1. GENERAL BIOSECURITY PROCEDURES

General Policies and Standard Operating Procedures (SOPs) for Biosecurity applicable to all sectors of the Faculty of Veterinary Medicine

According to the World Health Organization and the Food and Agriculture Organization of the United Nations[1], biosecurity is "*a strategic and integrated approach that encompasses the policy and regulatory frameworks (including instruments and activities) that analyse and manage risks in the sectors of food safety, public health, animal life and health, and plant life and health, including associated environmental risk.*" The most frequent definition of biosecurity is the one that encompasses the rules of the 5Bs: (1) limit the risk of introduction (**bioexclusion**). (2) limit the spread of pathogens within the facility, for example, by isolating excreting animals (**biocompartmentalization**). (3) limit the spread of pathogens out of the facility (transmission between herds) (**biocontainment**). (4) prevent the risk of transmission to people (**bioprevention**) and (5) prevent any environmental contamination and the persistence of the pathogen (**biopreservation**) (Saegerman et al, 2023).

Philosophy of the Faculty of Veterinary Medicine of the University of Lisbon regarding Infection Prevention and Control

Biosecurity, prevention, and infection control are essential functions in all teaching, research, and service provision activities of the Faculty of Veterinary Medicine of the University of Lisboa (FMV), including the Teaching Hospital (HE), a structure that brings together three hospitals: Companion Animal Teaching Hospital (HE-AC), Equine Teaching Hospital (HE-EQ), and Farm Animal Teaching Hospital (HE-EP), an Ambulatory Service.

Good infection prevention and control practices are not the only indicator defining excellence in veterinary care, but it is impossible to achieve excellent patient care without implementing logical and standardized infection control procedures. The biosecurity rules, infection prevention, and control procedures implemented at FMV aim to reduce the risk of healthcare-associated infections (HAIs), and zoonoses, being specifically oriented to deal with threats of contagious diseases.

Objectives of the Biosecurity Program

- Protect workers, students, HE clients, and FMV visitors from exposure to zoonotic pathogens.
- Create a safe environment in the HE, where patient care can be optimized, mitigating the risk of nosocomial infections.
- Optimize students' educational experiences regarding biosecurity and infection control by carrying out appropriate infection prevention and control practices, and disease surveillance.
- Offer clients and share with the community information on the control and prevention of infectious and parasitic diseases in animals and people.
- Protect FMV operational capabilities.

Principles of Infection Prevention and Control

The procedures gathered and described in this document were developed based on the principles described below. These measures help prevent the transmission of infections from professionals and students to the patient, between patients, and from the patient to students and professionals.

[1] https://www.fao.org/4/a1140e/a1140e01.pdf

- **Optimize the hygiene** of areas through standardized interventions, including hand washing and sanitization, use of appropriate clothing and passage through hygiene locks, minimal contact with patients, appropriate disposal of infectious materials, and proper cleaning and disinfection of facilities.
- **Break chains of transmission** through the effective use of hygiene protocols and implementation of sanitary barriers against direct and indirect transmission of pathogens. This concept involves analysing patient circulation routes and housing locations, as well as the circulation paths of people (staff, students, and visitors) within the faculty.
- **Specify and reinforce infection prevention and control procedures** through monitoring and surveillance routines.

Increase education and awareness of the risks of HAIs and zoonoses, optimizing communication regarding the objective of these guidelines and procedures.

1.1. Faculty Hygiene and Biosecurity Committee

1.1.1. Mission and Scope of Action

The Faculty Hygiene and Biosecurity Committee (CHB) is a permanent counselling body, created in 2019, with the mission to:

1. Provide recommendations and advise on biosecurity measures to implement and define procedures allowing the assessment and management of biological risks within the scope of teaching, research, and service provision activities.
2. Update and ensure compliance with procedures gathered in the manuals of "General and Specific Procedures for Safety, Hygiene and Health in the Training and Workplace", safeguarding compliance with legislation, the adequacy of measures to epidemiological scenarios of infectious disease occurrences, and respect for recommendations from internal University bodies, such as the Department of Safety, Hygiene and Occupational Health (SUPHT), or external ones, such as the Directorate-General for Food and Veterinary (DGAV), the Directorate-General for Health (DGS), the European Association of Establishments for Veterinary Education (EAEVE), and the European Committee of Veterinary Education (ECOVE).
3. Update the Biosecurity SOP available on the FMV website.
4. Monitor, in partnership with the Pedagogical Council, the Biosecurity content of the programs of different curricular units of the various study cycles taught at FMV.
5. Hold a seminar on good biosecurity practices in force at FMV, in the first week of classes of the academic year, for all freshmen.
6. Promote the celebration of the World Day for Safety and Health at Work (April 28), aimed primarily at workers.
7. Elaborate crisis scenarios and contingency plans, whenever necessary.

Evaluate, in collaboration with relevant Departments and the Presidency, the human and logistical resources necessary to achieve the objectives referred to above (Strategic and Action Plan).

1.1.2. Composition of the CHB

The coordinator and members of the CHB are appointed by the President of the Faculty for a 4-year term. Each FMV Department is represented in the CHB.

The CHB currently has the following composition:

- Prof. Virgílio da Silva Almeida – Associate Professor, Department of Animal Health, Vice-President of FMV who coordinates the Commission.
- Prof. Maria Manuela Castilho Monteiro de Oliveira - Full Professor, Department of Animal Health, Head of the Bacteriology and Mycology Laboratories.

- Prof. Luís Ressano Garcia Pardon Lamas - Associate Professor, Department of Clinical Medicine, Director of the Equine Teaching Hospital.
- Prof. Luísa Maria Freire Leal Mateus - Associate Professor, Department of Clinical Medicine, Coordinator of the Diagnostic Services.
- Prof. Marília Catarina Leal Fazeres Ferreira - Assistant Professor, Department of Animal Production and Food Safety, Food Technology and Food Safety Laboratory.
- Prof. Ana Catarina Belejo Mora Torres - Assistant Professor of the Clinical Department, Manager of Resident Animal Facilities.
- Dr. Mafalda Pires Gonçalves – Manager of the Companion Animal Teaching Hospital.
- Engineer José António Martins Silvestre - Coordinator of the Technical Services and Maintenance Office of the FMV.
- Engineer Petra Carina de Jesus Morgado - Occupational Health and Safety Unit.

1.1.3. Operation of the CHB

The CHB meets at least twice a year, and in any situation that requires it, to treat ongoing topics and evaluate presented issues. A report is written by the coordinator and transmitted to the Presidency and any interested party on the treated topics, after validation by all CHB members.

1.1.4. Response of the CHB to the "Full Visitation Report" elaborated by EAEVE experts on 29/09/2024

The visit, on September 23-27, 2024, by EAEVE and ECOVE experts, detected non-conformities in infrastructure and procedures regarding biosecurity at FMV. On October 25, 2024, a Task Force was created composed of nine Working Groups (GT):
GT 1 - Update of Biosafety Manuals (Virgílio Almeida, Luísa Mateus, Manuela Oliveira, Telmo Nunes).
GT 2 - Isolation and Biological Containment Units (Virgílio Almeida, Luís Lamas, Solange Gil, Telmo Nunes).
GT 3 - Common outdoor area of Equine Intensive Care, Anatomy, Pathological Anatomy and Isolation and Biological Containment Units (Virgílio Almeida, Luís Lamas, Solange Gil, Graça Pires, Jorge Correia, Telmo Nunes).
GT 4 - Anatomy and Pathological Anatomy (Virgílio Almeida, Graça Pires, Jorge Correia, Rute Noiva, Luísa Mateus, José Meireles, Miguel Cardo, Telmo Nunes).
GT 5 - Teaching Laboratories of buildings C and D (Virgílio Almeida, Luísa Mateus, Manuela Oliveira, Marília Ferreira, Telmo Nunes).
GT 6 - Clinical Skills Training Center - buildings D, G and H (Virgílio Almeida, Luís Costa, Berta Braz, Lisa Mestrinho, Telmo Nunes).
GT 7 - Companion Animal Teaching Hospital (Virgílio Almeida, Esmeralda Delgado, Ana Mafalda Lourenço, Rodolfo Leal, Mafalda Gonçalves, Luís Lamas, Telmo Nunes).
GT 8 – Production Animal Species Hospital (Outpatient Service) (Virgílio Almeida, George Stilwell, Ricardo Bexiga, Fernando Boinas, Manuel Joaquim, Telmo Nunes).
GT 9 - Sanitary Inspection (Virgílio Almeida, Miguel Cardo, João Cota, Telmo Nunes).

These Working Groups mobilized 24 professors and HE managers who advised the CHB and the Presidency in 2025 on decision-making regarding interventions to be carried out in FMV areas where non-conformities were signalled, to correct them.
This vision implied:
1. Construction of new buildings, namely a new Equine Isolation and Biological Containment Unit (UICB-EQ).
2. Reformulation of access to the Small Animal Isolation and Biological Containment Unit (UICB-AC).

3. Installation of hygiene locks in Anatomy and Pathology rooms.
4. Conversion of a kennel into a General Locker Room.
5. Conversion of a Metabolic Pavilion into a Garage for washing and disinfecting vehicles used in field classes.
6. Construction of a new Waste Storage Pavilion.
7. Acquisition of new equipment.
8. Acquisition of more lockers.
9. Reinforcement of Biosecurity posting.

Drafting of "Biosecurity SOP applied to the Faculty of Veterinary Medicine, Lisbon University, Portugal", a document complementary to existing safety manuals.

1.2. Definitions

Antiseptic: Chemical product that can be applied to epithelial surfaces and causes the destruction or inhibition of microorganisms, preventing their growth or multiplication, without causing lesions to the animal.

Hygiene lock: Equipment and practices that act as barriers to prevent cross-contamination of patients, people, and inanimate objects (fomites), e.g., clothing and footwear, which in turn decreases the risk of nosocomial disease transmission. Hygiene lock precautions are used in Teaching Hospital isolation units (Class 4), in patients with special needs, e.g., immunocompromised patients, young animals without vaccination history, etc. (Class 3).

