

**ATATURK UNIVERSITY**  
**FACULTY OF VETERINARY MEDICINE**



**VETERİNER FAKÜLTESİ**  
Faculty of Veterinary Medicine

**BIOSAFETY**  
**GUIDE**

**Standard Operating Procedures (SOP) for Students,  
Administrative and Academic Staff**



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## **PREFACE**

Biosecurity is defined as "the entirety of activities conducted safely to protect human, animal, and plant health, as well as the environment and biological diversity," and the biosecurity system encompasses all activities, administrative, legal, and institutional structures carried out to ensure biosecurity. In essence, biosecurity is a term that encompasses all measures aimed at preventing the transmission of pathogenic agents to the living spaces of humans and animals.

From the perspective of animal health, the definition of biosecurity involves implementing measures to reduce the risk of entry and prevent the spread of pathogenic agents. To achieve this, it is necessary to establish a set of rules and behaviors related to all animals and animal products, and these must be adopted by individuals.

The preparation and implementation of a biosecurity program tailored to the characteristics of each health institution and business are essential. Biosecurity encompasses all actions taken to keep infectious agents and diseases away from target enterprises or units. In short, the goal of biosecurity measures is to reduce the risk of contamination of the environment with pathogenic agents and ensure the safety of life. In practice, this translates into taking necessary precautions to reduce the risk of carrying infectious agents to a facility.

As evident from these explanations, the aim of biosecurity is to protect both individuals in the working environment and the entire external environment from the transmission of dangerous agents that can cause diseases. Biological risks due to the transmission of agents that can cause diseases are encountered in many facilities, with laboratories, hospitals, clinics, laboratory animal and waste processing and disposal facilities, and animal production farms being among the most critical.

The prevention and control of biosecurity and infectious diseases are fundamental functions of all units of the faculty, especially the Animal Hospital. It should be remembered that successful infection prevention and control practices are defining characteristics of excellence in veterinary medicine.

The implementation of the Atatürk University Faculty of Veterinary Medicine Biosecurity Guide procedures, when considered and applied in all work areas of our unit, will result in the prevention and control of infectious diseases. The faculty administration has committed itself to prioritize biosecurity measures in all our activities and to continue our work with an approach that places importance on necessary precautions.

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# BIOSAFETY GUIDE

## CHAPTER 1



**VETERİNER FAKÜLTESİ**  
Faculty of Veterinary Medicine

**GENERAL BIOSAFETY STANDARD  
OPERATIONAL PROCEDURES (SOP)**



## **1. GENERAL BIOSAFETY STANDARD OPERATIONAL PROCEDURES (SOP)**

The international definition of biosecurity in the field of animal health is quite general: "Biosecurity is the implementation of measures to reduce the risk of entry of disease agents (biological contamination) and prevent their spread. For this purpose, introducing a set of rules and behaviors to reduce the risks related to all animals and animal products, and It must be adopted by people" (World Organization for Animal Health, 2008).

**Atatürk University, Faculty of Veterinary Medicine's Policy on the Prevention and Control of Diseases:** Atatürk University, Faculty of Veterinary Medicine (AtaVet) one of the main tasks of the Animal Hospital, as well as all Faculty Units, is biosecurity and the prevention and control of infectious diseases. Excellence in veterinary medicine is measured by successful infection prevention and control practices. Additionally, it is not possible to provide successful hospital service without implementing infection control procedures. The procedures used at AtaVet aim to reduce the risks of nosocomial and zoonotic diseases. Biosecurity and infection prevention and control procedures adapted to AtaVet's specific conditions are specifically designed to counter infectious disease threats we may encounter at AtaVet.

### **The AtaVet Biosafety Program's Targets**

- To protect faculty staff, students, visitors, and animal owners from zoonotic disease agents.
- To create an environment where appropriate clinical services are provided and the risk of nosocomial infection is minimized.
- Demonstrate and apply appropriate infection prevention and control and disease surveillance practices to enhance students' professional education experience.
- To inform and assist animal owners and relevant segments of society about the control and prevention of infectious and parasitic diseases of humans and animals.
- To strive to maintain and increase AtaVet's service quality.

**Infection Prevention and Control Principles:** The following principles guide the development of all procedures described in this document. These measures; In addition to aiming to prevent staff and patients from infecting each other, it also aims to prevent the spread of the disease between patients and staff.

- Hygiene is optimized through the use of standard precautions such as hand washing, wearing appropriate clothing and protective equipment, minimizing unnecessary contact with patients, proper disposal of infectious materials, and appropriate cleaning and disinfection.
- The infection cycle is interrupted depending on the effective implementation of hygiene protocols, knowing the ways of transmission of the disease and taking precautions against direct or indirect transmission of infectious agents between patients in different infectious disease risk groups. These measures include areas where animals are kept at AtaVet, as well as areas used by employees, students and visitors.

- In the prevention and control of infections, goals and procedures are constantly monitored and evaluated through observation and other methods. Additionally, targets and procedures are updated at regular intervals.
- Awareness of the risks of nosocomial and zoonotic diseases is developed through insider information regarding these procedures and regulations.

### 1.1. Definitions

**Antiseptic:** It is a chemical that can be applied to epithelial surfaces without harming living organisms and destroys or suppresses microorganisms by preventing their growth and reproduction.

**Barrier Practice Precautions:** These are materials and procedures that act as barriers between patients and staff, preventing cross-contamination of bodies, clothing, and shoes, thereby reducing the risk of nosocomial infection to other patients. Barrier measures are used in all isolation areas (category 4) and for patients with special needs (animals at high risk of spreading infectious agents, young and vulnerable animals, patients with weakened immune systems).

Note: Care must be taken to use protective clothing correctly to prevent contamination of materials and hand-contact surfaces.

**Infectious Disease:** A disease that can be transmitted from one animal to another.

**Multidrug Resistance:** Some bacteria have the ability to survive despite the presence of various antibiotics. Antibiotic resistance occurs when the effectiveness of drugs, chemicals, or other agents in treating or preventing bacterial infections decreases or disappears. There are a limited number of antibiotics that can kill these bacteria and often cause unwanted effects in humans and animals. Examples of multidrug-resistant bacteria include *Salmonella enterica*, methicillin-resistant *Staphylococcus aureus* (MRSA) and some vancomycin-resistant enterococci species.

**Disinfection:** It is a process used to reduce the number of microorganisms to a level that is not harmful to health.

**Disinfectant:** It is a chemical agent that can be applied to inanimate surfaces (surgical equipment, floors, tables, patient care equipment, etc.) and kills microorganisms or prevents them from multiplying.

**Hospital Uniform:** Clothes, shoes and outerwear worn only while working at AtaVet Animal Hospital or during field duty.

**Personal Protective Equipment:** It is equipment that helps people protect themselves against a microorganism or disease, prevent them from transmitting disease agents, and avoid exposure to potentially harmful chemicals (such as some disinfectants). For example; gloves, apron, mask, protective glasses, boots, overshoes, etc.

**Nosocomial Infection:** These are infections that are caused by being in a hospital and occur in inpatients, healthcare personnel, visitors and other people associated with the hospital.

**Personnel:** Academic and administrative staff and students working in any permanent or temporary position at AtaVet.

**Sanitizer:** A cleaning agent that reduces the number of microorganisms to a "safe" level without completely eliminating all microorganisms and is usually applied to hard surfaces.

**Subclinical Infection:** It is a disease caused by microorganism ('s) that does not show signs or symptoms in the body. A subclinical infection may be an early stage or very mild form of an infection in which signs and symptoms are not obvious or can be detected by clinical examination or laboratory tests.

**Sterilization:** It is the removal of all microorganisms, including bacterial spores, from inanimate surfaces.

**Zoonosis:** It is a disease that can be transferred between vertebrate animals and humans.

### 1.2. Classification of Risk Categories

When classifying microorganisms, they are divided into four risk groups, considering their health, society, animal diseases and possible economic effects.

**Risk Class 1 (RS1):** These are microorganisms that are non-pathogenic and harmless to the environment. This class includes microorganisms of proven safety and strains that may be opportunistic pathogens or allergens.

**Risk Class 2 (RS2):** These microorganisms can cause disease in animals and have varying degrees of characteristics, they are rare microorganisms of limited geographical importance, with no interspecies transmission or non-vectoral.

**Risk Class 3 (RS3):** These are microorganisms that can cause serious diseases and epidemics in animals. Cross-species transitions can be significant.

**Risk Class 4 (RS4):** These are microorganisms that cause very serious pandemics and epidemics, as well as very high mortality rates and dramatic economic losses in animals in the affected areas.

The parameters used to define the clinical situation are presented in Table 1, and microorganism examples according to human and animal risk class are presented in Table 2.

**Table 1.** Parameters used to define clinical status in patients

Species	Fire (rectal heat)	leukopenia (cell x 10 <sup>3</sup> / mL)	neutropenia (cell x 10 <sup>3</sup> / mL)
Cattle	> 39.0 °C (adult) > 39.5 °C (calf)	< 5.0	< 0.6
Dog	> 39.5 °C	< 6.0	< 3.0
Goat	> 40.5 °C	< 4.0	< 1.2
Horse	> 38.5 °C	< 4.0	< 2.5
Cat	> 39.5 °C	< 5.0	< 2.0
Sheep	> 40.0 °C	< 4.0	< 0.7

**Table 2.** Examples of microorganisms according to risk classes in humans and animals

pathogen	Risk classes 2		Risk classes 3		Risk classes 4	
	Human	Animal	Human	Animal	Human	Animal
<b>Bacterium and like organisms</b>						
<i>Borrelia burgdorferi</i>	<b>X</b>	<b>X</b>				
<i>Clostridium perfringens</i>	<b>X</b>	<b>X</b>				
<i>Brucella abortus</i>			<b>X</b>	<b>X</b>		
<i>Yersinia pestis</i>			<b>X</b>	<b>X</b>		
<b>Mushroom</b>						
<i>Aspergillus fumigatus</i>	<b>X</b>	<b>X</b>				
<i>Candida albicans</i>	<b>X</b>	<b>X</b>				
<i>Coccidioides immitis</i>			<b>X</b>	<b>X</b>		
<i>Histoplasma capsulatum</i> var. <i>capsulatum</i>			<b>X</b>	<b>X</b>		
<b>Parasites</b>						
Eimeriosis,	<b>X</b>	<b>X</b>				
Trichostrongylosis	<b>X</b>	<b>X</b>				
<i>Leishmania infantum - tropica</i>			<b>X</b>	<b>X</b>		
<i>Echinococcus multilocularis</i>			<b>X</b>	<b>X</b>		
<i>Echinococcus granulosus sensu lato</i>			<b>X</b>	<b>X</b>		
<i>Toxoplasma gondii</i>			<b>X</b>	<b>X</b>		
<b>Viruses</b>						
Feline calicivirus		<b>X</b>				
Equine infectious anaemia virus		<b>X</b>				
Rabies virus			<b>X</b>	<b>X</b>		
West Nile			<b>X</b>	<b>X</b>		
Foot-and-mouth disease						<b>X</b>

**Table 3.** Risk categories

<p><b><u>CATEGORY 1:</u></b> Normal Maintenance-Hosting Infectious diseases caused by agents that are not likely to be transmitted to other animals and do not pose a risk of human infection.</p>
<p><b><u>CATEGORY 2:</u></b> Normal Maintenance-Hosting Infectious diseases are contagious infections caused by pathogens that have a low level of transmission and may include non-resistant microorganisms.</p>
<p><b><u>CATEGORY 3:</u></b> Protector Precaution Implementation Required Situations <b>Lower Category A:</b> Resistant bacteria. Infections caused by bacteria with a pattern of highly resistant antimicrobial susceptibility according to laboratory results <b>Lower Category B:</b> Infectious diseases, diseases caused by agents of moderate transmission and/or potential human pathogens.</p>
<p><b><u>CATEGORY 4:</u></b> Insulation Infectious diseases, diseases caused by agents considered to be highly contagious and/or serious human pathogens.</p>

### 1.3. General Rules

#### 1.3.1. Hand washing

Hand washing is the most important way to reduce the risk of microorganism transmission. It is a precaution and solid soap is not recommended.

#### **Hands should be washed in the following cases:**

- Before and after the intervention on each patient,
- After touching blood, body fluids, secretions, excretions and contaminated substances, whether or not gloves are worn,
- Immediately after the gloves are removed,
- Before each different procedure on the same patient to avoid cross-contamination of different body sites,
- After each contact with laboratory samples or cultures,
- After cleaning every environment where animals are kept and harboured,
- Before meals, during breaks, before smoking or at the end of working hours,
- Before and after using the toilet.

#### **Recommended technique for hand washing:**

- Wet hands and arms with warm water.
- Pour at least 3-5 ml (1-2 full pumps) of liquid soap into the palm of the hand.
- Lather the soap by vigorously rubbing or scrubbing both sides of the hands from the wrist for 10-30 seconds. Clean between fingers and nails, and if wearing a ring, clean this area.
- Wash hands in warm water until all soap residue is removed.



