



## 9. LAUNDRY

### 9.1. Introduction

The laundry is a very important department within Biosafety, as soiled and contaminated items from all FMV departments enter it daily.

### 9.2. General Information

- All soiled laundry coming from the Teaching Hospital and the Diagnostic Service must be considered contaminated, and standard precautions must always be applied when handling it.
- The use of disposable items should be encouraged whenever possible in areas where biological risk is higher, for example, items originating from areas with biosafety level 3 and 4.
- The use of reusable PPE is in place in various FMV facilities, and the Laundry follows a specific procedure for materials washed on its premises:

- Laboratories:

- White coats
- Hand towels
- Cleaning cloths
- Fabric coveralls

- Companion Animal, Equine and Production Animal Hospitals:

- Surgical scrubs (blue, green, and burgundy)
- White coats
- Blankets
- Surgical drapes
- Surgical gowns
- Towels for Exotic Species
- Reception staff uniforms
- Heating pads

- Maintenance, Waste, Stables and Cleaning:

- Uniforms

- Dormitories:

- Bed sheets
- Towels
- Duvets
- Kitchen cloths

- The Laundry has completely separate circuits for dirty and clean materials.



- Dirty and clean materials are transported in containers of different colors (red for contaminated and green for clean laundry).
- Dirty and clean materials are stored in separate areas.
- Order of procedures: clean materials must be handled before dirty ones.
- In the laundry room:
  - Movement must follow a one-way flow.
  - Walls and floors must be easy to clean.
  - The room must be climate-controlled at a constant temperature.
  - The room must be kept clean (regular cleaning, especially in the dirty area).
  - Industrial equipment (washing machines, dryers, ironing machines) is used for **effective elimination of microorganisms and compliance with biosafety standards** through high-temperature cycles. This ensures **operational efficiency** with **long-term cost reduction** due to fabric durability and water/energy savings and **improves staff comfort and safety** by providing clean and disinfected laundry, mitigating the risk of nosocomial infections.
  - A sink is available in the dirty area for hand hygiene.
  - Dirty and clean areas are physically separated and clearly marked.
- Procedures implemented in the Laundry are standardized in written documents available in a file kept in the Laundry.
- In occasional situations requiring washing/drying volumes exceeding installed capacity or in case of machine breakdown, the use of an external private laundry service is *предусмотр.*
- Anyone involved in the collection, transport, sorting, or washing of soiled materials must be properly trained.

### 9.3. Procedures

#### 9.3.1. Collection of Potentially Contaminated Laundry

##### 9.3.1.1. In the Laundry

- During the collection of dirty materials, the risk of contamination for the technician performing collection, for the environment, and for clean laundry must be minimized.
- Precautions to be taken:
  - Contaminated laundry must not be shaken, to avoid aerosolization of pathogens.
  - Carefully remove any organic matter residues before starting the washing process (e.g., blankets from the Teaching Hospital – Companion Animals).
  - In each sector, specific surgical scrubs / uniforms / PPE are used to avoid cross-contamination. Specific procedures for Class 3 and Class 4 patients are detailed in the respective chapters.
  - Wear gloves when handling potentially contaminated laundry.
  - Any skin lesion or wound on Laundry staff must be properly covered.
- Procedure to follow:



- Remove all items that do not belong to the Laundry from the dirty laundry. Do not leave sharp objects in pockets, as they may injure staff and damage equipment.
- Place dirty laundry in the appropriate container, biobox, or white bag (contaminated), or in the designated dirty-laundry bag if an external service is contracted. Containers/bags must not be overloaded.
- Remove gloves, wash and disinfect hands immediately after handling dirty laundry.
- For external laundry services, bags must be clearly labelled and identified.
- The subsequent procedure is validated for materials/laundry washed and processed at FMV. External companies follow their own validated procedures.

#### **9.3.1.2. Internal Transport of Dirty Materials to the Laundry**

- Containers must be transported on department trolleys and remain closed during transport to prevent spills and loss.
- Trolleys used for transporting dirty materials must be easy to clean and must never be used to transport clean materials unless they have been previously cleaned and disinfected.
- Trolleys used for dirty materials must be cleaned and disinfected regularly.
- Precautions must be taken to minimize the risk of contamination during the transport of dirty items:
  - Minimize handling of dirty materials.
  - Sorting/classification must not be carried out in patient care areas.
  - Dirty items must never be transported through the clean area.
- When dirty laundry arrives at the Laundry, it must enter through the dirty area, whose entrance is clearly identified.
- During the sorting procedure, carried out in each Department, measures must be taken to minimize microbial contamination of the environment and staff handling dirty materials.
- Materials may be classified according to the following categories:
  - Normal – standard processing.
  - Infectious – risk to workers, environment, and animals.
  - Delicate (e.g., blankets from the Teaching Hospital – Companion Animals) – may be damaged by the normal washing process.