Table 1 refers to the parameters used in defining clinical status in the three FMV hospitals.

Table 1
Parameters Used in Defining the Clinical Status of Animals
(adapted from Liège University)

Species	Fever (rectal temperature)	Leukopenia (cells $\times 10^3$/ml	Neutropenia (cells $\times 10^3$/ml
Bovine	> 39,0ºC (adults) > 39,5ºC (calves)	< 5,0	< 0,6
Canine	> 39,5ºC	< 6,0	< 3,0
Caprine	> 40,5ºC	< 4,0	< 1,2
Equine	> 38,5ºC	< 4,0	< 2,5
Feline	> 39,5ºC	< 5,0	< 2,0
Ovine	> 40,05ºC	< 4,0	< 0,7

Biocide (Sanitizer): Chemical product that reduces the number of microorganisms present on inanimate surfaces to a level considered safe, without eliminating them completely.

Biofilm: Complex community of bacteria adhered to surfaces, involved in an exopolysaccharide matrix, resulting in a thin residue after cleaning. These bacterial communities are highly resistant to disinfection.

Biosecurity: All measures with the objective of (1) limiting introduction risk (bioexclusion), (2) mitigating spread within a facility (biocompartmentalization), (3) reducing spread out of a facility (biocontainment), (4) preventing human contamination risk (bioprevention), and (5) preventing environmental contamination (biopreservation).

Contagious disease: Infectious disease caused by agents such as viruses, bacteria, fungi, or parasites, which can be transmitted between people, between animals, and at the animal-person interface, by direct or indirect contact.

Disinfectant: Chemical agent that prevents or inhibits microorganism growth on fomites, e.g., surgical equipment, floors, tables.

Disinfection: Process that eliminates or reduces the number of pathogenic microorganisms on fomites to levels not harmful to health.
Team: Refers to all persons working or present in the FMV environment in any function (professors, students, staff, researchers, vets, clients, visitors, etc.).
Personal Protective Equipment (PPE): Barriers used to protect against pathogenic microorganisms or harmful chemicals (e.g., gloves, masks, goggles, gowns).
Sterilization: Process eliminating all forms of microbial life.
Hospital-acquired infection (HAI): Also known as Healthcare-Associated Infection, an infection developing after 48 hours of hospitalization or stay in a health unit that was not present or incubating at admission.
Nosocomial infection: A localized or systemic condition resulting from an adverse reaction to the presence of an infectious pathogen or toxin that was not present or incubating at admission.
Subclinical infection: Invasion of the organism without observation of clinical signs.
Multidrug Resistance: Bacteria that have developed the ability to survive in the presence of various antibiotics.
Zoonosis: Disease transmissible between vertebrate animals and humans.

1.2.1. Classification of microorganisms based on biological risk

Decree-Law No. 102-A/2020 of December 9, which transposes Directives (EU) 2019/1833 and 2020/739[2], amends the minimum requirements for the protection of the safety and health of workers against the risks of exposure to biological agents during work, and Directive (EU) 2000/54[3] classifies human, animal and plant pathogens into four risk classes.
The classification of a microorganism considers the risk to human health, the community and animals, as well as the possible economic impact. The following definitions are defined for animal pathogens[4]:

- **Risk Class 1 (CR1):** Microorganisms known as non-pathogenic for animals and people and not harmful to the environment.
- **Risk Class 2 (CR2):** Microorganisms that can cause disease in animals. Limited geographic importance. Generally effective vaccines/treatments available.
- **Risk Class 3 (CR3):** Microorganisms that can cause serious diseases or epidemic outbreaks in animal populations. Interspecies spread can be important.
- **Risk Class 4 (CR4):** Microorganisms causing pandemics or extremely serious epidemics in animal populations, with very high mortality rates or dramatic economic consequences.

Table 2 exemplifies some microorganisms, according to their risk classes in people and animals.

[2] https://files.dre.pt/1s/2020/12/23801/0000200050.pdf
[3] https://eur-lex.europa.eu/legal-content/PT/ALL/?uri=CELEX%3A32000L0054
[4] https://www.biosafety.be/content/contained-use-definitions-classes-biological-risk

Table 2
Examples of microorganisms according to risk classes

	CR2 HUMANS	CR2 ANIMALS	CR3 HUMANS	CR3 ANIMALS	CR4 HUMANS	CR4 ANIMALS
Bacteria						
Borrelia burgdorferi	×	×				
Clostridium perfringens	× (T)	×				
Brucella abortus			×	×		
Yersinia pestis			×	×		
Fungi						
Coccidioides immitis	×	×				
Histoplasma capsulatum var. capsulatum	×	×				
Parasites						
Fasciola hepatica	×	×				
Toxocara canis	×	×				
Leishmania brasiliensis			× (*)	×		
Taenia solium			× (*)	×		
Virus						
Feline Calicivirus		×				
Equine Infectious Anaemia		×				
Rabies			×	×		
Venezuelan Equine Encephalitis			×	×		
Foot and Mouth Disease						×
Classical Swine Fever						×
African Swine Fever						×

CR = Risk class. T = Toxin production. * = Class 3 biological hazard pathogens that may present a limited risk of infection to humans and animals, as they are not normally infectious via the airborne route.

1.2.2. Categories or risks used at FMV

At FMV, a specific risk categorization is implemented. Infectious diseases of hospitalized animals are classified into the following classes, based on the transmissibility of the pathogen to other animals and/or its zoonotic potential.

Table 3 lists the four risk classes present in HE-AC and HE-EQ.

Table 3
Risk Classification in Companion Animal and Equine Hospitals

CLASS 1: GENERAL HOSPITALIZATION
Infectious diseases without probability of transmission to other animals or people.
CLASS 2: GENERAL HOSPITALIZATION
Infectious diseases with low transmission level, including non-multiresistant bacterial infections.
CLASS 3: HYGIENE LOCK
Subclass A: Multiresistant bacteria (MDR). Infections caused by bacteria with high levels of antibiotic resistance, as determined by laboratory testing. **Subclass B**: Infectious diseases caused by pathogens with a moderate degree of transmission and/or that are potentially zoonotic.
CLASS 4: ISOLATION
Infectious diseases caused by pathogens with a high degree of transmissibility and/or that cause serious illness in people. Diseases subject to mandatory reporting fall into this risk class.

Examples related to specific animal species are listed for each class in the corresponding School Hospital Unit.

1.3. General Rules

1.3.1. Hand Hygiene

Hand hygiene is one of the most effective measures to prevent the transmission of pathogens in a hospital setting.

- **Hands must be washed (or at least sanitized if not macroscopically dirty)**:

- Before and after handling each patient.
- After contact with fluids, secretions, or contaminated equipment.
- Immediately after removing gloves.
- Between different procedures on the same patient.
- After handling biological samples.
- Before eating/smoking/leaving work.
- Before and after using the bathroom.

- **Recommended technique for hand washing:**

- Wet your hands and forearms with warm water.
- Add at least 3 to 5 ml (1 to 2 full portions) of soap to the palm of your hand.
- Lather and vigorously rub each side of your hands, including your wrists, for 10 to 30 seconds, cleaning between your fingers and under your nails.
- Rinse in warm water until all soap residue is removed.
- Dry your hands with a paper towel or in a hot air dryer.
- If it is not possible to wash your hands immediately, you should use alcohol-based wipes until you have access to warm water and soap.
- If you cannot wash your hands immediately, use alcohol-based wipes until you have access to warm water and soap.

• Recommended method for using hand sanitizer:

- Apply a thumbnail-sized amount to the palm of your hand.
- Apply the sanitizer to the fingertips of the opposite hand and then to the rest of the hand.
- Repeat with the opposite hand.

- Rub vigorously until dry and do not rinse.

Students and staff at FMV who have direct contact with patients or who handle biological samples are encouraged to keep their nails short and not wear jewellery on their hands to minimize contamination and improve hand hygiene. In addition, any skin lesions on the hands and forearms should be covered with a waterproof bandage.

1.3.2. Hygiene Lock Precautions

Hygiene lock precautions should be appropriate to the type of procedure performed and the type of exposure anticipated. These guidelines apply to working with infected tissues or body fluids, handling animals in cages/pens, cleaning facilities that have been occupied by infectious animals, or handling the corpse of an animal diagnosed with an infectious/zoonotic disease.

- Use gloves and protective clothing (laboratory coat, apron, or coveralls) when handling patients with or without suspected infectious or zoonotic diseases (Class 3 or 4).
- Gloves, surgical masks, and eye protection must be used during procedures that generate droplets, bone fragments, or splashes of blood or other body fluids.
- If a glove is torn, or following a needlestick injury or any other wound, the glove must be removed and replaced with a new one as soon as patient safety allows.
- Washable boots or shoes, or disposable shoe covers, should be used to enhance the ability to mitigate the spread of infectious material.
- Additional protection, such as face shields or FFP3 masks, may be required depending on the disease involved and the specific circumstances.

1.3.3. Standard Dress Code

FMV has a dress code aimed at ensuring biosafety and promoting professionalism (for further details, please refer to the remaining chapters of this document).

TEACHING HOSPITAL

- <u>Veterinarians:</u>
- Surgery: **Green surgical scrubs**.
- Medical consultations and general hospitalization:
  - Small Animals: **Blue-violet hospital scrubs**.
  - Equines: **Dark blue hospital scrubs**.
  - Farm Animals: **Impermeable blue overalls**.
- <u>Veterinary Nurses:</u>
  - Small Animals: **Dark blue hospital scrubs**.
  - Equines: **Dark blue hospital scrubs**.
- <u>Students:</u>
  - Labs/Anatomy: **White cotton lab coat**.
  - Pathology: **Cobalt-blue Delphis apron**.
  - Small Animal/Equine Hospital:
    - Consultations and general hospitalization: **Navy-blue hospital scrubs**.
    - Surgery: **Green surgical scrubs**.
  - Farm Animals Hospital (Outpatient Service): **Impermeable blue overalls**.
  - Isolation Units (Class 3/4):
    - Companion animals: **burgundy scrubs + disposable green gown + disposable PPE** (Class 3)

- Companion animals: **burgundy scrubs + disposable white coverall + disposable PPE** (Class 4)
- Equine: **burgundy scrubs + disposable green gown + disposable PPE (Class 3)**
- Equine: **burgundy scrubs + disposable white coverall + disposable PPE (Class 4)**.