- Dry your hands with paper towels or a hot air dryer.
- If you cannot wash your hands immediately, alcohol wipes can be used until you have access to warm water and soap.

**Recommended method for using hand sanitiser:**

- Apply a small amount to the palm of the hand.
- Spread the sanitiser first on the fingertips of the other hand and then on the whole hand.
- Do the same on the other hand.
- Rub until the disinfectant dries, do not rinse.

AtaVet staff and students who have contact with animals or work with biological samples are recommended to have short nails and not wear jewellery to minimise contamination and ensure effective cleaning of hands.

**Personal Protector Measures**

Personal protective measures must be appropriate to the type of procedure performed and the type of exposure anticipated. These precautions apply when handling infected tissues or body fluids, treating live animals, cleaning environments used by infectious diseased animals, or handling animals that have died from an infectious/zoonotic disease.

- Gloves and protective clothing (lab coat, work clothes, apron, overalls, etc.) must be worn when dealing with patients infected or suspected of infectious or zoonotic diseases (Category 3 or 4).
- Gloves, surgical masks and protective goggles should be worn for procedures that may result in contact with biological materials, splashing of blood or other body fluids.
- When gloves are torn, a needle is inserted into the hand or any other injury occurs, patient safety must first be ensured, then the glove must be removed and replaced immediately with a new glove.
- Washable boots, shoes or shoe covers are effective in preventing the spread of infectious material in the hospital.
- Face shields or respiratory masks should be used, depending on the circumstances and the disease.

**1.3.2. Standard clothing**

It is mandatory to wear appropriate clothing for the work performed in the units, laboratories and other related areas where health services are provided within AtaVet. Basically, upper and lower clinical suits should be worn in clinical units and white coats should be worn in laboratories. Students must wear white coats in anatomy and pathology practice units.

Unless officially stated otherwise, nothing other than a white coat may be worn over the clinical suit. In areas that constitute an exception in terms of biosafety, such as the Isolation Unit, overalls etc. determined for that location should be worn and removed in accordance with the necessary procedures. Personnel working in cleaning services must wear a work apron or overalls. No alternative clothing other than work clothes may be worn in work areas for any

reason. If there are codes determined by the Management regarding the colors of the clothes, this must be followed.

- The work clothes used at AtaVet are the first line of defense against academic and administrative staff, students and visitors carrying animal and human pathogens into living spaces outside the Faculty.
- All staff and students working directly with animals or in areas where animals are present are required to wear special clothing. Work clothes should not be worn outside work areas.
- All staff and students should wear appropriate footwear and protective clothing for the task at hand when working with animals or their environment. For example, waterproof aprons and boots are the most appropriate protective outerwear when working with large animals.
- All staff and students working directly with animals or in areas where animals are present must wear safe, protective, clean and cleanable closed shoes. Shoes that are contaminated and contaminated with biological material must be cleaned and disinfected. It is therefore recommended that footwear is not made of porous or absorbent material. For safety reasons, shoes from the One-Toed and Ruminant Clinics should not be used in the Cat and Dog Clinic.
- Staff and students with long hair who work with animals or in areas where animals are present are advised to tie or collect their hair.
- At least one spare clean protective outer garment must be available at all times.
- Students should wear clean clothes that are not contaminated with any waste.

### **1.3.3. Patient care and hygiene**

- Issues to be considered regarding patient care and hygiene:
- It is of great importance to place sick animals in a suitable cage, room, transport box, etc. and to keep these areas and animals as clean as possible in order to reduce the burden of infection and basic hygiene rules.
- Drinkers and feeders and their buckets and containers should be clean and changed regularly.
- When sick animals defecate outside of their care-housing areas (indoors or outdoors), the feces should be removed and the soiled floor surface should be cleaned immediately. When animals urinate indoors (not outside a building), the urine should be removed immediately and the floor cleaned and dried.
- The surroundings of the cage and the care-housing areas must also be tidy and clean. All staff and students are required to leave the materials they use in an organized and clean place. Items and materials that are not fit for purpose should not be kept or stored in the cage and care-housing areas.
- Specific requirements for patient hygiene in different animal clinics are specified in the relevant clinic section.
- The specific requirements for patient hygiene in different animal clinics are specified in the relevant clinic section.

#### **1. 4. Minimizing Unnecessary Contact with Patients**

- At AtaVet, direct contact with a large number of sick animals occurs during routine activities related to education and training activities and Animal Hospital services. Therefore, it should be kept in mind that there is always a risk of infection with infectious and/or zoonotic agents.
- All staff and students should minimize contact with animals, especially those for whose care and treatment they are not directly responsible, to minimize the risk of infection.
- Academic staff should allow and encourage students to have contact with animals for educational purposes. However, when students are asked to perform examinations or procedures on more than one patient, in order to eliminate risks such as cross-contamination, hands should be washed between patients and equipment such as stethoscopes should be regularly wiped with alcohol or hand sanitizer. Examination gloves should be worn in all necessary patients.
- Contact with patients known or suspected to be infected with infectious pathogens should be limited to relevant staff and students.
- Where possible, monitoring of sick animals should be carried out without physical contact and the use of video cameras, etc. should be encouraged.
- To reduce the risk of transmission of infectious agents, movement of staff and students between clinics should be limited as much as possible.
- Staff and students should refrain from touching or petting animals unless necessary or requested to do so.
- Animals should not be made the subject of arbitrary photo and video shoots outside of the health service provided, and especially close contact shoots should be avoided.

#### **1.5. Food and Beverage**

- Food and drink must not be consumed or stored where animals are examined, treated or kept.
- Staff and students are prohibited from eating, drinking or storing food in areas where biological samples are processed or medicines are stored. This includes corridors, registration areas, operating rooms, laboratories, examinations, imaging areas, control rooms, accommodation areas, warehouses and all healthcare-related spaces.
- The indoor areas where food and beverages are allowed to be consumed and stored at AtaVet are listed below:
  - Student cafeteria/canteen
  - Student rest areas where there is no animal contact and will not disrupt the entrance and exit
  - Kitchens of academic and administrative units
  - Academic and administrative staff offices

- Recreation rooms and social areas
- In front of the canteen in the classroom block
- Animals, biological materials and medicines are never allowed in these areas where eating and drinking are permitted.
  - Food and beverages are not allowed to be stored in refrigerators and freezers used for storing medicines or biological materials.
  - Machinery and equipment such as microwave ovens, autoclaves, etc. used in animal care-housing, examination and treatment areas and laboratories cannot be used for the preparation and heating of food for humans.

#### **1.5.1. AtaVet dining halls and canteens**

It is strictly forbidden for faculty staff and students to wear their work clothes (clinical clothes, laboratory coats, boots, clinical shoes-slippers, stethoscope, etc.) in the cafeterias and canteens of the Faculty and University. Any animal must not be allowed to enter the faculty dining halls.

#### **1.6. Medicines**

Supply, storage and disposal of medicines and/or medical products are carried out in accordance with official legislation.

##### **1.6.1. Storage and access**

- Medicines should be stored in a clean environment in accordance with the label information. Medicines should not be exposed to significant temperature changes and/or humidity. Temperature and humidity changes in warehouses must be monitored and recorded.
  - Medicines should be appropriately organized (e.g. alphabetically / by pharmacological classes).
  - Opened medicine should be stored properly in a closed room or place separate from sick animals. The date on which the medicine was opened must be recorded.
  - The medication storage room must not be accessible to persons not connected with the department, children and animals.
    - Opioid drugs, ketamine and euthanasia drugs must be stored in a secure room or safe and only accessible by the responsible veterinarian with a password or key.

##### **1.6.2. Expiry date**

- When all medicines, including liquids, are opened or broken, the date of opening should be noted on the package with a water-resistant pen.
- When the expiry date has passed more than 24 hours (or earlier according to the label), the medicine should be disposed of in medical waste.

##### **1.6.3. Drug preparation**

- Preparation of drug should be done under the direct supervision or control of technicians or veterinarians. When preparing medicinal products, contamination with other medicinal products or dirt should be avoided. The rubber stoppers on bottles, vials and other packaging of parenteral medicines should be wiped with alcohol

before each puncture with a needle. Each drug should be prepared with a new and sterile syringe and needle. Needles and syringes used for one animal should never be reused in the same or a different animal (exception: syringes for oral administration can be reused after rinsing and cleaning).

- After preparation of the drug, new and sterile needles should be used for injection.
- The preparation of toxic or hazardous medicines must be carried out under safe conditions and by appropriate persons. Protective equipment such as gloves, goggles, masks, etc. should be worn when necessary.
- Drugs that do not remain stable for a long time should not be prepared in advance.
- If the drug is not to be used immediately after preparation, the name of the drug should be labeled with a water-resistant pen on the syringe immediately after preparation.

#### **1.6.4. Disposal of medicines**

- Expired, unused or unnecessary medicines that cannot be returned to the pharmacy are disposed of in coordination between Erzurum Metropolitan Municipality ÇETAŞ unit and AtaVet Biosafety Commission in accordance with the Veterinarian E- Prescription and Drug Tracking system Instruction published by the Ministry of Agriculture and Forestry and AtaVet Waste Management Plan Instruction.

#### **1.7. Washing the Laundry**

##### **1.7.1. General assessments**

- Dirty covers should be collected and deposited in suitable containers at designated points.
- Before sending the covers for washing, any cutting and piercing tools should be removed.
- Patients' or owners' belongings must not be washed in the laundry.
- Personal items should not be washed in the laundry room. This includes blankets, student supplies or student clothing.

#### **1.8. Disposal of Waste Products**

- All processes related to waste management at AtaVet must be recorded.
- Precautions should be taken to prevent injuries caused by needles, scalpels and other sharp and piercing instruments. To prevent needle injuries, staff and students should be prevented from retracting, bending or breaking needles or removing needles from disposable syringes. Sharps should be placed in a puncture-resistant container.

- Waste must be disposed of in designated areas in accordance with the legislation.
- Hospital waste from animals with suspected zoonotic or highly infectious diseases should be disposed of in yellow waste bins.
- All waste produced in the isolation department must be disposed of in the yellow waste bins.
- Biological samples collected from patients at risk of infectious diseases should be sealed in impermeable plastic bags and labeled with appropriate information before being sent to diagnostic laboratories.
- Bandaging of wounds known to be infected with infectious agents (e.g. MRSA or other highly resistant bacteria) should be carried out in areas of low mobility that can be easily cleaned and disinfected. Precautions should be taken to avoid contamination of hands and clothing, and care should be taken to avoid spread to the environment through drainage of washing solutions or careless handling of bandaging materials.
- Biological specimens, witness specimens (frozen semen, embryos, etc. other specimens of commercial value) or dead animal parts are not allowed to leave the hospital except for medical requirements or disposal.
- The methods to be followed in the removal of medical and hazardous wastes should be determined according to the units. Medical waste labeled in medical waste bags must be regularly collected by the authorized company from a refrigerated room (medical waste temporary storage unit).
- Hazardous waste must be stored in the hazardous waste storage area in accordance with packaging procedures. Hazardous waste disposal must be carried out in accordance with the legislation of the Republic of Türkiye Ministry of Environment, Urbanization and Climate Change

### **1.9. General Cleaning and Disinfection**

It is important for AtaVet staff and students to obtain information about the different chemicals used in general cleaning and disinfection in terms of not only using these chemicals effectively but also minimizing their possible negative effects on human and animal health.

Organic materials quickly inactivate most disinfectants. When choosing a disinfectant, the possibility of organic materials on the surfaces should be taken into consideration.

The spectrum of action of disinfectants varies greatly. In general, protozoa such as *Cryptosporidium*, bacterial spores, mycobacteria and harmless viruses are very resistant to disinfection.

To ensure maximum decontamination, disinfectant solutions must be applied at appropriate concentrations and for a sufficient contact time (usually at least 10-15 minutes).

Most disinfectants are used for short-term disinfection. However, some disinfectants can maintain their disinfectant activity for a long time when they remain on the surfaces to which they are applied. This situation brings with it the residue problem.

It is very important to rinse and remove any residue of previously applied disinfectants.

The disinfectant to be used must be selected from biocides that are allowed to be used within the framework of national legislation.

### **1.10. Convenient Cleaning**

Appropriate clothing should be worn when disinfectants are used. If there is a possibility of splashing resulting in contact with disinfectant, additional personal protective equipment (mask, face shields, goggles, waterproof clothing and boots) should be used.

All visible dirt and debris must be removed before disinfection. Otherwise, coarse dirt and grime will render most disinfectants ineffective. If compressed air is used to remove coarse dirt, precautions should be taken to prevent aerosol contamination and the spread of infectious agents.

Washing, brushing or mechanical cleaning of the areas to be disinfected with water, detergent or soap is necessary to break down the film layer and residues that prevent the disinfection process.

Since some disinfectants can be inactivated by detergents, rinsing should be done to remove detergent residue. For this reason, it is very important to rinse the disinfection area thoroughly after washing.