#### **9.3.2. Washing and Disinfection Process**

- The following precautions must be taken:
  - Do not overload the washing machine, as detergent distribution and spinning efficiency will be compromised.
  - After loading the machine, discard used gloves in the designated container, wash and disinfect hands.
- The washing process has the following effects:



- Mechanical: agitation of fabrics.
- Thermal.
- Chemical: disinfectants and some detergents have antimicrobial properties.
  - Each program has specific characteristics:
- Program duration: pre-wash, wash, rinse.
- Temperature: washing, disinfection, rinsing.
- Chemical products: detergents and disinfectants, with different types and concentrations at each stage of the process. These products are listed in the Laundry Procedures Manual.
  - The use of high temperatures during washing ensures a disinfecting effect. The following formula estimates the process duration according to washing temperature:

$$N \text{ minutes} \times \text{Temperature (X}^\circ - 55^\circ) > 250$$

where X = selected wash cycle temperature.

For example, hot water (71°C) for a minimum of 25 minutes is considered effective in eliminating microorganisms.

- If this procedure cannot achieve such results, or if high temperatures are not recommended, **chemical disinfection** must be used. The following disinfectants may be applied:
  - Sodium hypochlorite (bleach): should be used for white cotton fabrics due to its bleaching effect, low cost, and broad antimicrobial spectrum.
  - Various detergents and disinfectants suitable for industrial machines:
    - Detergent – Dual 100 OB
    - Bleach and disinfectant – Lunosept Hypo
    - Disinfectant – Peracid Asepsis
    - Fabric softener – Soft Power
    - Alkaline additive – Power Perfect
    - Enzymatic booster – Smart Enzym
- Manufacturer recommendations for all products used in the machines must be followed. Products must not damage fabrics or cause skin irritation.

### 9.3.3. Drying

- After washing, handling of materials must be minimized.
- The time between washing and drying must be as short as possible.
- Do not leave damp laundry in machines overnight.
- Preferably use a tumble dryer, as it enhances the antimicrobial effect, and select high-temperature programs whenever the fabric allows.



#### 9.3.4. Ironing and Folding Laundry

- Ironing at high temperature helps eliminate microorganisms.
- Folding laundry immediately after ironing helps maintain cleanliness.
- If laundry becomes soiled during the process, it must be rewashed

#### 9.3.5. Storage of Clean Laundry

- Clean laundry must be stored in a separate room or in the clean area of the laundry. Avoiding recontamination during storage is crucial.
- If stored in another room, the door must always remain closed.
- Clean laundry must be transported in dedicated containers, preferably using a trolley reserved for clean materials. If the trolley is also used for dirty materials, or whenever it appears dirty, it must be thoroughly cleaned and disinfected before transporting clean items.
- The storage area must be clean, avoiding cross-contamination, especially if bed linen is stored on open shelves or trolleys.
- The storage room/area must be accessible only to authorized personnel.
- Clean materials must be handled as little as possible and only after handwashing.
- If laundry is processed by an external service, upon return it must remain packaged until use and should not be stored in a potentially contaminated area.

### 9.4. Specific Considerations

#### 9.4.1. Materials from Rooms with Class 3 and 4 Patients

- The use of reusable textiles in rooms with Class 3 and 4 patients should be avoided as much as possible, with preference given to disposable items. However, if handling laundry from Class 3 or 4 patients is necessary (e.g., burgundy isolation unit scrubs), additional precautions must be taken, including the use of extra PPE: disposable gown, face mask, gloves, and eye protection.
- The patient's risk class must be clearly visible on a label placed on the transport container (contaminated items enter the Laundry in white bags).
- After washing contaminated items, run an empty wash cycle to ensure the machine is not left contaminated.
- Some microorganisms, e.g., *Cryptosporidium* spp., may adhere to bedding during machine washing. Therefore, fabrics must not be sorted but placed directly into the washing machine.
- Parvoviruses can withstand temperatures of 80 °C for at least one hour.

#### 9.4.2. Surgical Laundry

- All textile items used in surgical rooms must undergo additional inspection: any tear, (micro)hole, etc., must be detected before washing, since a hole  $\geq 1 \mu\text{m}$  allows bacterial penetration. This procedure is carried out by technicians from each Department.
- The number of cycles (from washing to sterilization) each item withstands must be recorded to anticipate loss of the “protective barrier” property and the need for replacement.



#### **9.4.3. Blankets and Towels from the Companion Animal Teaching Hospital**

- Laundry items, blankets, and towels must be used for only 1–2 patients that do not have wounds. One blanket is used per animal.
- Patients housed in Class 3 and 4 rooms, as well as those with any wound (surgical or otherwise), must have disposable pads in their cages.