• The use of specific clothing is the first line of defence against the spread of pathogens outside the HE facilities.
• Workers and students wear specific clothing for the HE, i.e., clothing, footwear, and PPE exclusive to the FMV and the Equine and Production Species Outpatient Clinic.
• In all practical classes, the use of shorts, long skirts (below the knee), or skirts without leggings or tights is not permitted.
• In all practical classes, footwear must be closed, secure, protective, clean, and washable. Dirty or contaminated footwear must be cleaned and disinfected and must not be made of porous or absorbent material.
• In all practical classes, long hair must be tied back.
• At least one extra set of clean PPE must always be available.
• In practical classes with reusable PPE, it must always be clean and disinfected (for more details, see the other chapters of this document).

NOTE: Depending on the specifics and scope of the practical training, there are specific requirements regarding clothing, footwear, and PPE, which are listed in the corresponding **section.**

1.3.4. Patient Care

1.3.4.1. Patient Hygiene

• For basic hygiene reasons and to reduce infection pressure, it is of utmost importance that patients are housed in a cage/pen that is kept as clean as possible.

• Buckets or bowls of water and food should be changed and cleaned regularly.

• If animals defecate outside their enclosures (inside or outside a building), the faeces must be removed and the floor cleaned and sanitized immediately after defecation. If patients urinate inside (and not outside a building), the urine must be removed and the floor cleaned and dried as quickly as possible.

• The cage/pen space must be clean, organized, and tidy, meaning no medications or materials are scattered around, no beds are outside the pen, and students' personal belongings are not present. Teachers and students are expected to tidy up and put away used materials and leave the area in its original condition.

• Specific sector requirements in terms of patient hygiene are listed in the corresponding section of the Teaching Hospital.

1.3.4.2. Minimizing unnecessary contact with patients

• Providing patient care and student learning require frequent contact with multiple patients in routine activities. However, it is important to remember that such contact can contribute to generating chains of transmission of infectious and/or zoonotic pathogens.

• Teachers, clinical instructors, and students should minimize contact with patients to limit the risk of hospital exposure to infectious and/or zoonotic pathogens.

• Teachers and clinical instructors may, at their discretion, allow and encourage student contact with animals for educational purposes. Whenever students perform examinations or assist in procedures on multiple patients, they should systematically wash and disinfect their hands between

patients. Stethoscopes and other equipment should be regularly cleaned with alcohol or hand sanitizer.

• Teachers, clinical instructors, and students in contact with patients suspected/confirmed of having a contagious disease should limit contact to those essential for adequate patient care.

• When appropriate, animals should be monitored by observation, without physical contact, if possible, using video surveillance cameras.

• To reduce the spread of pathogens, professors, clinical instructors, and students should also minimize, whenever possible, movement to areas shared by different services. For example, whenever possible, professors, clinical instructors, and students of Internal Medicine should minimize visits to the surgical block. Professors, clinical instructors, and students assigned to the Equine Teaching Hospital should avoid visiting the Companion Animal Teaching Hospital, etc.

• Teachers, clinical instructors, and students should enter cages/stalls only when necessary (e.g., avoid entering cages/stalls during rounds) and should avoid touching or petting animals when passing by.

• Whenever possible, teachers, clinical instructors, and students should work last in areas with the highest risk of contamination, after attending to other patients.

1.3.5. Food and Drinks

• Food or beverages should not be stored or consumed where animals are housed and examined and treated.

• Teachers, clinical instructors, and students are prohibited from storing food, and from eating and drinking in areas where biological samples are handled, or medications are stored or reconstituted. This includes registration rooms, hallways, operating rooms, examination rooms, or reception areas.

• It is permitted to store and consume food and beverages in:

- Cafeterias.

- Department break rooms.

- Offices of teachers, clinical instructors, and technicians.

- Outside the spaces of the Clinical Department.

- Dormitories of students on call.

• As eating and drinking is permitted in the areas mentioned in the previous section, the presence of animals or biological samples and medications is not permitted in them.

• The storage of food and beverages is not permitted in refrigerators/freezers used to store medications or biological samples.

• Microwaves used to heat food for animals should not be used to heat food for people

1.3.5.1. Cafeterias

• Teachers, clinical instructors, HE staff, and students are prohibited from wearing professional clothing and carrying professional equipment (e.g., lab coats, hospital scrubs, and stethoscopes) in bars.

• Cafeteria staff must ensure that these hygiene rules are followed.

• Pets are not allowed in bars.

1.3.6. Medications

• Each hospital has a medication storage area reserved for hospitalized animals and maintains a medication register, in accordance with legislation. Any acquisition of medications for the storage area is recorded in an entry book, and each release from the storage area must be recorded in an exit book

1.3.6.1. Storage and Access

• Medications must be stored under ideal conditions (see label), in a clean environment, and must not be subject to significant variations in temperature and/or humidity.

• Medications must be arranged in an orderly manner (e.g., alphabetically/by class).

• Opened medication vials must be physically separated from the stock in another room or location.

• The Pharmacy must not be accessible to people who are not FMV workers, children, or animals (hospitalized or not, including pests). Students are prohibited from entering the Pharmacy, except with express authorization and/or accompanied by professors or clinical instructors.

• Opioid narcotics, ketamine, and euthanasia products must be stored in a secure room or safe. Access is limited to active clinical professors and instructors, via code or key.

1.3.6.2. Expiry Date

The opening or sterility seal breaking date must be clearly indicated on medications, including fluids, with a water-resistant marker.

• The medication should be discarded 24 hours after opening or earlier if specified on the label.

1.3.6.3. Medication Preparation

• Medication preparation should be performed by technicians, professors, and clinical instructors or under their direct supervision. During preparation, contamination with other medications or dirt should be avoided. For parenteral medications, the rubber stoppers of the vials should be cleaned with alcohol before each puncture. New (sterilized) syringes and needles should be used for medication preparation. Needles and syringes for administering medications should never be reused, neither for other patients nor for the same patient (exception: syringes for oral administration of liquid medications and liquefied foods may be reused after rinsing and cleaning).

• Recapping needles is prohibited, as it can cause accidents. After preparation, a new needle will be used for the injection.

• The preparation of toxic or hazardous medications must be carried out under safe circumstances, i.e., with the use of appropriate PPE (depending on the medication: e.g., gloves, mask, protective eyewear), and never in the presence of unprotected persons.

• The medication must be coded on the QVET computer platform immediately after use.

• Some medications (e.g., sodium penicillin, ampicillin) should not be prepared in advance due to their short stability.

• The name of the medication must be clearly identified with a waterproof marker on each syringe if it is not administered immediately after preparation.

1.3.6.4. Medication Return

• Discontinued or unnecessary medications that cannot be returned to the pharmacy should be disposed of in the yellow waste containers.

1.3.7. Cleaning Service / Waste Disposal

1.3.7.1. General Considerations

• Discard sharp objects in the yellow, puncture-resistant waste containers before sending your clothes to the Laundry and equipment or instruments to the respective service.

• Do not mix garbage, hay or animal bedding materials, sharp objects or anatomical parts with soiled laundry.

• Remove all organic matter from surgical instruments or equipment before returning them to the respective service.

• Buckets, pumps and tubes need to be cleaned or rinsed. Oil residues must be removed before returning the aforementioned equipment to the Waste Pavilion.

• The Laundry will not wash personal items such as student gowns and scrubs.

• The Laundry will not wash clients' belongings, e.g., blankets.

1.3.8. Waste Disposal

• Care should be taken to avoid injuries from needles, scalpels and other sharp objects. To prevent needle stick injuries, recapping needles is prohibited. Students and staff should avoid intentionally bending or breaking needles. Sharp objects should be disposed of in specific, puncture-resistant containers. Once full, these puncture-resistant containers should be placed in a yellow waste container for disposal.

• Waste should be disposed of in the area where it was generated, in accordance with the regulations described in this chapter. For specific waste types, please refer to the specific chapters for the three hospitals associated with HE.

• FMV waste is stored in black bags (Group I waste), white bags (Group II and III waste), and red bags (Group IV waste). Subsequently, it is collected weekly by a certified specialist company (ITS | etsa).

• Biological samples collected from potentially contagious patients should be sealed in impermeable plastic bags (double packaging) and labelled with the associated information and risks before being sent to diagnostic laboratories. Care should be taken to avoid contamination of the outside of the plastic bags.

• Dressings for wounds infected with pathogens of concern, e.g. (for example, MRSA or multidrug-resistant bacteria), should be performed in low-traffic areas that can be easily cleaned and disinfected. Good sanitary practices should be used to avoid contamination of hands, clothing, and surfaces. Environmental disinfection and disposal of these materials should be carried out in accordance with the procedures described in this document.

• Biological samples, removed tissues, or cadavers may not leave the areas assigned to the Teaching Hospital except for complementary diagnostic tests or incineration.

1.4. Basic Cleaning and Disinfection

• Students and staff who use detergents and disinfectants are expected to be familiar with the concepts described in this chapter to understand their activity and potential interactions with other products used in FMV.

• Organic material rapidly deactivates most disinfectants, so the potential presence of residual organic material should be considered when choosing a surface disinfectant.

• Disinfectants vary widely in their spectrum of activity. Generally, protozoa such as *Cryptosporidium* spp., bacterial spores, mycobacteria, and non-enveloped viruses are very resistant to disinfectants.

• Ensuring optimal decontamination requires adherence to the manufacturer's recommendations regarding dilutions and contact times (generally 10 to 15 minutes minimum).

• Although most disinfectants are used for their short-term decontamination activity, some retain residual disinfectant activity on surfaces for longer periods.

• It is essential to rinse and remove all residues from previous products (detergent and disinfectant).