Emptying, washing and drying the disinfection area as much as possible will prevent the disinfectant solutions to be used from diluting and reducing their effectiveness.

The area to be disinfected should be thoroughly wetted with disinfectant. The disinfectant should ideally remain in contact with surfaces for 15 minutes, especially when the infectious agent is suspected.

After disinfection, excess disinfectant should be removed with water, paper towels, mop or squeegee.

Following disinfection of areas where animals are kept, the disinfectant should be rinsed from all surfaces with plenty of water or allowed to dry for a sufficient time (the time specified in the disinfectant's user manual) before placing the animals.

Commonly used areas where animals are examined or treated (examination rooms, examination tables, etc.) should be cleaned and disinfected immediately by staff and students responsible for the patient, regardless of the infectious disease status of the animal.

When performing these procedures, skin and mucous membrane contact with blood or body fluid should be avoided.

After the disinfection process, protective clothing is removed and hands are washed.

Only personnel trained and approved to wear and use the necessary personal protective equipment are permitted for non-routine (special) disinfection operations.

### **1.11. Disinfectants**

Various disinfectants are used at AtaVet to reduce the risk of contamination with infectious agents. Many factors are taken into consideration in the selection of disinfectants used. See Table 4 for summary information on detergents and disinfectants approved for use under national legislation.

Disinfectants differ in terms of their toxic and irritating potential for humans and animals. In general, alcohols, povidone iodine and chlorhexidine solutions are used when contact with skin or other tissues is required. Other cleaning and disinfecting agents such as hypochlorites, glutaraldehyde, phenols and quaternary ammonium compounds are applied to equipment and floors and/or surfaces.

The expected effect can be achieved when disinfectants are applied only to roughly cleaned, smooth surfaces. Uncoated wooden materials and materials with dirty surfaces cannot be decontaminated by routine disinfection processes. In addition, if disinfectants are applied in environments where dirt, oil, biofilms and biological materials are present, reliable decontamination cannot be achieved even on smooth surfaces.

### **1.12. Foot Baths and Mats**

Infectious agents are often found on floor surfaces in environments where sick animals are present.

Footbath or mop solutions should be changed every morning by responsible personnel.

Foot baths or mats should be replaced immediately when excessively dirty or contaminated with urine, feces or bedding material.

Foot baths or mats need to be refilled when the amount of disinfectant becomes low or appears to be drying out. This process is the responsibility of everyone working in that field.

Staff and students are required to use foot baths or mats appropriately.

Foot mats are designed to disinfect only the soles and edges of shoes. Therefore, the entire feet do not need to be immersed in the mat. However, staff and students working in areas where mats are used are required to wear waterproof shoes, as disinfectant splashes on the top and sides of shoes are common.

### **1.13. Disinfection Protocol for Tools and Equipment**

After all tools and equipment are used at AtaVet, they must be properly cleaned and disinfected or sterilized before being placed in storage areas to minimize the risk of transmission of disease agents. The equipment used in Horse, Ruminant and Small Animal Clinics was also evaluated in the relevant sections.

#### **1.13.1. Thermometers**

At AtaVet, electronic thermometers are preferred instead of glass thermometers to prevent health risks that may occur due to breakage and mercury exposure.

Electronic thermometers should be thoroughly disinfected daily using alcohol and/or chlorhexidine wipes. Plastic thermometer cases should be soaked in disinfectant solution regularly.



Anesthesia etc. In such cases, the probes of thermometers used for continuous body temperature measurement should be thoroughly disinfected by wiping with alcohol and/or chlorhexidine solution to remove fecal material.

For high-risk infectious patients (Category 3 and Category 4), individual thermometers are allocated for use only on the sick animal and are cleaned and disinfected after the animal is discharged.

Thermometers should be cleaned and disinfected immediately when visibly dirty or after examining a patient.

### **1.13.2. Endoscopes**

Endoscopes should be cleaned and disinfected with quaternary ammonium compounds after each use.

Endoscopes should only be cleaned and disinfected by faculty or other staff on duty.

### **1.13.3. Stethoscopes**

It is recommended to clean stethoscopes regularly with soap and water and disinfect them with a hand sanitizer.

For animals in the Isolation Unit (Category 4), an individual stethoscope is allocated to be used only on that animal and is cleaned and disinfected after the animal is discharged.

Stethoscopes are cleaned and disinfected immediately when they become visibly dirty or after examination of a patient suspected of an infectious disease (Categories 3 and 4).

## **1.14. Approved Detergents and Disinfectants Used within the Framework of National Legislation**

Registration, licensing and sales of disinfectants in Türkiye are subject to the permission of the General Directorate of Public Health of the Turkish Ministry of Health. Therefore, it should be selected from the lists approved by the Ministry of Health (<http://cbs.cevresaglik.gov.tr/cevresaglik/Biyosidal/Dezenfakanlar.aspx>)

According to the regulation published in the 4th recurring issue of the Official Gazette dated 31.12.2009 and numbered 27449, the Ministry of Health divided the first main group of biocidal product types into disinfectants. These products do not include washing liquids, powders and similar products that are not intended to have a biocidal effect.

**Product types within the disinfectant main class are listed as follows;**

**Product Type 1:** Human hygiene: Biocidal products in this group are used for human hygiene; They are products that are applied to or come into contact with human skin and scalp for the primary purpose of disinfection of the skin and scalp.

**Product Type 2:** Disinfectants and algicides not intended to be applied directly to humans or animals: Products used for the disinfection of surfaces, materials, equipment and furniture not used in direct contact with food or feedstuffs. Usage areas: swimming pools, aquariums; air conditioning systems, walls and floors of private, public, industrial

spaces and other areas used for professional activities. These are products used for the disinfection of air, water used for purposes other than human or animal consumption, chemical toilets, wastewater, hospital waste and garbage. These are products used as algicides for the treatment of water used in swimming pools and aquariums and for the reclamation of building materials. These are products used to process textiles, fabrics, masks, paints and other items or materials for the purpose of producing processed goods with disinfectant properties.

**Product Type 3:** Animal hygiene: Disinfectants used for animal hygiene are products such as soaps with disinfectant effect, oral or bodily hygiene products, or products with anti-microbial functions. These are products used for the disinfection of materials and surfaces associated with the housing or transportation of animals.

**Product Type 4:** Food and feed area: Products used for disinfection of equipment, containers, equipment used for consumption, surfaces or pipelines associated with the production, transportation, storage or consumption of food and feed, including drinking water.

**Product type 5:** Drinking water: These are products used for disinfection of drinking water of humans and animals.

**Table 4.** Basic detergents and disinfectants used in veterinary medicine (Linton et al., 1987)

Disinfectants and Dilutions	Organic to the material Effect	Impact Spectrum	Suggestions
<p><b>Chlorhexidine</b> It is used for disinfection of objects in contact with skin or mucosal surfaces (e.g. endotracheal tubes, etc.). It is available in 2%, 4% and 0.5% dilutions in water or alcohol. Contact time: at least 15 minutes.</p>	<p>Decreases Rapidly</p>	<p>Mycoplasma: Very effective Mycobacteria: Variable GM + Bacteria: Very effective GM – Bacterium: A lot effective Pseudomonas: Limited Effect Rickettsiae: Limited Effect Enveloped Viruses: Limited Effect Chlamydiaceae: Limited Effect Non-Enveloped Viruses: Ineffective Fungal Spores: Limited Effect Bacterial Spores: Ineffective Cryptosporidia: Ineffective Prion: Ineffective</p>	<ul style="list-style-type: none"> <li>• Wide antibacterial spectrum however limited effectiveness against viruses</li> <li>• It is used to disinfect materials that patients come into close contact with (endotracheal tube, etc.).</li> <li>• Soaps and detergents take effect quickly reduces.</li> <li>• Low toxic potential; Typical dilutions are not irritating even when contacted with mucosa. It is neutralized by anionic detergents.</li> <li>• Bactericidal activity on the skin is quite rapid.</li> <li>• Permanent effect on the skin reduces regrowth.</li> <li>• Only function at limited pH (5-7) sees. to the fish is poisonous, to the environment should not be emptied.</li> </ul>

<p><b>Povidone Iodine</b> Used for skin decontamination and disinfection (e.g., surgical preparation).</p>	<p>Decreases Rapidly</p>	<p>Mycoplasma: Very effective Mycobacteria: Limited Effect GM + Bacteria: Effective GM – Bacteria: Effective Pseudomonas: Effective Rickettsiae: Effective Enveloped Viruses: Effective Chlamydiaceae: Effective Non-enveloped Viruses: Limited Effect Fungal Spores: Effective Bacterial Spores: Effective Cryptosporidia: Ineffective Prion : Ineffective</p>	<ul style="list-style-type: none"> <li>• Broad spectrum.</li> <li>• Very low toxic potential; Suitably diluted solutions are suitable for use on tissues or on substances that come into contact with skin or mucous membranes. People may become sensitized by skin contact. Dilution of iodophors increases free iodine concentration and antimicrobial activity. Staining of tissues and plastic may occur. Stable in warehouses. It is neutralized by organic residue and feces. Requires frequent application. Caustic.</li> </ul>
<p><b>Alcohol</b> (90% isopropanol or 70% denatured ethanol) Used to disinfect materials (instruments, hand sanitizing solutions, etc.) that come into close contact with people, students, and patients.</p>	<p>decreases</p>	<p>Mycoplasma: Very effective Mycobacteria: Effective GM + Bacteria: Very effective GM – Bacterium: A lot effective Pseudomonas: Effective Rickettsiae: Limited Effect Enveloped Viruses: Effective Chlamydiaceae: Limited Effect Non-Enveloped Viruses: Ineffective Fungal Spores: Limited Effect Bacterial Spores: Ineffective Cryptosporidia: Ineffective Prion: Ineffective</p>	<ul style="list-style-type: none"> <li>• Broad spectrum.</li> <li>• Very low toxic potential</li> <li>• Properly diluted solutions are suitable for materials that come into contact with tissues or skin or mucous membranes.</li> <li>• There is no permanent activity on surfaces.</li> <li>• Fast effective</li> <li>• Does not leave any residue.</li> <li>• Rapid evaporation.</li> <li>• Highly flammable.</li> </ul>
<p><b>Sodium Hypochlorite (Bleach) *</b> It is used for disinfection of clean surfaces, especially to increase the activity of the disinfectant. Dilutions: 1:64 = ¼ cup (2oz) per gallon of water. Suitable for most applications in AtaVet  1:32 dilution = 1/2 cup (4oz) per gallon of water  1:10 dilution = 1½ cup per gallon of water. Limited use - very powerful</p>	<p>Decreases Rapidly</p>	<p>Mycoplasma: Very effective Mycobacteria: Effective GM + Bacteria: Effective GM – Bacteria: Effective Pseudomonas: Effective Rickettsiae: Effective Enveloped Viruses: Effective Chlamydiaceae: Effective Non-enveloped Viruses: High in concentrations effective Fungal Spores: Effective Bacterial Spores: Effective Cryptosporidia: Ineffective Prion: Ineffective</p>	<ul style="list-style-type: none"> <li>• Broad spectrum.</li> <li>• Relatively low toxicity potential with standard dilution, but higher concentrations or prolonged contact may cause irritation to mucous membranes or skin.</li> <li>• Can be used in the presence of anionic detergents; It is not affected by water hardness.</li> <li>• Cheap</li> <li>• Bactericidal activity decreases with increasing pH, low temperature, and the presence of ammonia and nitrogen; This is also important in the presence of urine. It is also neutralized by cationic soaps/detergents, sunlight and some metals.</li> <li>• Chlorine gas can be produced when mixed with other chemicals. Strong oxidizing (bleaching) activity that can damage fabric and is corrosive to strip and aluminum (not stainless steel) metals.</li> <li>• Limited stability in storage.</li> </ul>

