than 3 minutes; minimum cycle time 7 minutes for low loading or 11 minutes for high loading.
   e. Steam or Gas may be used as heating elements.
Linen Processing

B. Decontamination, Disinfection and Washing Requirements

4. Chemical disinfection
   
a. Soiled linen that is heat sensitive and cannot be thermally disinfected shall be washed using a wash cycle and appropriate chemicals registered with the Food and Drug Administration.

b. No chemical listed as prohibited or banned by the Department of Environment and other national and international regulations shall be used.

2. Thermal disinfection
   
a. Soiled linen that is to be thermally disinfected shall be washed so that the temperature of the load is maintained at a minimum of 65°C for not less than 10 minutes, or at a minimum of 71°C for not less than 3 minutes. It is known that 60°C for 30 minutes kills HIV, 70°C for 10 minutes kills vegetative microorganisms and 98°C for 2 minutes kills the Hepatitis B virus.

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Special Laundry Situations

1. Linen contaminated with radiation or any radioactive material shall be handled, stored, transported, or otherwise disposed of in accordance with the laws, standards and implementing rules and regulations of the Philippine Nuclear Research Institute (PNRI), Department of Environment and Natural Resources (DENR) and other existing laws, rules and regulations.

2. Some textile items (e.g., surgical drapes and reusable gowns) must be sterilized before use and therefore require steam autoclaving after laundering.

3. Use hygienically clean linen (i.e., laundered but not sterilized) in Neonatal Intensive Care units.

4. Burn unit linen need not be sterilized (unless specified by institution-specific policy) but should at least be hygienically clean.

Quality Control

1. As a matter of good laundry practice, the laundry shall have ongoing programs that record and monitor all key laundry processes. The programs shall include clear procedures for—
   a. achieving and maintaining effective washing, disinfection, drying, finishing as well as appropriate product life;
   b. preventative maintenance systems that ensure correct and safe operation of all plant and equipment including appropriate calibration of all key equipment such as water level controls, temperature controls and other process timer controls that ensures compliance and process stability.

2. Microbiologic Sampling of Linen
   a. In the absence of microbiologic standards for laundered linen, no rationale exists for routine microbiologic sampling of cleaned health-care textiles and fabrics.
   b. Sampling may be used as part of an outbreak investigation if epidemiologic evidence suggests that textiles, fabrics, or clothing are a suspected vehicle for disease transmission.
Thank You and Good Morning!