1.4.1. Proper Cleaning

1.4.1.1. General protocol for environmental cleaning and disinfection, including contaminated surfaces

• Whenever using disinfectants, appropriate clothing should be worn and additional PPE (mask, face shields or protective goggles, waterproof clothing and boots) should be put on when there is a likelihood of splashing.

• Remove all visible residues before disinfection. The presence of organic matter will inactivate most disinfectants. If you use a hose, care must be taken to minimize aerosolization and the spread of pathogens.

• Clean contaminated areas with water and detergent or soap. Friction, manual or mechanical, is always necessary to remove biofilms and residues that hinder or inhibit the disinfection process.

• Rinse the cleaned area thoroughly to remove any detergent residue, as some disinfectants can be inactivated by detergent residue.

• Allow the area to drain or dry as much as possible to avoid diluting the disinfectant solutions.

• Thoroughly wet the area with the disinfectant solution. Ideally, the disinfectant should remain in contact with the surfaces for at least 15 minutes, following the manufacturer's instructions.

• Remove excess disinfectant with water, wipes, a mop, or a squeegee.

• The disinfectant should be rinsed from all cage/pen surfaces or allowed to dry for a sufficient amount of time (see disinfectant label) before housing a patient.

• All multi-purpose areas (e.g., tables, scales, etc.) where animals are examined or treated must be cleaned and disinfected immediately after use by staff and students responsible for the patient, regardless of their infectious status.

• When performing the cleaning/disinfection process, you must avoid any contact of blood or body fluid with non-intact skin or mucous membranes. Non-intact skin should be protected, e.g., with a waterproof bandage.

• After disinfection, remove PPE and wash your hands.

• For non-routine disinfection measures, only staff trained to use the necessary PPE are permitted to access the areas to be disinfected.

1.4.2. Disinfectants

• A variety of disinfectants are used at FMV to decrease the likelihood of pathogen transmission. Several factors were considered in the selection of disinfectants. Please also refer to the following pages for a summary of detergents and disinfectants approved for use in FMV.

• Disinfectants vary in their toxic and irritant potential to animals and people. In general, ethyl alcohol, iodopovidone, or chlorhexidine-based disinfectants are used when contact with skin or other tissues is likely or necessary. Other disinfectants, such as sodium hypochlorite (bleach),

phenols, quaternary ammonium compounds, hydrogen peroxide, and aldehydes, are applied only to equipment, facility surfaces, and footbaths and footbath mats for disinfecting shoe soles.

• Disinfectants are effective when applied to clean, non-porous surfaces. Some materials, such as unstained/unvarnished wood and soil, cannot be disinfected or decontaminated through routine procedures. Furthermore, non-porous surfaces will not be reliably decontaminated if disinfectants are applied in the presence of dirt, oil, biofilms, and biological materials.

• Non-routine protocols applied in specific cases, e.g., *Cryptosporidium* spp., *Leptospira* spp., and mycoses, are described in the chapters corresponding to the three hospitals of the HE.

1.4.3. Footbaths and footbath mats

• Pathogens are frequently isolated from the floor of facilities where infected animals are housed.

• Footbaths or footbath mat sheets for disinfecting shoe soles should be changed every morning by staff, students, or veterinarians, and whenever they contain excessive amounts of dirt, bedding debris, shavings, hay, etc.

• Footbaths should be replaced by anyone who notices that they are low or dry. Footbath mat sheets should be replaced whenever they no longer adhere to the soles of shoes. This task is the responsibility of EVERYONE working in the area (students and staff).

• Students and staff should use footbaths/footbath mats properly whenever they encounter them.

• Footbaths do not require full immersion of the feet, as they are designed to disinfect the soles and sides of shoes. However, the top and sides of shoes are frequently splashed, so waterproof footwear is strongly recommended for those working in areas where footbaths are placed.

1.4.4. Instrument and Equipment Disinfection Protocol

• All equipment in Teaching Hospitals must be properly cleaned and disinfected before storage to mitigate the risk of pathogen transmission. Equipment specific to small or large animals will be discussed in their respective chapters. The following pages contain a summary of detergents and disinfectants approved for use in the FMV.

• Thermometers

- Digital thermometers must be carefully cleaned and disinfected between patients using alcohol and/or chlorhexidine wipes. Glass thermometers are not used to avoid the physical hazards associated with broken glass and mercury exposure.

- Thermometer probes used for continuous temperature monitoring (e.g., during anaesthesia) must be carefully cleaned and disinfected between patients by wiping and washing them to remove faeces and immersing them in alcohol and/or chlorhexidine solutions.

- For patients in risk classes 3 and 4 in the Isolation and Biological Containment Units of HE-AC and HE-EQ, thermometers exclusive to the respective hospitals are used.

- Immediate cleaning and disinfection are necessary when thermometers are visibly soiled and systematically after each patient examination.

• Endoscopes

- Endoscopes must be cleaned and disinfected after each use with quaternary ammonium compounds, and only by professors, veterinarians, veterinary nurses, and technicians.

• Stethoscopes

- It is recommended to disinfect stethoscopes daily with hydroalcoholic gel.

For patients in risk classes 3 and 4 in the Isolation and Biological Containment Units of HE-AC and HE-EQ, stethoscopes exclusive to the respective hospitals are used.

- In addition, immediate cleaning and disinfection are necessary when stethoscopes are visibly soiled and systematically after examining a class 3 or 4 patient.

1.4.5. Summary of the main detergents and disinfectants approved for use in the FMV

• The detergents and disinfectants used in the FMV (Table 4) are selected from the list of veterinary biocides approved by the DGAV [5].

Table 4
Main detergents and disinfectants used in Veterinary Medicine
(adapted from: Linton et al., 1987)

Disinfectants and their dilutions	Activity in the presence of organic matter	Activity spectrum	Comments
Chlorhexidine 0.05%-0.5% Used for disinfecting items in contact with skin and mucous membranes (e.g., muzzles, endotracheal tubes). Dilutions: 60 ml of a 2% solution per 3.79 l of water = 0.06% solution. Immersion barrels: 256.4 ml of a 2% solution per 10 l of water = 0.05% solution (23.79 ml per litter of water is used in the anaesthesia of horses in immersion barrels). Contact time: at least 15 minutes.	It is rapidly reduced.	- Mycoplasmas: very effective. - Mycobacteria: variable. - Gram-positive bacteria: very effective. - Gram-negative bacteria: very effective. - *Pseudomonas*: limited activity. - *Rickettsia*: limited activity. - Enveloped viruses: limited activity. - *Chlamydia*: limited activity. - Non-enveloped viruses: no activity. - Fungal spores: no activity. - Bacterial spores: no activity. - *Cryptosporidium*: no activity. - Prions: no activity.	- Extended antibacterial spectrum, but limited effectiveness against viruses. - Used for disinfecting items in contact with skin and mucous membranes (e.g., muzzles, endotracheal tubes). - Easily inactivated by soaps and detergents. - Low toxicity potential. Usual dilutions are not irritating even in contact with mucous membranes. - Inactivated by anionic surfactants. - Bactericidal activity on the skin is faster than with many other compounds, including iodophors. - The residual effect on the skin reduces regrowth. - Works only within a limited pH range (5-7). - Toxic to fish (cannot be released into the environment).
Iodopovidone Used for decontamination and disinfection of the skin (e.g., preparation for surgery).	It is rapidly reduced.	- Mycoplasmas: very effective. - Mycobacteria: limited activity. - Gram-positive bacteria: effective. - Gram-negative bacteria: effective. - *Pseudomonas*: effective. - *Rickettsia*: effective. - Enveloped viruses: effective. - *Chlamydia*: effective.	- Broad spectrum. - Very low toxicity potential. Appropriate dilutions are indicated for disinfecting fabrics and materials in contact with skin and mucous membranes. - People may become sensitive after skin contact. - Dilution of iodophors increases the concentration of free iodine and antimicrobial activity. - May stain fabrics and plastics.

[5] https://www.dgav.pt/wp-content/uploads/2021/01/LISTA-DE-BIOCIDAS-DE-USO-VETERINARIO-AUTORIZADOS-dezembro-2020.pdf

		- Non-enveloped viruses: limited activity. - Fungal spores: effective. - Bacterial spores: effective. - *Cryptosporidium*: no activity. - Prions: no activity.	- Stable in storage. - Inactivated by organic residues and quaternary ammonium compounds. - Requires frequent application. - Corrosive.
Alcohol 90% isopropanol or 70% denatured ethanol. Used for disinfecting items that come into contact with skin and mucous membranes, e.g. (harnesses, instruments, hands, etc.).	Reduced.	- Mycoplasmas: very effective. - Mycobacteria: effective. - Gram-positive bacteria: very effective. - Gram-negative bacteria: very effective. - *Pseudomonas*: effective. - *Rickettsia*: limited activity. - Enveloped viruses: effective. - *Chlamydia*: limited activity. - Non-enveloped viruses: no activity. - Fungal spores: limited activity. - Bacterial spores: no activity. - *Cryptosporidium*: no activity. - Prions: no activity.	- Broad spectrum. - Relatively low toxicity potential. Appropriate dilutions are indicated for disinfecting tissues and materials in contact with skin and mucous membranes. - Leaves no residue. - No residual activity on surfaces. - Fast-acting. - Evaporates quickly. - Extremely flammable.
Sodium hypochlorite (bleach) Used for disinfecting clean surfaces, especially to increase the spectrum of activity of disinfectants. <u>Dilutions</u>: - 1:64 = 15.85 ml per litter of water. Suitable for most applications in FMV. - 1:32 = 33.02 ml per litter of water. - 1:10 = 100 ml per litter of water. Very strong, limited use.	It is rapidly reduced.	- Mycoplasmas: very effective. - Mycobacteria: effective. - Gram-positive bacteria: effective. - Gram-negative bacteria: effective. - *Pseudomonas*: effective. - *Rickettsia*: effective. - Enveloped viruses: effective. - *Chlamydia*: effective. - Non-enveloped viruses: effective at high concentrations. - Fungal spores: effective. - Bacterial spores: effective. - *Cryptosporidium*: no activity. - Prions: no activity.	- Broad spectrum. - Relatively low toxic potential at appropriate dilutions. High concentrations or prolonged contact may irritate the skin and mucous membranes. - Extremely flammable. - Can be used in the presence of anionic surfactants. - Not affected by "hard" water with high concentrations of calcium and magnesium salts. - Inexpensive. - Bactericidal activity is reduced as pH increases, temperature decreases, and in the presence of ammonia or nitrogen, which is important to consider in the presence of urine. It is also inactivated by soaps/cationic surfactants, sunlight, and some metals. - Chlorine gas can be produced when bleach is mixed with other chemicals. - High oxidizing (bleaching) activity that can damage fabrics and be corrosive to metals such as silver and aluminium (not stainless steel).