<p><b>Quaternary ammonium compounds</b>                  Primary surface disinfectant used in AtaVet (spot disinfection and general disinfection) Dilution: 1/2oz (15ml) per gallon of water = 1:256                  One plastic sample cup (fecal cup) = 4oz                  Contact time: at least 15 minutes.</p>	<p>intermediate level</p>	<p>Mycoplasma: Effective                  Mycobacteria: Variable                  GM + Bacteria: Very effective                  GM – Bacteria: Effective                  Pseudomonas: Ineffective                  Rickettsiae: Limited effect                  Enveloped Viruses: Effective                  Chlamydiaceae: No effect                  Non-enveloped Viruses: Limited effect                  Fungal Spores: Limited impact                  Bacterial Spores: Ineffective                  Cryptosporidia: Ineffective                  Prion: Ineffective</p>	<ul style="list-style-type: none"> <li>• Broad spectrum.</li> <li>• Although irritation and toxicity vary between products, these compounds are generally not irritating and have low toxicity in typical dilutions.</li> <li>• It is passivated with anionic detergents.</li> <li>• Some residual activity after drying.</li> <li>• More effective in alkaline pH.</li> <li>• It becomes less effective in cold weather.</li> <li>• Stable in storage.</li> <li>• It becomes ineffective with hard water.</li> <li>• Neutralized by soaps / detergents (e.g. bleach)</li> </ul>
<p><b>Oxidizing Substances:</b>                  Hydrogen peroxide.                  Hydrogen peroxide is used in all disinfecting footbaths and disinfectant misting (fogging) in the large animal clinic.                  Dilution: 1.3 oz powder (10 grams per liter of water) 1% solution per gallon of water                  Spray bottle: 5 ml powder (5 grams) to 500 ml water (1% solution)                  Contact time: At least 15 minutes</p>	<p>in its class variable, Peroxymono - sulfate and accelerated hydrogen so much for peroxide Good</p>	<p>Mycoplasma: Very Effective                  Mycobacteria: Effective                  GM + Bacteria: Effective                  GM – Bacteria: Effective                  Pseudomonas: Effective                  Rickettsiae: Effective                  Enveloped Viruses: Effective to                  Chlamydiaceae: Effective                  Non-enveloped Viruses: Limited Effect                  Fungal Spores: Limited Effect                  Bacterial Spores: Effective                  Cryptosporidia: Limited Effect                  Prion: Ineffective</p>	<ul style="list-style-type: none"> <li>• Broad spectrum.</li> <li>• The products listed have very low toxic potential, but may cause skin irritation through drying, especially in powders or concentrated solutions.</li> <li>• Other compounds not used in AtaVet may be very toxic (e.g. chlorine dioxide).</li> <li>• There are no harmful decomposition products.</li> <li>• Residual activity on surfaces.</li> <li>• Virkon solutions lose effectiveness within a few days after mixing.</li> <li>• Poor lipid solubility.</li> <li>• It is less active at low temperatures.</li> <li>• It is corrosive to plain steel, iron, copper, brass, bronze and vinyl.</li> <li>• Add powder to water to aid mixing.</li> <li>• Wear a mask and rubber gloves when preparing the solution to prevent irritation.</li> </ul>
<p><b>Phenols</b>                  It is used only for disinfection of instruments and autopsies that may be contaminated with prions (e.g., Chronic Wasting Disease, scrapie).</p>	<p>Very good</p>	<p>Mycoplasma: Very Effective                  Mycobacteria: Variable                  GM + Bacteria: Very Effective                  GM – Bacterium: Very efficient                  • Pseudomonas: Very efficient                  Rickettsiae: Effective                  Enveloped Viruses: Effective                  Chlamydiaceae: Limited effect                  Non-enveloped Viruses: Limited effect                  Fungal Spores: Effective                  Bacterial Spores: Ineffective                  Cryptosporidia: Ineffective                  Prion: Compounds between variable, limited effective</p>	<ul style="list-style-type: none"> <li>• Broad spectrum.</li> <li>• Irritation potential varies among compounds in this class, but phenolic disinfectant products generally should not be used on surfaces that come into contact with your skin or mucosa.</li> <li>• Concentrations above 2% are highly toxic to animals, especially cats.</li> <li>• Its effect is not affected by water hardness.</li> <li>• Some residual activity after drying.</li> <li>• It is effective in a wide pH range.</li> <li>• Non-corrosive.</li> <li>• Balanced in storage</li> </ul>

**Table 5.** Antimicrobial Spectrum of Disinfectants (Linton et al., 1987)

Most Sensitive	Acids (hydrochloric acid, acetic acid, citric acid)	Alcohols (ethyl alcohol, isopropyl alcohol)	Aldehydes (formaldehyde, paraformaldehyde, glutaraldehyde)	Alkalis (sodium and ammonium hydroxide, Sodium carbonate)	Biguanides (Chlorhexidine)	HALOGENS		Oxidizers (hydrogen peroxide, Peroxyacetic acid)	Phenolic compounds	Quaternary Ammonium Compounds
						Hypochlorite	Iodine			
mycoplasma	+	++	+	++	++	++	++	++	++	+
gram- positive bacterium	+	++	+	+	++	+	+	+	++	+
gram- negative bacterium	+	++	+	+	++	+	+	+	++	+
Pseudomonads	+	++	+	+	±	+	+	+	++	-
Rickettsiae	±	+	+	+	±	+	+	+	+	±
Enveloped viruses	+	+	+	+	±	+	+	+	± a	±
Chlamydiae	±	±	+	+	±	+	+	+	±	-
Non-enveloped viruses	-	-	+	±	-	+	±	±	-	-
Fungal sports	±	±	+	+	±	+	+	±	+	±
Picornaviruses (e.g. RMD)	+	N	+	+	N	N	N	+	N	N
Parvoviruses	N	N	+	N	N	+	N	N	N	-
Acid-fast bacteria	-	+	+	+	-	+	+	±	±	-
Bacterial spores	±	-	+	±	-	+	+	+ b	-	-
Coccidia	-	-	-	+ c	-	-	-	-	+ d	-
Prion	-	-	-	-	-	-	-	-	-	-

Sign: ++ highly effective, + effective, ± limited effectiveness, - ineffective, N no information available; a-varies depending on composition, b-peracetic acid is sporicidal, c-ammonium hydroxide, d- some are effective against coccidia.

**Table 6.** Properties of selected disinfectants (Linton et al., 1987)

Disinfectant Category	alcohols	aldehydes	biguanides	Halogens: Hypochlorites	Halogens - Iodine compounds	Oxidized those who act	phenols	quarter Ammonium compounds
<b>Effect mechanism</b>	Precipitates proteins Denatures lipids	Denatures proteins Alkylates nucleic acids	Changes membrane permeability	Denatures proteins	Denatures proteins	Denatures proteins and lipids	Denatures proteins Changes membrane permeability	Denatures proteins Binds phospholipids to the cell membrane
<b>Advantages</b>	Fast effect Does not leave residue	Broad Spectrum	Broad Spectrum	Broad Spectrum Short contact time Cheap	Stable in storage Trustworthy	Broad Spectrum	Effective in the presence of organic matter Non-corrosive Stable in storage	Stable in storage. Does not irritate the skin. Effective at high temperatures and pH (9-10)
<b>Disadvantages</b>	- Fast evaporation - flammable	-Carcinogenic -Mucous membranes and tissue irritation -Use only in well-ventilated areas	-Functions only in a limited pH range (5-7) -toxic to fish (environmentally sensitive)	-Deactivated by sunlight -Requires frequent application -Corrodes metals -Mucous membrane and tissue irritation	-Inactivated by KABs -Requires frequent application -Corrosive -Protects clothing and processed surfaces.	-Damages some metals	May cause skin and eye irritation	
<b>Warnings</b>	Flammable	carcinogenic		Never mix it with add-ons; poisonous chlorine gas will be released			May be toxic to animals, especially cats and pigs	
<b>Vegetative bacterium</b>	Effective	Effective	Effective	Effective	Effective	Effective	Effective	
<b>mycobacteria</b>	Effective	Effective	Variable	Effective		Effective	Variable	Variable
<b>Enveloped viruses</b>	Effective	Effective	Annoyed	Effective	Effective	Effective	Effective	Variable
<b>Non-enveloped viruses</b>	Variable	Effective	Annoyed	Effective	Annoyed	Effective	Variable	Ineffective
<b>Spores</b>	Ineffective	Effective	Ineffective	Variable	Annoyed	Variable	Ineffective	Ineffective
<b>Fungi</b>	Effective	Effective	Annoyed	Effective	Effective	Variable	Variable	Variable
<b>Effect with organic matter</b>	Decreased	Decreased	?			Variable	Effective	Inactive
<b>Effect with hard water</b>	?	Decreased	?	Effective	?	?	Effective	Inactive
<b>Effect with soaps and detergents</b>	?	Decreased	Inactive	Inactive	Effective	?	Effective	Inactive

?: Unknown

### **1.15. Breaking the Cycle of Contagion**

Animals must be walked around AtaVet with appropriate materials such as leashes etc. Pet owners are required to have a dog muzzle with them to be used when requested. Dangerous dogs must be walked with a muzzle on during the entire period they spend on campus.

University staff and students should not bring their pets to AtaVet unless there are medical reasons.

#### **1.15.1. Visitors**

Service to society is one of AtaVet's important duties. That's why AtaVet welcomes many visitors. However, our visitors face the risk of exposure to various factors at AtaVet. Additionally, visitors are potential intermediaries for the spread of infectious agents.

Visitors are prohibited from physical contact with sick animals. Public tours are coordinated through the AtaVet Deanery and guided by trained staff.

Visitors are not allowed into the isolation units.

Visitors must be informed by AtaVet staff about the danger of nosocomial and zoonotic diseases associated with sick animals.

Visitors are not allowed to enter anesthesia rooms, emergency rooms and operating rooms.

Visitors are required to enter education and research laboratories with permission and must be registered in the visitor registry.

Visitors are not allowed to gather in areas where animals are kept.

Visitors are strictly prohibited from consuming food, beverages and smoking in unauthorized areas.

#### **1.15.2. Animal owners in the animal hospital**

Pet owners are allowed unrestricted access to the waiting rooms, restrooms and student cafeteria within the Animal Hospital. Animal owners can be in closed areas outside these units under the supervision of AtaVet staff and students.

may restrict access to patient care and examination areas to minimize the risk of zoonotic or nosocomial infections. In addition, when there are concerns about the safety of the working environment, academic physicians may use their personal discretion and not allow patient owners into patient care and examination areas.

At the discretion of academic physicians, patient owners may be left unattended with their animals in examination rooms, but this is prohibited in units where animals are treated as inpatients. Pet owners should be prevented from contacting other animals.

Pet owners are not allowed to enter the Isolation Unit. Permission may only be granted exceptionally in cases of euthanasia or extreme suffering of the animal. In this case, animal owners should also implement high biosecurity measures.

Animal owners must always comply with the rules regarding animal health and care conditions.

Visiting hours are limited to periods determined by the Animal Hospital units, unless expressly permitted by the clinic manager.

Designated AtaVet staff and students must inform animal owners about the risks of animal hospitalization and zoonotic and nosocomial diseases.

### **1.15.3. Children**

AtaVet poses significant safety and health risks for children. The consequences of a child being exposed to disease agents or injured while at AtaVet are unacceptable.

The Biosafety Commission may restrict children's access to patient care areas when deemed appropriate to minimize the risk of zoonotic infection. In addition, faculty members, at their discretion, may remove children (children under the age of 18) from patient care areas when concerns arise regarding the safety or degradation of the work environment.

Children visiting AtaVet must be supervised by an adult at all times.

Visitors should not touch animals other than their own. This is particularly important for children due to the risk of zoonotic disease and physical injury.

### **1.15.4. Healthy pets**

- There is a significant health and safety risk for non-ill animals at AtaVet. Healthy pets should not be allowed in areas where clinical services are provided except for medical purposes.
- Staff and students must comply with all rules when caring for or walking healthy animals at AtaVet.
- Pets are not allowed in offices, classrooms or cafeterias.
- It is prohibited to place food items inside buildings, in front of buildings and in random areas for stray animals living on Atatürk University Campus, and to store or preserve any commercial or other type of food kept for this purpose in areas where health services are provided. Feeding activities are carried out only at feeding points determined by the Campus Management.
- It is forbidden to take owned and stray animals into common areas such as staff rooms, rest rooms, toilets and dining halls.

## **1.16. Ways of Disease Transmission**

Various disease agents can survive in the air, on surfaces and in organic materials for a long time. Pathogens can be transmitted directly or indirectly from animal to animal, from animal to human, or even from human to animal in various ways. Knowing the routes of disease transmission can help reduce its potential effects.

### **1.16.1. Aerosol contamination**

This form of transmission occurs when infectious agents transmitted between susceptible species are present in the respiratory air. Most pathogenic agents cannot survive in



respiratory air for long periods of time and disease transmission can only occur in susceptible animals. Increasing the distance between animals will reduce the risk of contamination.

Aerosol transmission occurs in areas where animals and/or humans are in close contact. Infectious agents can spread to the environment by becoming aerosolized when animals cough, sneeze or sneeze. During cleaning of infected areas with high pressure water or air, or by direct airflow, infectious agents (e.g., *Coxiella burnetii*) can be re-aerosolized. Temperature, relative humidity and ventilation are important factors in the aerosol transmission of pathogens.

#### **1.16.2. Oral contamination**

Oral transmission involves ingestion of infectious agents through the gastrointestinal tract. It is also possible that aerosolized materials are inhaled and then swallowed through the nasopharynx. Oral transmission occurs when animals lick, bite and eat contaminated objects, as well as drinking contaminated water. Oral transmission of disease agents is usually caused by feed and water contaminated with feces or urine. In humans, oral contact with contaminated hands is an important part of the transmission cycle for oral- fecal agents. Therefore, staff and students who frequently come into contact with animals should pay utmost attention to hand hygiene. Measures such as proper handling and housing of sick animals and proper cleaning and disinfection of feeders and waterers can help control the spread of potential microorganisms that can be transmitted by diarrhea.