			- Stored solutions have limited stability.
Quaternary Ammonium Compounds Most commonly used surface disinfectant in FMV (for spot and large area disinfection). Dilution: 1:256: 4 ml per litter of water. Contact time: at least 15 minutes.	Moderate.	- Mycoplasmas: effective. - Mycobacteria: variable. - Gram-positive bacteria: very effective. - Gram-negative bacteria: effective. - *Pseudomonas*: no activity. - *Rickettsia*: limited activity. - Enveloped viruses: effective. - *Chlamydia*: no activity. - Non-enveloped viruses: limited activity. - Fungal spores: limited activity. - Bacterial spores: no activity. - *Cryptosporidium*: no activity. - Prions: no activity.	- Broad spectrum. - Irritation and toxicity vary with the product, but generally these compounds are non-irritating or have low toxicity at most frequent dilutions. - Inactivated by anionic surfactants. - Some residual activity after drying. - Stable during storage. - Less effective at low temperatures. - Inactivated by hard water. - Inactivated by soaps/detergents.
Oxidizing agents: (hydrogen peroxide) Used for disinfection by nebulization and in footbaths. Dilution: 10g per litter of water, 1% solution. Spray: add 5ml of powder (5g) to 500ml of water (1% solution). Contact time: at least 15 minutes.	Variable. Very good for potassium peroxymonosulfate and accelerated hydrogen peroxide.	- Mycoplasmas: very effective. - Mycobacteria: effective. - Gram-positive bacteria: effective. - Gram-negative bacteria: effective. - *Pseudomonas*: effective. - *Rickettsia*: effective. - Enveloped viruses: limited activity. - *Chlamydia*: effective. - Non-enveloped viruses: limited activity. - Fungal spores: effective. - Bacterial spores: effective. - *Cryptosporidium*: limited activity. - Prions: no activity.	- Extended spectrum. - Very low toxicity potential, but may irritate the skin if dried, especially in powder or concentrated solutions. - Other compounds not used in FMV may be very toxic, e.g. (e.g., chlorine dioxide). - Does not produce hazardous residues. - Residual activity on surfaces. - Low solubility in lipids. - Less effective at low temperatures. - Corrosive to steel, iron, copper, brass, bronze, vinyl. - Adding the powder to water facilitates mixing. - Use a mask and rubber gloves during solution preparation to avoid skin/mucosal irritation.
Phenols Used to disinfect instruments and necropsy rooms that may be contaminated with prions, e.g., Bovine Spongiform Encephalopathy and Scrapie.	Very good.	- Mycoplasmas: very effective. - Mycobacteria: variable. - Gram-positive bacteria: very effective. - Gram-negative bacteria: very effective. - *Pseudomonas*: very effective. - *Rickettsia*: effective. - Enveloped viruses: effective. - *Chlamydia*: limited activity. - Non-enveloped viruses: limited activity.	- Broad spectrum. - Irritation potential varies with the compounds, but phenols are generally very irritating and should not be applied to surfaces in contact with skin and mucous membranes. - Concentrations above 2% are very toxic to animals, especially cats. - Activity is not affected by "hard" water. - Some residual activity after drying. - Effective over a very wide pH range.

		- Fungal spores: effective. - Bacterial spores: no activity. - *Cryptosporidium*: no activity. - Prions: limited activity, variable with the compounds.	- Non-corrosive. - Stable in storage.

Table 5 summarizes the antimicrobial spectrum of disinfectants, adapted from Linton et al. (1987).

Table 5
Antimicrobial Spectrum of Disinfectants
(adapted from: Linton et al., 1987)

	CHEMICAL DISINFECTANTS									
	Acids (hydrochloric, acetic, citric acid)	**Alcohols** (ethyl, isopropyl)	**Aldehydes** (formaldehyde, paraformaldehyde, glutaraldehyde)	**Alkaline substances** (sodium hydroxide, ammonia hydroxide, sodium carbonate)	**Biguanides** (chlorhexidine)	**Halogens** Hypochlorite	**Halogens** Iodine	**Oxidizing agents** (hydrogen peroxide, peracetic acid)	**Phenolic compounds**	**Quaternary ammonium compounds**
Mycoplasmas	+	++	++	++	++	++	++	++	++	+
Bacteria Gram+	+	++	++	+	++	+	+	+	++	++
Gram-bacteria	+	++	++	+	++	+	+	+	++	+
Pseudomonas	+	++	++	+	±	+	+	+	++	-
Rickettsia	±	+	+	+	±	+	+	+	+	±
Enveloped viruses	+	+	++	±	±	+	+	+	±[a]	±
Chlamydia	±	±	+	+	±	+	+	+	±	-
Non-enveloped viruses	-	-	++	±	-	+	±	±	-	-
Fungal spores	±	±	+	+	±	+	+	±	+	±
Picornaviruses (e.g., FMD)	+	N	+	+	N	N	N	+	N	N
Parvovirus	N	N	+	N	N	+	N	N	N	-
Acid-fast bacilli	-	+	+	+	-	+	+	±	±	-
Bacterial spores	±	-	+	±	-	+	+	+[b]	-	-
Coccidia	-	-	-	+[c]	-	-	-	-	+[d]	-
Prions	-	-	-	-	-	-	-	-	-	-

Legend: ++ very effective. + effective. ± limited activity. – no activity. N= information unavailable. [a] Varies with a composition. [b] Peracetic acid is sporicidal. [c] Ammonium hydroxide. [d] Some have activity against coccidia. FMD= Foot-and-Mouth Disease

Table 6 compiles the characteristics of disinfectants and antiseptics, adapted from Linton et al. (1987) and the Center for Food Safety and Public Health (CFSPH) at Iowa State University (2023).

Table 6
Characteristics of selected disinfectants and antiseptics
(adapted from Linton et al., 1987 and CFSPH, 2023)

DISINFECTANT CLASS	Alcohols	Aldehydes	Biguanides	Halogen-Hypochlorite	Halogen-Iodine	Oxidizing agents	Phenolic compounds	Quaternary ammonium compounds
Examples of active ingredients	Ethanol Isopropanol	Glutaraldehyde Formaldehyde	Chlorhexidine (antiseptic)	Sodium hypochlorite	Iodopovidone (antiseptic)	Hydrogen peroxide Peracetic acid	Chloroxyphenol	Benzalkonium chloride
Mechanisms of action	It precipitates proteins. It denatures lipids.	It precipitates proteins. Alkylate nucleic acids.	It alters the permeability of the cell membrane.	It precipitates proteins.	It precipitates proteins.	It precipitates proteins, and lipids.	It precipitates proteins. It alters the permeability of the cell membrane.	It precipitates proteins. It binds to the phospholipids of the cell membrane.
Features	Fast-acting. Quick evaporation Leaves no residue or residual effect.	Broad spectrum. Non-corrosive. Unpleasant odour.	Broad spectrum.	Broad spectrum. Short contact time. Inexpensive. Degrades rapidly after preparation.	Stable during storage. Relatively safe.	Broad spectrum. Fast-acting. Low toxicity at low concentrations.	Non-corrosive. Stable during storage. Strong odour. Residual biofilm. May damage rubber and plastic.	Stable during storage. Effective at high temperatures and high pH (9-10).
Factors affecting effectiveness	Inactivated by organic matter.	Affected by organic matter, hard water, soaps/detergents, temperature, and relative humidity.	Effective within a limited pH range (5-7).	Inactivated by sunlight and heat. Requires frequent applications. Affected by pH and temperature.	Inactivated by quaternary ammonium compounds. Requires frequent applications.		Affected by temperature.	Affected by pH. Best in neutral or alkaline pH.
Health hazards	Skin irritation.	Carcinogenic. Very irritating to the skin and mucous membranes.		Irritating to skin, mucous membranes, and eye.		In powder form, it can irritate mucous membranes.	Irritating to skin, eyes, and respiratory tract.	It may cause irritation to the skin, eyes, and respiratory tract.
Precautions	Flammable.	Use only in well-ventilated areas. Flammable.	Toxic to fish (environmental concern).	Never mix with other products as it will release toxic chlorine gas.	Corrosive. Stains disinfected clothing and surfaces.	It can damage some metals (aluminium, copper, steel, etc.).	It can be toxic to animals, especially cats and pigs.	It can accumulate in the environment. It can damage some metals in high concentrations.
Vegetative forms of bacteria	Effective	Effective	Effective	Effective	Effective	Effective	Effective	Variable
Mycobacteria	Effective	Effective	Variable	Effective		Effective	Variable	Ineffective
Enveloped viruses	Effective	Effective	Limited	Effective	Effective	Effective	Effective	Variable
Non-enveloped viruses	Variable	Effective	Limited	Variable	Limited	Effective	Variable	Ineffective
Spores	Ineffective	Effective	Ineffective	Variable	Limited	Variable	Ineffective	Ineffective
Fungi	Effective	Effective	Limited	Variable	Effective	Variable	Effective	Variable
Effectiveness in the presence of organic matter	Inactive	Reduced	?	Inactivated		Variable	Effective	Inactive
Effectiveness with "hard" water	?	Reduced	?	Variable	?	Variable	Effective	Inactive
Effectiveness with soaps/detergents	?	Reduced	Inactive	Inactive	Effective	?	Affected by cationic surfactants	Inactivated by cationic surfactants

1.5. Interruption of Transmission Chains

1.5.1. General Behaviour

• The smoking ban in the workplace must be respected.