#### **1.16.3. Contamination by direct and indirect contact**

For transmission by direct or indirect contact, an animal or human must come into direct or indirect contact with an infected animal or human. Indirect contact transmission occurs through contact with surfaces or materials contaminated for different reasons (e.g. blood, wounds, saliva, nasal secretions or aerosolized respiratory droplets, urogenital secretions, fecal material, etc.). It is important to remember that in clinics, sick animals are likely to become infected with infectious pathogens, and surfaces in areas used by animals are also likely to be contaminated. Therefore, the most important way to reduce contamination through possible direct and indirect contact is to keep sick animals separate and minimize contact with them. It should be noted that not all infected animals may show symptoms of the disease.

#### **1.1 6.4. Fomite contamination**

Fomites are intermediary objects in the contact transmission cycle. In fact, any object can be a fomite, even a caregiver. All objects that can be contaminated with pathogenic factors and play a role in the transmission of infectious diseases: door handle, keyboard, telephone, clothing, thermometer, stethoscope, hose, collar, brush, shovel, etc. It is considered a fomite. An important feature of fomite transmission is that portable objects can be a source of contamination for people and animals in places far from the patient. The most important way to control contamination with fomites is to perform appropriate cleaning and disinfection, apply personal protective measures, separate tools and equipment used on sick animals, and properly identify and separate sick animals. Whenever possible, healthy animals should be examined before treating sick animals showing clinical signs and symptoms.

#### **1.16.5. Contamination with vectors**

Vector-mediated transmission is defined as the transmission of a pathogen by an arthropod from an animal to another animal or human. Heartworm and West Nile viruses are examples of vector-borne diseases. Fleas, ticks, flies and mosquitoes are important biological vectors that transmit diseases. The most effective precaution against vectors is to eliminate or reduce them or remove vectors from the host.

#### **1.16.6. Zoonotic infections**

While the risk of contracting a zoonotic disease in the general population is low on average, veterinarians and other people who come into contact with animals have a high risk of exposure to zoonotic disease agents. In case of exposure to a suspected or detected zoonotic disease, patient owners, veterinarians, students and contact personnel should be recorded and reported to the Biosafety Committee. The head of the Biosafety Committee and the relevant academic physician should contact exposed individuals and work together to apply to official health institutions. When a suspected or diagnosed infectious condition is encountered, the authorized academician should be referred to the hospital for medical support with reports. Likewise, when a zoonotic disease is suspected or diagnosed, the situation should be reported to the Chief Physician and the Chairman of the Biosafety Committee by the main academician physician. The hospital chief physician must provide the occupational physician with specific information regarding zoonotic diseases and occupational exposures. All staff and students should be contacted by health institutions regarding exposure to zoonotic agents. Faculty friends or family members of staff and students should also be informed accordingly, as they are in the high-risk group.

#### **1.17. Special Infectious Disease Risks**

Immunocompromised staff, caregivers, and students are at greater risk for zoonotic diseases. Immune status is affected by many conditions, and people at high risk include: children under 5, pregnant women and the elderly. Diseases and conditions that can damage or alter the immune system; HIV/AIDS, pregnancy, organ failure, diabetes, alcoholism and liver cirrhosis, malnutrition, or autoimmune diseases. The immune system may be adversely affected by certain treatments, such as radiotherapy, chemotherapy, chronic corticosteroid therapy or bone marrow or organ transplants, implanted medical devices, splenectomy, or long-term hemodialysis. There may be social bias for some of these diseases or treatments, making it difficult for people to share individual health information. All staff, including students, must inform the relevant academic staff or the Chief Physician of AtaVet Animal Hospital of any special health conditions (e.g., pregnancy, immunosuppression, etc.) that may affect the risk or consequences of infection with zoonotic agents before intervening with any patient. Care must be taken to maintain the confidentiality of this information. However, it may be necessary to inform the necessary academic staff to take precautions and/or organize normal clinical or educational activities in the hospital.

## **1.17. Risk Communication**

### **1.17.1. AtaVet risk communication in case of infectious disease**

Given the complexity of patient care at AtaVet and the number of people working in this setting, effective communication regarding the risk of spreading infectious disease is essential. Effective and proactive communication regarding patients' actual and potential infectious status reduces the likelihood of spread of potential nosocomial or zoonotic disease. Risk communication for biosafety concerns at AtaVet includes appropriate notification and education of infectious disease-related risks for all individuals who may come into contact with patients with infectious diseases, including zoonotic disease concerns, appropriate precautions needed to limit transmission to staff and students. Appropriate precautions should be taken to disinfect other patients and any areas or materials that may be contaminated.

All animals brought to AtaVet for examination and treatment must be evaluated by academics to determine their risk of infectious diseases. The clinical officer has the authority to appropriately assess the risk of infectious disease transmission and initiate infectious disease control efforts consistent with the Biosafety SOP.

The biosafety committee should be informed of all significant infectious disease hazards (known or suspected). This includes, but is not limited to, zoonotic disease, highly infectious diseases, highly pathogenic diseases, diseases that cause multidrug resistant bacteria or significant resistance patterns (e.g. MRSA or VRE), highly persistent disease agents, routine hygiene. It also includes diseases that are difficult to apply and difficult to disinfect. This notification must be made by the veterinarian who has primary responsibility for the incident. This notification can be made in person or using the link below: [vetfak@atauni.edu.tr](mailto:vetfak@atauni.edu.tr)

Must be appropriately communicated to AtaVet staff, students, and animal owners to effectively manage the threat of infection in humans and animals that may come into contact with a particular patient.

Remember that a patient's infectious disease status may change during their stay in the hospital and risk communication material may need to be updated.

### **1.17.2. Biosafety email list service**

AtaVet uses electronic mailing lists (E-mail Lists) to facilitate communication regarding infectious disease risks in the hospital.

Purpose: To communicate and raise awareness with patients at high risk of infectious diseases and/or zoonotic diseases at AtaVet.

People Sending Emails: Once patients are admitted to isolation, they should be made public.

The recipients of the e-mails are selected from the Biosafety Commission, cleaning staff, technical staff, and staff at the Animal Hospital and Diagnostic Laboratory.

### **1.18. Small Animal, Horse and Ruminant Clinic**

Cages and enclosures (and their surroundings) containing animals with infectious diseases should be clearly marked with infectious disease labels. These signs must contain the following information:

- Category of the disease following the risk classification system (see Table 3)
- Appropriate disinfection procedures to control the disease agent involved.
- Needed personal protection and hygiene practices
- Whether there are any zoonotic health risks
- Name of known or suspected condition
- Staff and students responsible for animals with infectious diseases should ensure that information is provided to others who wish to work with these patients or in their environment.
  - Staff and students responsible for patients with infectious diseases should ensure that information is appropriately communicated to the Biosafety Commission's email list.

### **1.19. Protocol for Registration Staff and Triage Team**

During the admission of an animal to the Animal Hospital, if it is understood that the animal has suspicion/symptoms of infectious disease:

- To minimize the risk of contamination, the animal should be quickly taken to the appropriate coded area or its removal outside the Animal Hospital closed areas should be coordinated.
- Owners should be asked to keep their animals outside until the inspection is carried out. Following the check-up, the clinical condition of the animal should be evaluated as quickly as possible before entering the hospital or applying to the emergency clinic.
  - Depending on the risk category and conditions, the animal may be taken directly to an examination room or into isolation.
  - To keep the risk to a minimum, small-sized animals should be preferred to be transported on a stretcher.

### **1.20. Protocol for Students**

- To reduce risks, a small number of students, determined by the academician, are allowed to monitor consultations/examinations of cases with possible infectious diseases.
  - Once the examination room is vacated, any areas or equipment contaminated with feces and/or body fluids should be immediately cleaned and disinfected by students and/or patient-responsible personnel.
  - Appropriate signs should be placed on the door to prevent use of the room until it has been cleaned and disinfected.
  - Students are responsible for knowing the necessary guidelines (video instructions, course and faculty website) and following the procedures established by this biosafety protocol when referring infectious disease cases.

### **1.21. Criteria for Entry and/or Hospitalization**

- An animal with a notifiable disease cannot enter (and cannot be hospitalised) a hospital.
- If the risks to other hospitalized patients or staff outweigh the risks to the animal itself, the patient may not be admitted.
- Specific rejection criteria for each animal species are listed under the relevant hospital service heading. Only veterinarians (interns are not included in this group) have the authority to reject an animal.

### **1.22. Biosafety Surveillance**

This guideline was created to monitor and detect the spread of infectious disease at AtaVet. Environmental and patient samples are cultured to detect specific microorganisms, disease syndromes potentially associated with general environmental contamination, nosocomial infections and complications. In general, responsible physicians should alert the Biosafety Commission as soon as possible in the following cases:

- Known or suspected hospital infections,
- Suspicious cases of nosocomial infections, even if the clinical consequences are not considered severe,
- Exposure to known or suspected zoonotic infections thought to have occurred through exposure to AtaVet.
- Scholars are encouraged to use appropriate diagnostic tests to determine the etiology of events at the Animal Hospital, even if they do not affect the patient's clinical outcome.
- The availability of infected animals and animals in contact is of great importance for biosurveillance. In AtaVet's animal hospitals, the information of all incoming cases must be completely recorded in the computer-based registration program.

### **1.23. Necessary Diagnostic Tests in Suspected Infections**

Diagnostic testing for the detection of certain infectious and/or zoonotic agents provides information necessary for appropriate clinical management of infected patients. This testing benefits pet owners by allowing them to appropriately manage other animals and protect their families, as well as directly benefiting the patient. Therefore, diagnostic testing is recommended for all hospitalized patients with a reasonable assessment of infection with specific infectious or zoonotic agents. This diagnostic test is essential for case management at AtaVet and therefore in the presence of clinical suspicion, if the animal owner is reluctant to pay for the test; The animal is determined as Category 4 and the subsequent invoice is charged to the customer.

responsible for the patient's care to ensure that appropriate samples are submitted for this testing, and appropriate biosecurity measures are taken with these patients. For this purpose, reference tests defined through algorithms determined by the Ministry of Agriculture and Forestry of the Republic of Türkiye are used.

If there is a reasonable difference in the following diseases or conditions, testing of appropriate samples is mandatory. A full description of testing, management, diagnosis, and possible treatment information is available on WOA's website:

- Animal disease data: <https://wahis.woah.org#/home>
- Terrestrial Animal Health Code: <https://www.woah.org/en/what-we-do/standards/codes-and-manuals/terrestrial-code-online-access/>
- Manual of Diagnostic Tests and Vaccinations for Terrestrial Animals: <https://www.woah.org/en/what-we-do/standards/codes-and-manuals/terrestrial-manual-online-access/>
- Diagnostic Test Book for Aquatic Animals: <https://www.woah.org/en/what-we-do/standards/codes-and-manuals/aquatic-manual-online-access/>
- Aquatic Animal Health Code: <https://www.woah.org/en/what-we-do/standards/codes-and-manuals/aquatic-code-online-access/>
- AtaVet Animal Hospital, special attention should be paid to the following diseases:
  - Acute diarrhea in dogs and cats (Salmonella, Campylobacter, Parvovirus, Cryptosporidium, Giardia)
  - canine distemper Virus
  - Chlamydia psittaci (Bird)
  - Neurological form of herpesvirus type 1
  - avian influenza
  - Toxoplasmosis, Echinococcosis
  - leptospirosis
  - Rabies
  - Crimean -Congo hemorrhagic fever
  - Streptococcus equi subsp equi
  - Salmonella, Brucella, anthrax (Bacillus anthracis) (Large animals)

#### **1.24. Environmental Salmonella Surveillance-Large Animals**

##### **1.24.1. Cage cultures**

- Tables or cages containing Salmonella positive animals should be cultured for bacteria after routine cleaning and disinfection and/or before being used by another patient.
- Responsible technicians or responsible veterinarians must notify the Biosafety Commission of the situation to take samples from tables or cages and work in coordination with the commission and the diagnostic laboratory in this process.
- AtaVet staff must report the situation to the Biosafety Commission following the release of laboratory test results.
- These obtained data should be regularly reported and archived by the Biosafety Commission.

#### **1.24.2. Environmental routine review**

Electrostatic dust collection wipes are used for routine environmental monitoring on smooth floors and hand contact surfaces throughout the hospital. Sampling should be planned every 6 months in each region and for areas more frequently contaminated with Salmonella (isolation every 3 months).

AtaVet personnel responsible for the positive site must immediately report a positive culture result to the Biosafety Commission.

These data should be summarized regularly and reported to the Biosafety Commission.

#### **1.25. Management of Patients Infected or Colonized with Resistant Bacteria**

Patients infected with bacteria resistant to major antimicrobial drugs or multiple drug classes pose a potential health hazard to AtaVet staff, students, pet owners, and other patients. Therefore, at AtaVet they are managed with high biosecurity measures (Category 3) to prevent spread.