• Dogs must be walked on a leash within FMV facilities.

1.5.2. Visitors

• Educating the public about the role of veterinarians in society is an important duty of the FMV, and allowing visitors limited access to faculty supports this mission. However, there are specific health and safety issues associated with exposure to the faculty environment, and visitors could potentially spread pathogens into the hospital environment.

• Patient handlers must be constantly supervised during their visit to the FMV. Physical contact with other patient animals is not permitted.

• Guided tours for the public are coordinated by the Presidency and conducted by trained staff.

• Visitors are not permitted to enter the Isolation and Biological Containment Units (Class 4).

• FMV staff supervising visitors must inform them of the risks of nosocomial and zoonotic diseases associated with hospitalized animals.

• Visitors should consult the Ordinance before entering FMV facilities.

• They should not be allowed to enter medical emergency rooms and anaesthetic preparation and surgery areas.

• Special authorizations can be obtained by contacting the Presidency to allow entry for visiting researchers or veterinarians into the aforementioned areas.

• Visitors may not gather in customer service areas.

• Smoking, eating, and drinking are not permitted.

• Visitors may not bring animals.

1.5.3. Clients

• Clients have free access to the waiting rooms of HE-AC and HE-EQ and the adjacent restrooms, and to the bars. They must be accompanied to other areas of the hospitals by students and staff.

• Access to patient care areas may be restricted whenever appropriate to mitigate the risks of nosocomial or zoonotic infections. In addition, professors and veterinarians may, at their discretion, exclude clients from care areas for safety reasons and whenever there is a risk of disruption to the work environment.

• At the discretion of the responsible veterinarian, clients may be left alone with their animals in the consultation rooms, however this is prohibited in general inpatient care. In addition, clients should always be instructed not to touch other animals.

• Clients are not allowed to visit patients housed in isolation units (Class 4). Permission is only granted, exceptionally, in terminal cases or euthanasia in accordance with biosafety measures.

• Clients must always adhere to sanitary prophylaxis measures.

• Visiting hours for hospitalized animals are restricted to specific periods determined by those responsible for HE-AC and HE-EQ, unless expressly authorized by the physician in charge of the case.

• The staff and students responsible for patient care are required to inform clients about the risks of nosocomial and zoonotic diseases associated with animal hospitalization.

1.5.4. Children

• There are specific health and safety risks in FMV spaces. It is unacceptable for a child to become ill or injured after contact with animals or environmental exposure.

• Children (under 18 years of age) of FMV workers and students are not allowed to remain in hospitals unless supervised by an adult.

• Children visiting FMV must always be supervised by an adult.

• All children must be prevented from touching any animal except their own, due to the risk of physical injury and/or zoonotic diseases.

• Access to patient care areas may be restricted whenever appropriate to mitigate the risks of zoonotic infections. In addition, veterinarians may, at their discretion, exclude children (under 18 years of age) from patient care areas for their own safety and whenever there is a risk of disruption to the work environment.

1.5.5. Pets at FMV (Employees/Students)

• The daily presence of companion animals at FMV is governed by the "Regulations for the presence and circulation of companion animals", P-R-01 of October 17, 2022.
• FMV is an institution with a pet-friendly workplace policy, and it is considered that the presence of employees' companion animals at the college increases the socialization, creativity, and productivity of the community, and improves the well-being of our companion animals. However, the presence and circulation of companion animals in the college's spaces are regulated to ensure safety and good coexistence between people and animals, safeguard public hygiene, and prevent the degradation of spaces and equipment.
• This regulation applies to all animals that frequent or visit the FMV facilities and outdoor spaces, except for hospital clients:

- Animals may only remain in the individual workspaces of their owners, and circulation within the FMV's internal and external spaces must be limited to routes considered indispensable, with the animals restrained by a leash or harness.
- Animals are not allowed in common areas, such as auditoriums, classrooms, technical rooms, laboratories, etc., except for guide dogs.
- Animals are prohibited from being in bars.
- Animal owners must clean up all solid and liquid waste as quickly as possible, whether in enclosed or open spaces, to minimize the presence of organic matter and avoid stains.
- Owners must prevent their animals from disturbing activities at FMV in any way, especially through noise.
- Owners must ensure that their animals do not endanger the safety of people and other animals, nor damage FMV facilities and equipment, and they will be held responsible for any resulting consequences.
- Failure to comply with these rules will result in the prohibition of animals from being on FMV premises.

• This Regulation does not apply to:

- Animals hospitalized as patients
- Animals used in academic activities
- Dogs with scheduled blood donations
- Animals participating in approved research projects.

• Contact between patient and healthy animals should be avoided, and patient animals should be housed in separate facilities.

• Workers and students must adhere to all FMV biosafety policies during the handling and stay of animals in hospitals.

1.5.6. Disease Transmission Routes

• Many pathogens can survive for long periods in suspension in air particles, on surfaces, and in organic matter.

• Pathogens can spread from animal to animal, from animal to person and vice versa, through inhalation, oral route, direct contact with mucous membranes, and indirectly through fomites or insect vectors.

• Knowledge of these disease transmission routes helps to mitigate their potential effects.

1.5.6.1. Aerosol Transmission

• Aerosol transmission occurs when pathogens are transmitted through aerosol droplets. Most pathogens do not survive for long periods in aerosol droplets. Therefore, proximity between infected and susceptible animals is necessary for effective transmission. The greater the distance between animals, the lower the probability of transmission.

• Aerosol transmission can occur in a veterinary hospital through close contact with animals and/or people. Pathogens may be recently aerosolized (e.g., through the sneeze of a cat infected with feline herpesvirus), may be aerosolized through high-pressure washing of cages/pens, or in dust particles dispersed by air currents (e.g., *Coxiella burnetii*). Temperature, relative humidity, and ventilation play an important role in the transmission of pathogens by aerosols.

1.5.6.2. Oral Transmission

• Oral transmission occurs through exposure to pathogens via the gastrointestinal tract. Another form of oral transmission involves inhalation and subsequent ingestion of aerosolized material.

• Contaminated equipment includes food and water bowls, and any other items that an animal may lick or chew (e.g., toys). Food and water contaminated with faeces or urine are frequently responsible for oral infections.

• For people, contact of the oral mucosa with contaminated hands is frequently involved in the faecal-oral transmission cycle of pathogens, making frequent hand washing and disinfection relevant among people who work with animals. Proper handling and segregation of diarrheal patients, as well as rigorous cleaning and disinfection of feeders and waterers, will help reduce faecal-oral transmission chains.

1.5.6.3. Direct and Indirect Contact Transmission

• Direct contact transmission requires an animal or person to come into direct contact with another infected animal or person.

• Indirect contact transmission occurs through contact with surfaces/materials contaminated by biological fluids, e.g., blood, wound exudates, saliva, nasal secretions or aerosolized respiratory droplets, genitourinary secretions, faeces, etc.

• The likelihood of hospitalized patients with infectious disease carrying contagious pathogens is considerable. Therefore, the probability of facility surfaces being contaminated is real. Segregating infected animals and reducing contact with them are two essential measures to break chains of transmission by direct or indirect contact.

1.5.6.4. Fomite Transmission

• Fomites are inanimate objects that serve as intermediaries in transmission cycles. Virtually any object can play the role of a fomite, even a person (e.g., a handler). Door and cabinet handles, keyboards, telephones, clothing, thermometers, stethoscopes, hoses, collars, brushes, etc., are objects that can be contaminated and transmit pathogens to animals and people.

• The main measures to control the transmission of pathogens by fomites include proper cleaning and disinfection, the application of sanitary prophylaxis measures, the use of exclusive equipment for contagious patients, as well as the proper identification and segregation of patients.

• Whenever possible, animals showing clinical signs of infectious disease should be handled and treated after healthy patients.

1.5.6.5. Vector Transmission

• Vector transmission occurs when an arthropod acquires a pathogen from one animal and transmits it to another animal, e.g., Dirofilariasis and West Nile Fever are diseases transmitted, respectively, to dogs and horses, by mosquito bites.

• Fleas, ticks, flies, and mosquitoes are common vectors of pathogens.

• The most effective means of preventing the transmission of pathogens by vectors are controlling insect populations using insecticides and reducing contact between the vector and the host through the use of repellents. Practical measures are referred to in the Pest Control Chapter.

1.5.7. Zoonotic Infections

• Although the risk of contracting a zoonotic disease among the general population is, on average, low, professionals who have routine contact with animals are at greater risk of exposure.

• In case of exposure to a suspected or confirmed zoonotic pathogen, all clients, workers and students of FMV must be registered and reported to CHB, biosseguranca@fmv.ulisboa.pt.

• The CHB Coordinator and the veterinarian responsible for the sporadic case/epidemic outbreak will work together to ensure that all potentially exposed persons are contacted, as well as the local health authority, Dr. Ana Gaspar, Coordinating Health Delegate of the Public Health Unit (USP) of Western Lisbon, T: 214 540 814 usp.lxocidoeiras@arslvt.min-saude.pt.

• Any individual with a suspected or confirmed occupational disease is strongly encouraged to seek medical attention immediately after notifying their direct manager and reporting to the CHB.

• Any suspected or confirmed exposure to a zoonotic pathogen must be reported to the CHB Coordinator and the Clinical Director of HE-AC (aferreira@fmv.ulisboa.pt), HE-EQ (llamas@edu.ulisboa.pt) and HE-EP (stilwell@fmv.ulisboa.pt) by the veterinarian who attended the patient.

Ms. Petra Morgado, head of the Occupational Safety and Health Unit of FMV (NSST), (pmorgado@fmv.ulisboa.pt), should be informed for subsequent referral for consultation at the Occupational Health Service (SSO) (https://www.arslvt.min-saude.pt/servico-de-saude-ocupacional/) of the Regional Health Administration of Lisbon and Tagus Valley (ARSLVT).

• Students and staff at FMV, as well as their family and friends who may be at higher risk of contracting zoonoses or who have concerns about any exposure to zoonotic pathogens, are strongly encouraged to contact their family physician.

1.5.8. Special Risks Regarding Infectious Diseases

• Anyone with a compromised immune system is at higher risk of exposure to zoonotic diseases. In addition to causes of immunosuppression related to disease or medication, other physiological conditions affect the quality of the immune system's response, e.g., children under 5 years of age, the elderly, pregnant women, and immunocompromised individuals. These categories of people are called YOPI, an acronym for Young, Old, Pregnant, Immunocompromised, used in health contexts.

• Numerous diseases and conditions can compromise or alter immune function, including HIV/AIDS, organ failure, diabetes, alcoholism and liver cirrhosis, malnutrition, or autoimmune diseases.

• Several therapies can induce immunosuppression, including radiotherapy, chemotherapy, corticosteroids, or immunosuppressive therapy associated with bone marrow or organ transplants, implantation of medical devices, splenectomy, or long-term haemodialysis.

• Some of these diseases/conditions may have a social stigma, making it difficult to share confidential health information.

• All students and staff must inform their supervisor, before participating in patient consultations/interventions, about any health condition/problem they have (e.g., pregnancy, immunosuppression, etc.) that may increase the risk or severity of infections from zoonotic pathogens.

• This information is confidential. However, communication between team members may be necessary to implement appropriate precautions and/or adapt clinical or teaching procedures.

1.6. Risk Communication Regarding the Contagious Status of Patients

• Effective communication about the risk of spreading contagious pathogens is essential, given the complexity of patient care and the number of people who study and work in teaching hospitals. Effective and proactive communication about patients in the infectious period reduces the likelihood of chains of transmission of nosocomial or zoonotic diseases.

• Regarding biosecurity, risk communication involves adequate notification and education about the risks for all individuals in contact with infectious patients and about the prophylactic measures necessary to break the spread to other animals and people and to disinfect contaminated equipment and areas.

• It is the responsibility of the Clinical Director of HE-AC, HE-EQ and HE-EP, or a veterinarian from their teams with delegated skills for the task, to assess the risk of transmission of contagious diseases and implement appropriate infection control measures, consistent with the “FMV Biosecurity SOP”.

• The CHB MUST BE NOTIFIED OF ALL IMPORTANT INFECTIOUS RISKS (SUSPECTED OR CONFIRMED), which include, but are not limited to, notifiable diseases (e.g., dermatophytosis), potentially zoonotic diseases (e.g., avian influenza), highly contagious diseases (e.g., salmonellosis), highly pathogenic diseases (e.g., leptospirosis), infections caused by multidrug-resistant bacteria (e.g., MRSA or VRE), and pathogens that are highly persistent in the environment or difficult to eradicate with routine hygiene practices (e.g., anthrax). This notification must be made by the responsible veterinarian as soon as possible, via the following email address: biosseguranca@fmv.ulisboa.pt.

• All risks of contagion must be adequately communicated to FMV students, staff, and clients to effectively manage the threat of infection to animals and people in contact.

• A patient's infectious state may evolve during hospitalization, and risk communication must be updated and adjusted.

1.6.1. Biosafety Email Lists

• FMV uses email lists to facilitate communication about the risks of infectious diseases among teaching hospital professionals, e.g., biosseguranca@fmv.ulisboa.pt, medicos@fmv.ulisboa.pt, enfermeiros@fmv.ulisboa.pt, amendes@fmv.ulisboa.pt

• **Objective**: To promote communication and raise awareness about patients at increased risk of contagious diseases and/or zoonoses.

• **Email senders**: Open to all, mandatory when patients are admitted to class 4 (Isolation Units).

• **Email recipients**: Presidency, CHB members, members of the Occupational Health and Safety Unit, Hospital School workers and cleaning staff.

1.6.2. Floor markings

• To make access more visible to students, workers, clients, suppliers and visitors, lines have been painted on the floor of specific areas of the FMV. The colour of the line corresponds to the circulation authorization:

- **Green**: no restriction, passage is permitted.

- **Yellow**: passage is restricted (e.g., entry into a support laboratory for teaching hospitals).

- **Red**: passage is not permitted without prior authorization (e.g., surgical centres or biological isolation and containment units).

1.6.3. Hospitals – Companion Animals, Horses and Ruminants

• The infectious risk must be clearly identified in the cages/stalls housing contagious patients, as well as in the surrounding space. The following information must be included:

- Disease Risk Class (see Table 2).

- Suspected/confirmed diagnosis (name of the disease/condition).

- Appropriate disinfection procedures for disease/condition control.

- Applicable sanitary prophylaxis measures.

- Hygiene lock.

- Potential zoonotic risk.

• The team responsible for contagious patients must ensure that the specifics of the hygiene lock are properly communicated to other people working with patients or in the contaminated space. Furthermore, they must ensure that the information is promptly communicated to CHB (biosseguranca@fmv.ulisboa.pt)..

1.6.4. Protocol for the Reception Teams of the Companion Animal and Equine Hospitals

• During patient triage, whether in person or by phone, if a client mentions clinical signs consistent with contagious disease (e.g., vomiting, diarrhoea, ataxia, abortion, cough, sneezing, etc.):

- The receptionist will schedule an appointment at the Isolation and Biological Containment Unit for the respective animal species, AFTER approval from the unit's responsible veterinarian, and if an isolation cage/pen is available.

- The reason for the suspicion will be indicated on the schedule (e.g., unvaccinated puppy with haemorrhagic diarrhoea).

- "Suspected Contagious Disease" will be written next to the complaint.

- The client will be asked to keep the animal inside the vehicle in the parking lot until a veterinarian performs a clinical evaluation of the patient to determine the risk before referring it to the respective Isolation and Biological Containment Unit or authorizing the client to enter the respective hospital with the animal. According to the risk category and circumstances, the animal will be taken directly to a consultation room (Class 1 and 2) or to the isolation unit (Class 3 and 4). Pets should preferably be transported in a carrier (cats and small and medium-sized dogs) or on a stretcher (only large dogs). Equines are transported in the owner's horse trailer to mitigate the risk of contamination of FMV spaces.

1.6.5. Protocol for Students

• The admission of potentially contagious patients is organized as follows:

- The reason for the consultation will be recorded on the Clinical Record (e.g., diarrhoea, vomiting, sneezing, etc.).

- The Clinical Record should state "Suspected Contagious Disease".

- The client will be asked to keep the animal inside the vehicle in the parking lot until a veterinarian assesses the patient to determine the risk before denying or authorizing its entry into the hospital. According to the decision and risk category, the animal will be taken directly to a consultation room or transported to a Biological Isolation and Containment Unit. Pets should preferably be transported in a carrier (cats and small and medium-sized dogs) or on a stretcher (only large dogs). Equines are transported in the owner's horse trailer to mitigate the risk of contamination of FMV spaces.

- Direct contact between the animal suspected of having a contagious disease and other patients or resident animals of the FMV is not permitted.

- To reduce risks to students and other patients of teaching hospitals, only a minimum number of students (designated by the professor/clinical instructor) may accompany consultations/examinations of potentially contagious patients.

- After the consultation room is vacated, areas or equipment contaminated by faeces and/or body fluids must be cleaned and disinfected immediately by the student and/or assistant.

- An appropriate sign must be placed on the door, and the room cannot be used by another patient until cleaning and disinfection are complete.

- Students must be trained and informed (through seminars and in-person practical classes of various curricular units of the Departments of Animal Health and Clinical Medicine for training in good Biosafety practices, the teaching-learning materials available on the FMV Moodle and the “FMV Biosafety SOP” available on the FMV website) to follow the biosafety protocol in case of contact with contagious patients.

1.6.6. Exclusion criteria for admission and/or hospitalization

• A patient suspected of having a notifiable disease (see section 1.7.6) can only be admitted to the Isolation and Biological Containment Unit (companion animals and equines) of the respective HE, to which they are immediately transported.

• Patient admission may be denied if the risks to other patients or to students and staff are too high compared to the risk to the animal itself.

• Specific refusal criteria for each animal species are listed in the corresponding HE hospital chapter.

• Only veterinarians have the authority to refuse admission to an animal.

1.7. Biosecurity Measures Surveillance

• This program was established to monitor and identify the spread of infectious diseases in the Veterinary Medical Center (FMV). Environmental and patient samples are analysed for general environmental contamination and microorganisms associated with transmissible and hospital-acquired diseases.

• In general, veterinarians should alert the Veterinary Medical Center (CHB) as quickly as possible to:

- Occurrence of suspected or confirmed nosocomial events.

- Any trends of suspected nosocomial events, even if the clinical consequences are not serious.

- All suspected or confirmed zoonotic infections believed to have been contracted after exposure in the FMV;

• Physicians are encouraged to use appropriate diagnostic tests to determine the aetiology of nosocomial events, even if the results do not affect the patient's clinical outcome.

• Traceability of infected animals and their network of contacts is relevant for surveillance. In HE-AC and HE-EQ, the QVET IT platform provides a complete database of all received cases, contact information for the owner(s) and the responsible veterinarian(s), as well as the tests and medications used in the treatment of patients.

• Client and patient information are confidential. Its use for research depends on informed consent from clients and authorization from the FMV Ethics Committee.

1.7.1. Diagnostic tests required in case of suspected infection

• Confirmation of clinical suspicion of infection is fundamental for the proper clinical management of infectious patients, especially when dealing with zoonotic agents. Laboratory tests benefit both the patient and the client, allowing for proper home management (protection of human health in the case of zoonotic agents). They also allow the FMV to correctly manage the risk for all parties involved, e.g. (e.g., patients, workers, and students.)

• Therefore, it is highly recommended to test patient animals if a contagious or zoonotic pathogen is included in the differential diagnosis. If the owner is reluctant to bear the costs of the test, the animal will automatically be classified as a Class 4 patient and the resulting financial impact will be charged to the owner.

• The veterinarian responsible for the patient must ensure that information on infectious and/or zoonotic pathogens is provided to the owner.