#### **1.26. Antimicrobial Resistance and Antimicrobial Drug Use**

Antimicrobial resistance is one of the most important issues of the 21st century. Any aggressive infection control program must consider the significant impact that antimicrobial resistance may have on the ability to provide quality medical care. The Biosafety Commission is responsible for monitoring antimicrobial drug use at AtaVet and promoting strict use practices that help maintain the usefulness of antimicrobial drugs. A laboratory regularly summarizes antimicrobial resistance patterns among frequently isolated bacteria and prepares this report.

NOTE: These results summarize the results of samples submitted to the diagnostic laboratory and therefore represent the first sample of diagnostic results for bacteria found in animal populations. Therefore, the isolates represented by this report are thought to be more resilient than those encountered in average animal populations.

#### **1.27. Notifiable Animal Diseases in Türkiye**

AtaVet's policy and is required by law to investigate the possibility of any notifiable disease and report it to the Ministry of Agriculture and Forestry (Provincial Directorate of Agriculture and Forestry). When a notifiable animal disease is diagnosed or suspected, the Chairman of the Biosafety Commission or the hospital manager should be contacted as soon as possible. The responsible physician must be contacted directly.

Notifiable diseases published in the Official Gazette (Resmi Gazete) dated 22.01.2011 and numbered 27823 and renewed when necessary are as follows:

##### **1.27.1. Diseases of land animals**

1. Alum (FMD)
2. Bovine brucellosis
3. Bovine tuberculosis

4. Rabies
5. Bluetongue disease
6. Rinderpest
7. Bovine spongiform encephalopathy (BSE)
8. Sheep and goat brucellosis
9. Sheep and goat plague (PPR)
10. Sheep goat flower
11. Anthrax
12. Scrapie
13. Chicken plague (Avian influenza)
14. False chicken plague (Newcastle)
15. Pullorum
16. Poultry typhoid (Chicken typhoid)
17. Glanders (Dumbhead)
18. Durin (Horse syphilis)
19. Infectious anemia of horses
20. Equine encephalomyelitis (all types, Venezuelan equine including encephalomyelitis)
21. African horse plague
22. African swine fever
23. Classic swine fever
24. Vesicular disease of pigs
25. Small hive worm (*Aethina tumida*)
26. American foulbrood of bees
27. *Tropilaelaps* mite
28. Feline spongiform encephalopathy (FSE)
29. Nodular exanthema of cattle (Lumpy skin)
30. Infectious stomatitis (Vesicular stomatitis)
31. Rift Valley fever
32. Contagious bovine pleuropneumonia
33. Enzootic bovine leukosis
34. Epizootic hemorrhagic disease (EHD) of deer



### **1.2 7.2. Diseases of aquatic animals**

1. Epizootic hematopoietic necrosis
2. Epizootic ulcerative syndrome
3. Viral hemorrhagic septicemia (VHS)
4. White spot disease
5. Yellowhead disease disease)
6. Taura syndrome (Taura syndrome)
7. Infectious hematopoietic necrosis (IHN) of fish
8. Infectious salmon anemia salmon anaemia)
9. Perkinsus marinus infection
10. Microcytos mackini infection
11. Marteilia refringens infection
12. Bonamia ostreae infection
13. Bonamia exitiosa infection
14. Koi herpes virus disease
15. Spring Viraemia of Carp (SVC)
16. Crayfish plague
17. Bacterial kidney disease (BKD)

### **1.28. Required Samples and Diagnostic Tests**

For appropriate sampling and diagnostic techniques for reportable diseases, consult:

- Animal disease data: <https://www.woah.org/en/?s=&search=maladies>
- Manual of Diagnostic Tests, Vaccinations and Aquatic Animal Health Code for Terrestrial/Aquatic Animals: <https://www.woah.org/en/?s=&search=normes>

### **1.29. Recommendations for Disease Control and Animal Trafficking**

For advice on disease control and trade:

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

### **1.30. Animals Used for Education and Research**

Staff and students using educational and research animals at AtaVet must adhere to all applicable biosecurity measures.

Approval must be obtained from the AtaVet dean before these activities begin.

Training and research animals cannot be kept in the sections of the Animal Hospital where sick animals are kept, except for extra circumstances and medical reasons.

# BIOSECURITY GUIDE

## CHAPTER 2



**VETERİNER FAKÜLTESİ**  
Faculty of Veterinary Medicine

**ANIMAL HOSPITAL**  
**BIOSAFETY RULES**



## **2. ANIMAL HOSPITAL BIOSAFETY RULES**

### **2.1. Biosafety Rules for The Ungulate Clinic**

#### **2.1.1. Admission, examination and hospitalization of sick animals**

- The animal owner should be asked to register first. After the registration process, a quick clinical examination should be performed by an intern or academics to determine whether the animal is in a certain risk class. According to the results of the classification, the animal should be sent to the parking lot, taken down and directed to the examination room or isolation unit.
- After the examination, a paddock should be designated by the academician and the staff in charge for patients who are decided to be hospitalized.
- The records of the admitted patient (clinical findings, treatment procedures, etc.) should be recorded on the patient information forms posted in front of the paddocks. These records should be consultable by students, interns and academics. Changes in the patient's condition during hospitalization should be written on the information forms.
- Medicines or other supplies used in the treatment of patients should be kept in the pharmacy (medicines and other medications) or in a small cabinet attached to the wall of the paddock (ophthalmologic supplies, creams/pomades, alcohol and syringes). Patient information sheets on the wall of the paddock should indicate treatment instructions.
- A card indicating the category of disease the patient has should be placed in the paddock and on the unit. This should be mandatory for students and staff to ensure that the infectious disease is better recognized, and precautions are taken with the patient.
- Which grass and/or concentrated feed the inpatient eats and the frequency of eating should be clearly written on the paddock card.
- Students, interns and academics should be responsible for bedding in paddocks and feeding of patients.
- Full paddocks should be cleaned every morning by the hospitalization staff and new litter should be spread with straw or sawdust. If at other times the paddock is found to be damp or wet, the student, academic or technical staff member should be responsible for cleaning and laying new litter.
- If hospitalized patients or staff are at risk of contracting disease, this is far more important than the animal's own health and the animal should be refused entry or hospitalization.

#### **2.1.2. General rules for the single hoof examination hall**

- It must be mandatory for all personnel to wear clean and appropriate clothing for their work.
- Students, interns and faculty must wear scrubs or overalls with name badges attached. If they do not have appropriate clothing, they must be removed from the clinic. Cleaning staff and technical staff should also be required to wear clothes with name badges.

- All staff should be required to always wear durable boots or shoes. Footwear should be easy to clean and disinfect.
- Students, interns, or academicians who are in charge of the examination of the patient should first wash their hands with soapy water before and after the examination of the patient and then clean them with an alcohol-based hand sanitizer.
- Clean examination gloves should be worn when handling high-risk patients (e.g. suspected infectious diseases or newborn foals) or before handling secretions, discharge and wounds.
- Hand washing should be mandatory after wound treatment, bandage changes, ophthalmologic care, catheter insertion, endoscope application and contact with high-risk patients. Hands should also be washed in other situations where hands are contaminated.
- After the examination, the instruments and equipment used in the patient examination (stethoscope, thermometer, probes, endoscopes, etc.) must be cleaned and disinfected before being used on another patient.
- Any residual materials generated in this area during the examination should be disposed of in the medical waste bags in the waste bins in the hall, cutting, piercing and stabbing materials (scalpels, syringe tips and cannulas) should be collected in special yellow boxes, and if feces or secretions contaminate the floor, these parts should be cleaned and disinfected as soon as possible by the staff responsible for the patient. This should be especially important for patients suspected or known to shed important infectious agents.
- All staff and students must leave the materials in their original condition after use. All staff working in the hospital should be responsible for maintaining the cleanliness of the hospital and proper hygiene of the staff.
- Students and staff should be prohibited from consuming any kind of food and drink in the examination rooms.
- Before leaving the examination room, gloves and disposable aprons should be thrown into the appropriate waste bins and hands should be washed again.

### **2.1.3. Single hoofed hospitalization unit, cleaning and maintenance of the unit**

- Single-hoofed animals with infectious or non-infectious diseases (no fever, no respiratory problems, no fever and respiratory problems in the last 6 months, trauma and injuries, colicky patients, ophthalmological patients, newborns without infectious diseases) caused by agents that are not likely to be transmitted to other animals and do not pose a risk of infection in humans should normally be hospitalizable.
- Paddocks for the care of lying animals should be identifiable by the academician and staff on duty.
- Disinfectant foot baths must be used when entering and leaving the hospitalization unit. Therefore, waterproof shoes should be worn.
- If it is decided to hospitalize a single-hoofed animal, feces and soiled waste must be removed from the environment before the animal is taken to the paddock.

- The litter in the paddocks should be collected daily by the personnel in charge and replaced with new litter. There is a garbage bin in a suitable place outside the paddock and care should be taken to prevent garbage from overflowing.
- Paddocks and hospitalization corridors must be cleaned and regularly disinfected every day by the staff in charge of hospitalization. When there is soiling in the paddocks outside the working hours of the staff on duty, students, interns and/or academicians should remove feces and wet/dirty litter and lay new litter.
- In the presence of newborn animals, patient hygiene is much more important, and the accumulated feces and litter should be removed from the area as soon as possible by the intern / student / staff on duty.
- Waste materials generated during the examination of an inpatient should be thrown into the medical waste bags in the garbage bins in the corridor, and cutting, piercing, and stabbing materials (scalpels, syringe tips and cannulas) should be collected in special yellow boxes.
- Feeders and drinkers in the paddocks should be checked regularly and cleaned before a new patient is admitted. The information on whether the hospitalized patient consumes feed or water should be reported to the responsible academician and if the patient does not eat the feed, the feed should be removed from the feeder.
- Animals taken to the paddock should be cleaned daily, groomed regularly, and their secretions and discharges should be removed from the paddock as soon as possible. Stool and urine in the paddock should be removed immediately.
- If the vacated paddock belongs to a horse with an infectious disease, the paddock must be indicated as "to be disinfected" by the paddock intern/cleaning staff. If the infectious agent is known or suspected, effective disinfectant should be determined, and disinfection should be applied as soon as possible.
- Cleaning materials used for patients in the non-risk group should be disinfected once a week, while cleaning materials used for patients at known or known risk of infectious diseases should be cleaned and disinfected after use.
- The floors of the feed rooms in the hospitalization unit must be cleaned and disinfected before new feed sources are brought in. All cereals or other feed sources should be stored in containers with tight lids.
- Washbasins in corridors, general treatment areas, examination rooms must be cleaned and disinfected with a suitable disinfectant by technical staff or staff on duty.
- Areas that are not used daily (wall tops, windowsills, etc.) should be washed monthly to prevent dust accumulation.

#### **2.1.4. Isolation unit**

- Special precautions should be required when managing patients known or suspected to be infected with infectious disease agents. Due to the potential for nosocomial transmission, patients with acute gastrointestinal disorders (e.g. diarrhea without fever and/or leukopenia), acute respiratory infections, acute neurological disorders or abortion, dermatophytosis, dermatophilosis, etc.) should be isolated separately from the general hospital population.

- Academics, interns or students should perform an initial physical examination on these patients to assess the risk of infectious diseases.
- Staff should take personal protective care measures when examining these patients until they are satisfied that there is no risk of infectious disease.
- The Biosafety Commission should be informed immediately when patients are identified as being at high risk of infectious diseases or when these problems develop during hospitalization. Only the Biosafety Commission or the Chief Hospital Physician should be authorized to authorize the isolation of patients known or suspected to be at high risk of infectious diseases.
- Barrier protection measures should always be used for this class of patients. The doors of the paddock unit where these patients stay should be closed and cordoned off. Cleaning staff and/or academics must be responsible for observing all dress codes in the isolation unit.
- Entry to these units should be avoided unless necessary. Responsible academics may make a personal decision to allow students to enter the paddock for educational purposes, but this should be kept to a minimum and all entering staff should take appropriate protective measures.
- Disposable gowns and gloves should be worn. Thermometers, stethoscopes and other tools and materials used should be cleaned and disinfected by wiping with alcohol. Materials such as used aprons and gloves should be disposed of.
- During the examination of patients in the isolation unit, waste materials generated in this area should be thrown into the medical waste bags in the garbage bins in the unit, cutting, piercing and stabbing materials (scalpels, injector tips and cannulas) should be collected in special yellow boxes, feces or secretions should be cleaned as soon as possible by the staff responsible for the patient and the floor should be disinfected.
- The patient's nails should be scrubbed with 0.5% chlorhexidine solution prepared before the patient is removed from isolation. Personnel transporting the patient should be required to wear all appropriate clothing and take barrier precautions. Personnel in contact with the patient should avoid contaminating areas such as doors, exits, etc. with contaminated gloves or hands during patient transport, and contact surfaces should be effectively cleaned and disinfected to minimize the possibility of nosocomial transmission.
- Diagnosis and treatment procedures to be performed in the main hospital building for isolation patients should be planned for the end of the day. All instruments and equipment used for examination should be cleaned and disinfected according to the relevant procedure after the procedure.
- Cleaning and disinfection of surfaces contaminated with feces or body fluids during patient transport should be carried out very quickly.