• The veterinarian responsible for the patient must ensure that biological samples are sent to the laboratory for testing and that appropriate biosecurity measures for the treatment of the patient are implemented.

• If the veterinarian responsible for the patient suspects one of the situations indicated in 1.7.2., they must notify the CHB as soon as possible. This notification can be made via the following email address: biosseguranca@fmv.ulisboa.pt.

1.7.2. Diseases for which testing is mandatory

• Laboratory testing of appropriate samples is mandatory if The disease/condition is included in the differential diagnosis. A complete description of tests, management, diagnosis, and information is available on the World Organisation for Animal Health (WOAH) website):

- Animal Disease Fact Sheets (N=208): https://www.woah.org/en/what-we-do/animal-health-and-welfare/animal-diseases/

- Terrestrial Animal Health Code: https://www.woah.org/en/what-we-do/standards/codes-and-manuals/terrestrial-code-online-access/

-Diagnostic Tests and Vaccines Manual for Terrestrial Animals: https://www.woah.org/fileadmin/Home/eng/Health_standards/tahm/A_summry.htm

• In FMV, special attention should be given to the following diseases:

- Diseases Common to Several Animal Species

- Brucellosis
- Campylobacteriosis
- Cryptosporidiosis
- Avian influenza
- Leptospirosis
- Rabies
- Salmonellosis

- **Specific diseases of companion animals** (including exotic and zoo animals)

- Systemic feline calicivirus
- Avian chlamydiosis
- Acute diarrhoea in dogs and cats (e.g., parvovirus and Giardia spp.)
- Canine distemper

- **Equines**

- Equine infectious anaemia
- Strangles (*Streptococcus equi* subsp *equi*)
- Equine herpesvirus type 1 myeloencephalitis

- **Ruminants**

- Cryptosporidiosis

1.7.3. Environmental Surveillance of *Salmonella* spp. at the Equine Hospital

1.7.3.1. Microbiological Cultures of Stalls

• In a stall that housed a horse with a positive culture for Salmonella spp., samples must be collected for environmental analysis after routine cleaning and disinfection. The stall may only house another patient if bacteriological tests are negative for Salmonella spp.

• The technicians responsible for decontaminating the stall or the veterinarian responsible for the patient must notify the CHB when the stall is vacated to arrange for the collection of samples for environmental analysis.

• The team reports the results of bacteriological tests to the CHB as soon as the results are available, via the following email address: biosseguranca@fmv.ulisboa.pt.

• This data is compiled quarterly by the CHB and made available to those responsible for the three teaching hospitals.

1.7.3.2. Routine Environmental Surveillance

• Sample collection for environmental microbiological and parasitological surveillance should be carried out semi-annually at the Companion Animal Hospital and the Equine Hospital, except in the facilities of the Isolation and Biological Containment Units (Class 4), which, being more susceptible to contamination by Salmonella spp., should undergo environmental microbiological and parasitological analyses quarterly.

• The team reports the results of bacteriological examinations to the CHB as soon as the results are available, via the following email address: biosseguranca@fmv.ulisboa.pt.

• This data is compiled quarterly by the CHB and made available to those responsible for the three teaching hospitals.

1.7.4. Management of Patients Infected or Colonized by Multidrug-Resistant Bacteria

• Patients infected with/carrying multidrug-resistant (MDR) bacteria represent a potential risk to students, staff, clients, and other patients. As such, they are treated with enhanced biosafety precautions (Class 3) to prevent chains of transmission of these bacteria within and outside the college.

1.7.5. Antimicrobial Resistance and the Use of Antimicrobial Drugs

• Antimicrobial resistance is one of the most important and complex "One Health" challenges of the 21st century. An infection control program must consider the significant impact of antimicrobial resistance on the ability to provide quality medical care.

• The CHB promotes practices that help preserve the effectiveness of antimicrobials.

• HE-AC, HE-EQ, and HE-EP (Outpatient Service) routinely assess the antimicrobial resistance patterns of isolated bacteria and share a semi-annual report with the CHB. See Chapter 11 for additional information.

NOTE: These reports summarize the results of antimicrobial resistance found in animals investigated by the three FMV hospitals, including patients evaluated in second opinion and referral consultations, therefore the frequencies and resistance profiles are not representative of the true prevalence of MDR in animal populations, and are likely overestimated.

1.7.6. Notifiable Animal Diseases and Zoonoses in Portugal

• • It is FMV policy to investigate the possibility of any notifiable disease and, if suspicion is confirmed, to report it to DGAV at https://spc.dgav.pt.

• For animal species of interest to FMV, the notifiable diseases in Portugal, updated on April 22, 2024, are listed in Table 7 and are as follows (https://www.dgav.pt/wp-content/uploads/2024/04/ListaDDO.pdf).

Table 7
Notifiable diseases in Portugal of interest to the FMV

Diseases common to several species
Brucellosis (*Brucella abortus*)
Brucellosis (*Brucella mellitensis*)
Brucellosis (*Brucella suis*)
Anthrax (*Bacillus anthracis*)
Blackleg (*Clostridium chauvoei*)
Mycobacterium tuberculosis complex (*M. bovis, M. caprae, M. tuberculosis*)
Cowdriosis
Aujeszky's disease
Epizootic hemorrhagic disease
Japanese encephalitis

Eastern equine encephalomyelitis
Echinococcosis / hydatidosis (*Echinococcus multilocularis*)
Echinococcosis/hydatidosis (*Echinococcus granulosus*)
Vesicular stomatitis
Foot-and-mouth disease
Bluetongue disease
West Nile fever
Rift Valley fever
Q fever
Crimean-Congo hemorrhagic fever
Leishmaniasis
Chrysomya bezziana myiasis
Cochilomyia hominivorax myiasis
Paratuberculosis
Rinderpest
Rabies
Salmonellosis
Scabies
Trypanosoma evansi (Surra)
Tinea
Trichinellosis
Tuberculosis (mammals and birds) except CMT
Trypanosomiasis (*T. brucei, T. congolensis, T. simiae, T. vivax*)
Tularemia
Cattle Diseases
Bovine anaplasmosis
Bovine babesiosis
Bovine genital campylobacteriosis
Contagious nodular dermatosis
Bovine viral diarrhea
Diphtheria
Bovine spongiform encephalopathy
Bovine enzootic leukosis
Contagious bovine pleuropneumonia
Infectious bovine rhinotracheitis / Infectious pustular vulvovaginitis
Hemorrhagic septicaemia (*Pasteurella multocida*)
Theileriosis (*T. annulata, T. orientalis, T. parva*)
Trichomoniasis
Sheep and goat diseases
Enzootic abortion of sheep (Ovine Chlamydiosis)
Contagious agalactia
Caprine arthritis/encephalitis
Nairobi disease
Ovine epididymitis (*Brucella ovis*)
Maedi-Visna disease
Peste des petits ruminants
Caprine contagious pleuropneumonia
Salmonellosis (*Salmonella abortusovis*)
Scrapie
Theileriosis (*T. lestoquardi, T. luwenshuni, T. uilenbergi*)
Sheep and goat pox
Swine diseases
Cysticercosis
Swine vesicular disease
Nipah virus encephalitis

Transmissible gastroenteritis
Swine influenza
Erysipelas
African swine fever
Classical swine fever
Porcine reproductive and respiratory syndrome (PRRS)
Equine Diseases
Equine infectious anaemia
Equine viral arthritis
Dourine
Western equine encephalomyelitis
Venezuelan equine encephalomyelitis
Equine influenza
Epizootic lymphangitis
Equine contagious metritis
Glanders
Glanders (Burkholderia mallei)
Equine piroplasmosis
Equine trypanosomiasis
Equine rhinopneumonitis
Lagomorph Diseases
Rabbit hemorrhagic disease
Myxomatosis
Avian Diseases
Avian infectious bronchitis
Gumboro disease
Psittacosis
Avian cholera (*Pasteurella multocida*)
Avian diphtheria
Newcastle disease
Low pathogenic avian influenza
High pathogenic avian influenza
Duck viral hepatitis
Avian infectious laryngotracheitis
Avian mycoplasmosis (*M. gallisepticum / M. meleagridis*)
Avian mycoplasmosis (*M. synoviae*)
Salmonellosis (*S. pullorum, S. gallinarum, S. arizonae*)
Turkey rhinotracheitis
Salmonellosis (other species)

The following zoonoses must be reported by the Laboratory Manager as part of a laboratory analysis performed at the FMV Diagnostic Center:

• **Viral zoonoses**

- SARS-CoV-2 infection

• **Bacterial zoonoses**

- Brucellosis
- Campylobacteriosis
- Colibacillosis - Verotoxigenic *Escherichia coli* (VTEC)
- Lyme disease
- Salmonellosis
- Vibriosis

- Yersiniosis

• Fungal zoonoses

- Dermatophytoses

• Parasitic zoonoses

- Cysticercosis
- Cryptosporidiosis
- Echinococcosis
- Toxoplasmosis
- Trichinellosis

1.7.6.1. Biological Samples and Diagnostic Tests

• In case of doubt regarding biological samples and diagnostic tests related to notifiable diseases, consult:

- Animal Disease Data Sheets – WHO Disease Fact Sheets: https://www.woah.org/en/what-we-do/animal-health-and-welfare/animal-diseases/

-Manual of Diagnostic Tests and Vaccines for Terrestrial Animals: https://www.woah.org/fileadmin/Home/eng/Health_standards/tahm/A_summry.htm

1.7.6.2. Recommendations for Disease Control and Animal Trade

• For recommendations on disease control and trade, consult the WHO Terrestrial Animal Health Code: https://www.woah.org/en/what-we-do/standards/codes-and-manuals/terrestrial-code-online-access/

1.7.6.3. Animals for research and teaching

• Students and researchers who use laboratory animals, resident animals, and client animals for research purposes must follow all applicable biosafety procedures.

• Approval from the FMV Ethics Committee and the FMV Animal Welfare Agency must be obtained before commencing such activities.

• Teaching and research animals may NOT be housed in patient care and inpatient facilities or in isolation units for pets and equines with contagious diseases.