### **2.1.5. Single claw anesthesia area and surgical unit**

#### **2.1.5.1. Anesthesia field**

- The anesthesia preparation area should be designed to facilitate the entry of students, staff and academics into the operating room.
- Patients' feet should be thoroughly brushed or washed before entering the anesthesia area. The patient's feet should be rinsed outside the induction area. For unusual emergency operations, the patient should be cleaned as much as possible.
- Barrier protective measures should also be taken in this area and fecal material should be urgently removed from the anesthesia preparation area or other areas of the surgical unit.
- If possible, apparatus on ungulates should be removed before entering this area.
- The agents required for intravenous administration must be prepared aseptically and the catheter must be inserted aseptically in accordance with the technique. Clean gloves should be worn for this procedure.

#### **2.1.5.2. Surgical unit**

- A high standard of cleanliness and hygiene must be maintained in the single hoof surgery unit.
- All staff must comply with all dress codes in the surgical unit. All staff must wear shoe covers (overshoes) or shoes designated for use in "clean" surgical areas.
- The surgical team and the operating room should be prepared aseptically. Aseptic techniques must be maintained during surgery. Personal, patient and environmental hygiene standards in surgical and perioperative areas should be at the highest level.
- All auxiliary and technical materials used during and after the surgical procedure (e.g. anesthesia machines, endotracheal tubes, shackles, etc.) must be cleaned, disinfected and sterilized at the end of the procedure. Blood and other dirt on the floor must first be washed and then wiped with disinfectants.
- Cutting, piercing and stabbing materials (scalpels, syringe tips and cannulas) used during the surgical procedure should be collected in special yellow boxes, feces or secretions should be cleaned as soon as possible by the personnel responsible for the patient.
- Doors must always be closed during, during and after the operation.
- The tools and equipment in the hall and sewage channels should be cleaned and disinfected once a week when the operation is not performed.

#### **2.1.5.3. Management of surgical patients with infectious diseases**

- Fellows and interns assigned to surgical cases should have the responsibility to identify and inform cases with known or suspected infectious diseases.
- Procedures for these cases should be planned towards the end of the day or, as far as possible, in the isolation unit.
- Faculty and students assigned to these cases should be responsible for reporting that the anesthesia area and reanimation room are contaminated with potentially



infectious pathogens. This should ensure that these areas are properly disinfected before being used by other patients.

- When the patient leaves the room, the floor of the room should be cleaned and disinfected.

#### **2.1.6. Discharge of patients**

- Animals that have recovered as a result of the treatment procedures applied should be discharged and the date of discharge should be written in the patient record section.
- When the patient is discharged, the patient card in the paddock should be changed, it should be stated that the patient will not be hospitalized and all records should be collected in the patient registration unit.
- Emptied paddocks should be cleaned (feces and wet litter removed) before a new patient is brought in, while paddocks where patients with suspected or known infectious diseases are staying should be designated with a note **"to be disinfected"**. No other animals should be allowed to enter this paddock before cleaning and disinfection.
- When the patient is discharged, all the materials used on the patient (halter, rope, blanket, etc.) should be cleaned and disinfected with chlorhexidine solution.
- All medical supplies to be disinfected should be placed at the entrance of the units, then the relevant staff should collect these supplies for cleaning and disinfection and subsequent storage.

#### **2.1.7. Deceased patients**

- Patients who die during hospitalization should be reported by the relevant staff to the person in charge.
- When the patient dies, the paddock card should be replaced, and all records should be collected in the patient registration unit.
- Paddocks used by deceased patients must be cleaned (manure and wet bedding removed) before a new animal enters the paddock. However, paddocks used for patients with known or suspected infectious agents should be marked with a **"to be disinfected"** sign. No other animals should be allowed to enter these paddocks before cleaning and disinfection.
- When the animal dies or is euthanized, the cadaver should be removed from the paddock as soon as possible (on the same day on weekdays, in the evening or the next morning on weekends) and taken to the necropsy department in a sheltered transport vehicle.
- If the animal was euthanized in the reanimation room, the cadaver should be removed from this room as soon as possible. The reanimation room should then be cleaned and disinfected.
- If possible, the animal should be euthanized in the necropsy hall.
- After transportation of a cadaver, the sheltered transport vehicle must be thoroughly cleaned and disinfected in the necropsy department.

### **2.1.8. Visits to Animal Owners**

- Whatever the reason, animal owners should not be allowed to stay overnight in the hospital with their patients.
- Only after obtaining permission from the hospital administration and being accompanied by a staff member should they be allowed to visit their patients within the specified hours.
- Owners must comply with all barrier protection measures necessary to touch their animals or enter the paddocks.
- The general public, except owners, should not be allowed to enter the hospitalization areas of the hospital.
- Visiting patients in the isolation unit is prohibited. In exceptional cases, such as euthanasia, this should be permissible, provided that biosecurity measures are in place.

## **2.2. Biosafety Rules for Farm Animal Clinic**

### **2.2.1. Dress code for farm animal clinic**

#### **2.2.1.1. Boots and clothes**

- In the Farm Animal Clinic, all students, and all categories of staff in the patient examination/treatment care area must wear washable, clean boots. Boots must be strong enough to protect the foot against trauma.
- Boots should not be worn in offices and classrooms and should not be worn in non-clinical areas.
- Staff and students without boots are not allowed in the clinic.
- Boots should be cleaned and disinfected regularly or when visibly soiled or contaminated. Each clinic should have a hygiene unit for washing and disinfecting boots without using hands.
- The owner or keeper who helps to restrain the animal must comply with these rules.
- To prevent the transmission of infectious agents to humans and animals outside the clinic, it should be mandatory to wear a clean apron during procedures in the clinic.
- Aprons should be changed every day or when soiled/contaminated.
- The Animal Hospital should be responsible for washing the aprons of the staff and the students should be responsible for washing the aprons of the students. Washing should be done at 60-90 C.

#### **Clothing in Surgical Procedures:**

- All staff and students must wear a clean operating room gown.
- Clean and easily disinfectable, waterproof gowns should be worn for laparotomic operations on standing cattle.
- A clean white gown should be worn over the operating room gown when intervening in preoperative and postoperative patients.

### **2.2.2. General Cleaning and Hygiene**

- Hands should be washed properly and disinfected with alcohol-based hand sanitizer before and after examining each patient.
  - Clean gloves should be used when examining and treating high-risk patients such as infectious diseases or newborn calves.
  - Surfaces and equipment contaminated with feces, urine, blood and other secretions must be immediately cleaned and disinfected by designated personnel.
  - Boots should be properly cleaned and disinfected.
  - Rumen probes, padanes, endoscopes and thermometers should be disinfected after use before being used on another patient.
  - Instruments such as buckets, probes, funnels, speculum should be cleaned after each use and disinfected with 0.5% chlorhexidine. Instruments suitable for sterilization should be sent for sterilization.
  - Wheels and sides of equipment contaminated with feces or patient discharges should be cleaned and disinfected.
  - Desks, tables and floors in meeting rooms or classrooms open to students must be always kept clean.
  - Rectal thermometers, stethoscopes, hemostats, and scissors used in the clinic should be disinfected with 70% isopropyl alcohol or 0.5% chlorhexidine before use on each patient.

#### **2.2.2.1. Cleaning of patient paddocks**

- Sick animals should be housed in paddocks where basic hygiene is ensured.
- The litter must be changed before admitting a new patient.
- The staff in charge of this work should wash the paddocks and halls twice a day.
- Feces or wet litter in the newborns' stalls should be removed immediately.

#### **2.2.2.2. General disinfection protocol of contaminated paddocks**

- Gloves or similar protectors must be used when using disinfectants. Latex gloves used in patient examination should be sufficient for this task. Other protective equipment such as laboratory goggles or face shields should be used in situations where splashing is likely, such as when using pressurized water.
  - All feces and litter material must be removed before starting disinfection. If pressurized water is to be used, care should be taken as splashes may contaminate other areas.
  - Walls, doors and floors should be washed with a brush using soap or detergent. Scrubbing or similar mechanical cleaning should be very important to remove any film or residual dirt.
  - Rinse surfaces thoroughly after cleaning with detergent. Care should be taken to ensure that no detergent residue remains. These residues should be able to eliminate the effectiveness of disinfectants.
  - Before applying the disinfectant, care must be taken to ensure that no puddle remains. This puddle should be able to dilute the disinfectant solution.

- All surfaces should be washed with the appropriate disinfectant (e.g. 15 minutes with quaternary ammonium compounds prepared at the appropriate concentration) and kept in contact with the surface for the appropriate time.
- At the end of the period, the disinfectant should be rinsed off.
- After disinfection, the clothes used by staff should be removed and hands washed.
- Multi-purpose areas where animals are examined and treated, such as examination rooms, should be cleaned and disinfected by the personnel responsible for cleaning and disinfection according to the same principles.

#### **2.2.2.3. Boot baths and antimicrobial mats**

- The solutions of these baths or mats must be changed every morning by the staff or interns in charge.
- If the solution becomes excessively contaminated or reduced in quantity, it should be replaced immediately.
- In boot baths, it is essential that the boot is completely immersed. Therefore, make sure that there is sufficient solution.
- Staff and students should wear waterproof shoes or boots.

#### **2.2.2.4. Disinfection protocol for tools and equipment in clinics**

- All instruments and equipment (probes, scissors, knives, stethoscopes, thermometers, endoscopes, shavers, speculums, etc.) used on different patients must be disinfected before use when moving from patient to patient.
- Surgical materials sterilized before use should be cleaned with soapy water after each use, disinfected with 0.5% chlorhexidine, and then sent to the sterilization unit.

#### **Stethoscopes:**

- Stethoscopes owned by academics and students can be used in non-infectious areas and should be regularly disinfected with alcohol or hand sanitizers. They should be disinfected immediately if there is visual dirt or if there is a suspected risk of classroom 3-4 infection.
- Stethoscopes belonging to the faculty should be available for use in the examination of high-risk patients. These stethoscopes should be cleaned and disinfected immediately after use.

#### **Thermometers:**

- Glass thermometers should not be used in the Farm Animal Clinic due to the risk of breakage and mercury contamination.
- Electronic thermometers should be used. Wipe with alcohol or chlorhexidine wipes or cloth/cotton after each use.
- Thermometers used in animals with suspected high-risk enteric infections such as BVD, Salmonellosis should have boxes.
- There should be a separate thermometer for patients with suspected class 4 infection.

**Other equipment:**

- Other equipment such as scissors and hemostatic forceps used on patients should be disinfected with 70% isopropyl alcohol or 0.5% chlorhexidine.
- Desks, counters, sinks, floors, meeting rooms in clinics should always be kept tidy and clean.
- Students should not have bags in the clinics. They should keep their bags in their own lockers.

**Food and drinks:**

- Food and drink must not be allowed anywhere in the Farm Animal Clinic.
- The pharmacy is included in this prohibition. Food must be available for eating in the lounges.

**2.2.3. Patient Admission in farm animal clinic**

**2.2.3.1. Outpatient admission**

- Patients who do not show symptoms of a notifiable disease must be directed directly to the landing ramp. Transportation vehicles should not be left in front of the hospital in a way that prevents entry and exit.
- Outpatients can be watered with disinfected buckets belonging to the faculty but should not be fed. Buckets should be cleaned and disinfected with chlorhexidine after each use.

**2.2.3.2. Inpatients**

- The paddock where the patient will sleep should be determined by the clinic staff.
- The animal's halter and ropes should be sent home with the owner.
- After the patient enters the paddock, a paddock card containing the following information should be prepared and placed at the paddock entrance.
  - Patient/animal owner information
  - Names of responsible students and academicians
  - Detected or suspected contagious infectious disease
  - Feeding instructions
  - Unless restricted by academics, every patient should be given clean tap water.
  - Treatment/instruction cards must be available at the paddock gate.
- It should be the duty of the clinical staff or the assigned student to carry out the feeding instruction.
- The paddocks should be cleaned every morning by the clinic staff or the student in charge and new litter should be laid when necessary.

**2.2.3.3. Allocation of paddocks**

- Paddocks in the hospital must be pre-allocated for adult cattle, bedridden cows and calves.

- Appropriate paddocks should be allocated for animals suspected of Class 3 infection.
- Patients with suspected Class 4 notifiable diseases should be housed in isolation (quarantine).

#### **2.2.3.4. Feed and water**

- All grain feed and feed additives should be stored in tightly closed plastic containers.
- Minimal litter, roughage and concentrated feed should be available in the animal hospital to reduce the likelihood of contamination and prevent wild animals from nesting.

#### **2.2.3.5. Underlay**

- When patients arrive, it should be the duty of students, patient care staff and academics to lay the mat on the padding.
- The paddock in use should be cleaned by the paddock staff in the morning and evening and new litter should be laid.

#### **2.2.3.6. Launch Ramp/Parking area**

- The landing ramp should be cleaned once a day. It should also be cleaned immediately if animals defecate or urinate.
- Covered passage areas (hallways or passages between buildings) should be swept and disinfected twice a week.

#### **2.2.3.7. Examination area**

- The area contaminated with feces, urine, blood, saliva or secretions must be cleaned and disinfected immediately by the personnel in charge.
- Academics on duty must ensure that cleanliness is maintained in this area.

#### **2.2.3.8. Hospitalization unit**

- From Monday to Saturday, the staff on duty must change the litter in the morning and evening.
- On Sundays or holidays, on-call staff should take on this task.
- Patients should be fed with hay and concentrated feeds by staff, milked in the morning and evening unless otherwise stated, and hospital halls swept after morning feeding.
- All grain feed and concentrates should be stored in plastic containers with lids (e.g. clean garbage drums).
- Equipment whose wheels or sides are contaminated with faeces must be cleaned and disinfected before leaving the hospitalization unit.

### **2.2.3.9. Routine paddock cleaning**

#### **2.2.3.9.1. General principles of cleanliness**

- The principle to remember with disinfectants is that applying more disinfectant than necessary does not provide much benefit.
- It should be known that the use of appropriate dilutions of disinfectants provides optimum disinfection.
  - Overuse of disinfectants should trigger resistance and biofilm formation.
  - For disinfectants to be effective, surfaces must be clean.
  - Biofilms form where water puddles and where disinfectants are applied to contaminated surfaces.
- Care should be taken when working in high-risk areas to avoid the possibility of contamination.

#### **2.2.3.9.2. General procedures for cleaning the paddocks used by the patient**

- All litter material should be disposed of in the waste bin.
- Dust and other small items on the floor should be swept away.
- Wash floors and walls with water and clean dirty areas with detergent and a brush.
  - The entire paddock should be rinsed.
  - Paddock floors and walls should be disinfected with quaternary ammonium compounds.
    - The paddock should then be left to dry.
    - Adjacent areas and halls should be cleaned and disinfected in the same way.
    - Tools and equipment used in cleaning should be cleaned and disinfected daily.

#### **2.2.3.9.3. Cleaning and disinfection when there is a patient in the paddock**

- Overalls should be worn when cleaning.
- Appropriate waste bins should be used.
- Care should be taken to ensure that sick animals do not come into contact with garbage bins.
  - Cleaning materials should be cleaned and disinfected as necessary when moving from one paddock to another.
  - Waste bins used for food animals should not be used in the Ungulate Clinic. The reverse should also apply.

#### **Weekly routines:**

- The floors of feed stores should be cleaned (sweep, rinse, scrub with detergent and rinse).
  - Sewage drains in sinks and halls should be cleaned and disinfected with quaternary ammonium compounds.
  - Paddocks that have not been used for the last 1 month should be washed with pressurized water against dust accumulation.

#### **Monthly routines:**

- Areas that are not used frequently (upper parts of walls, scales, etc.) should be washed with pressurized water against dust.
- The tools used in cleaning and disinfection must be maintained.

#### **6-month routines:**

- All surfaces in the hospitalization area, whether frequently used or not, should be cleaned and disinfected with quaternary ammonium compounds.
- Calf boxing should be cleaned and disinfected from head to toe with a brush and detergent.
- Sewage drains in isolation units should be cleaned and disinfected.

#### **Annual routines:**

- The entire hospital should be cleaned and disinfected once a year from top to bottom, including all equipment.

#### **General cleanliness:**

- The wheels of tractors or forklifts should be scrubbed with quaternary ammonium compounds before entering and before leaving the hospital.
- When using a sheltered transport vehicle to take deceased animals to necropsy, the vehicle should be thoroughly cleaned and disinfected before returning to the hospital.
- Pest control should be ensured in feed storage rooms.

#### **Routine inspection of environmental contamination (Surveillance):**

- The floor and hand contact surfaces should be analyzed for the presence of Salmonella every 6 months and isolation units more frequently.
- Positive results should be reported to the hospital Biosafety working group.

#### **2.2.3. Management of Patients with Suspected Infectious Diseases**

- Special precautions should be applied in the management of patients with identified or suspected infectious diseases. Particular attention should be paid to acute gastrointestinal diseases, acute respiratory diseases, BVD, bacterial infections with multiple antibiotic resistance.
- Patients at high risk of infectious diseases should be treated as outpatients or hospitalized in an isolation unit.
- When a patient at risk of infectious diseases is admitted to the inpatient ward, appropriate preventive medicine rules should be applied.
- Examination of animals with infectious enteric, respiratory disease, suspected BVD should be done in a transport truck or trailer used as an ambulance. The examining academics should be responsible for deciding whether the patient should be hospitalized and/or admitted for treatment.

#### **2.3. Biosafety Rules for Small Animal Clinic**



- All academics, students and hospital staff should be required to observe basic hygiene rules and personal self-protection. All staff working in the Cat and Dog Clinic must be responsible for maintaining cleanliness.

### **2.3.1. General Clothing**

- All staff and students should wear hospital-specific clothing to reduce the risk of carrying infectious diseases.
- All staff and students must have clean clothes and wear clean and appropriate footwear. Shoes must be closed, easy to clean and disinfect.
- Protective clothing (gowns, etc.) and footwear should be changed or cleaned when contaminated with stool, urine, blood, nasal exudate and other body fluids.

### **2.3.2. Patient hygiene**

- Cage hygiene should be of utmost importance for the patient staying at the Cat and Dog Clinic. Stool, blood, urine, all organic material and dirt should be removed before a new animal enters a cage. The staff responsible for cleaning should clean the cages and corridors every day. When dirt is seen in the cage, a "To be cleaned" notice should be posted in the cage. Since hygiene is very important for newborns, the cage should be cleaned and disinfected when stool or wetness-moisture is detected in the litter.
- If the animal is discharged, the cage should be cleaned as soon as possible.
- The cage of an animal with an infectious disease or suspected infectious disease should be marked "To be disinfected". Cleaning staff should empty, clean and disinfect the cage as soon as possible. Until the cage is disinfected, it should be considered an infectious area, and no animals should enter before the cleaning-disinfection process.
- Cages used by animals that do not carry infectious diseases should be emptied, cleaned, and disinfected regularly. Cages should be cleaned and disinfected between the use of different animals and at least once a day.
- During the animal's hospitalization, feed and water bowls should be cleaned regularly (as needed or at least twice a day) and cleaned and disinfected between use by different animals. The water in the water bowl should be checked regularly and the bowl should be filled with fresh water at least twice a day after cleaning. The animal's appetite should be noted daily on the patient card. Food should be placed in appropriate containers for the animals (this includes the use of different colored containers for infectious and non-infectious patients).
- Animals should be kept as clean as possible, and all discharges and secretions should be removed. Dirty animals should be washed, and all animals should be regularly combed.
- The area around the cage should be clean and tidy. There should be no treatment material, cage mat, student-worker clothes, etc. around the cage.
- If the animal defecates outside the cage, the stool should be removed immediately. If the animal urinates inside the building or on a hard floor, the urine should be removed immediately and the floor should be cleaned, disinfected and dried.

### **2.3.3. Food and liquid consumption**

- Food and liquids must not be consumed by humans in the Cat - Dog Clinic. Food and liquids must not be allowed to be stored.

### **2.3.4. General cleaning and hygiene**

#### **2.3.4.1. Proper cleaning**

- All staff and students must be responsible for their personal hygiene and the cleanliness of the Dog and Cat Clinic.
- Hands must be cleaned or washed with an alcohol-based hand sanitizer before and after contact with each patient. Hands must also be cleaned or washed in the same way when leaving the Cat and Dog Clinic.
- Clean examination gloves should be worn when handling high-risk patients, such as those at risk of infectious disease or immunocompromised animals. Clean examination gloves should also be worn when handling discharge, secretions or wounds.
- Surfaces or equipment contaminated with stool, secretions and blood should be cleaned and disinfected.

#### **2.3.4.2. General disinfection protocol**

- All equipment (mouthpiece, speculum, forceps, etc.) should be cleaned and disinfected between patients using 70% isopropyl alcohol or 0.5% chlorhexidine.
- Students' equipment such as stethoscopes should be routinely cleaned and disinfected.
- All organic material must be removed before disinfection.
- Soiled cages, walls, doors, water and feed containers should be scrubbed or mechanically cleaned with water and detergent or soap. The cleaned area should be rinsed to remove any detergent residue. The rinsed area should be allowed to drain or, if possible, dry.
- The surfaces of soiled cages, walls, doors, water and feed containers should ideally be in contact with the disinfectant for 15 minutes. Excess disinfectant should be removed with water. The disinfectant should then be rinsed from all surfaces.
- After disinfection, the cleaner should remove their protective clothing and wash their hands.
- All multipurpose areas such as examination rooms should be organized, cleaned and disinfected between patients.

#### **2.3.4.4. Equipment disinfection protocol**

- All equipment or other objects including gastric catheters, mouthpieces, endoscopes, etc. should be cleaned and disinfected or sterilized when used between different patients.
- Sterilized equipment such as surgical equipment should be cleaned with soap and water after use and disinfected with 0.5% chlorhexidine solution. The equipment should then be sterilized.

- Surfaces contaminated with feces, secretions or blood should be cleaned and disinfected immediately. This is especially important in animals with infectious diseases or suspected infectious diseases.
- Infectious Disease Animal Boxing: All equipment used in such a patient should be specific to that patient and stored in a box for each patient. The material should be cleaned with 0.5% chlorhexidine solution after each application. The collars used on these patients should only be used on these patients and should not be used on other patients. These collars should be disinfected at regular intervals by immersion in 0.5% chlorhexidine solution. They should be checked, cleaned and disinfected once more before being used on a new patient.
- Stethoscopes Stethoscopes owned by staff in the non-communicable diseases department should be disinfected regularly (at the beginning and end of the day) with alcohol or hand sanitizer. Stethoscopes that are visibly soiled or have come into contact with a patient with an infectious disease or suspected infectious disease must be disinfected immediately.
- Thermometers Electronic thermometers should be thoroughly disinfected daily with alcohol and/or chlorhexidine wipes. Plastic thermometer cases should be regularly dipped in a disinfectant solution. Animals with infectious diseases or suspected infectious diseases should have their own individual thermometers. These should be kept on their boxing during hospitalization. They should be disinfected after they become visibly soiled, after each examination and after the patient is discharged.
- Other staff-owned equipment, such as scissors, can be used on multiple patients, but should be cleaned and disinfected with 70% isopropyl alcohol or 0.5% chlorhexidine solution when used between patients.

### **2.3.5. Rules for the management of animals arriving at the cat and dog clinic**

#### **2.3.5.1. Outpatients**

- Patients without signs of infectious diseases must be available in the waiting room with their owners.
- Patients with acute vomiting, cough, runny nose or diarrhea should remain in their car until a student or veterinarian can check them. Patients at risk of infectious diseases should not be taken directly to the examination room. The patient should be transported here on a stretcher or in a cage. If such a patient is brought directly to the information desk, the person in charge of the information desk should immediately contact the veterinarian in charge and take the patient to the examination room immediately. The patient should be transported to the examination room by the shortest route. The examination room where such a patient is placed should be closed, no one except those in charge should enter and a "Do Not Use" sign should be posted on the door. The room should be cleaned and disinfected after the patient is finished.

#### **2.3.5.2. Inpatients**

- Inpatient cages must be identifiable by the veterinarian in charge. The allocated cage must be clean.

- Accessories such as blankets, beds, collars, etc. belonging to the patient owner should be returnable to the patient owner. If the patient owner insists on keeping these accessories, they should be informed that they will not be returned.
  - A note about the owner and the patient should be written on the cage where the patient is placed.
  - Suspected or confirmed infection should be written on the information card.
  - If the patient has a special condition such as biting, Leptospirosis, etc., an information note should be posted in the cage.
  - Food such as raw meat or bones is not given and the animal should be given clean water until told otherwise.
  - Moving patients from cage to cage is prohibited. The cage must be cleaned when the patient is taken from the cage and walked.
    - When the patient is discharged, the cage should be marked "**To be cleaned**".
    - There should be a file containing the patient's condition and the information of the patient's owner at the hospitalization entrance desk.
    - The patient card in the Hospitalization section should include the name of the student responsible for the patient, the estimated time of discharge, and what needs to be done in the treatment.
    - Food should be stored in suitable bags, cans or plastic containers.
    - The smallest possible amount of food should be stored in the refrigerator at small animal hospitalization.
    - All staff, students should be responsible for cleanliness during hospitalization.
    - Full cages should be cleaned at least twice a day by cleaning staff and, if necessary, properly prepared again.
    - Again, all staff should be responsible for warning of a dirty cage, cleaning it and preparing it again.

#### **2.3.5.3. Discharge**

- Before discharge, owners should be warned about the dangers of infectious diseases and how to control these dangers.
  - The estimated time of discharge should be written on the patient card during hospitalization.
  - When the patient is discharged, the cage should be marked "**To be cleaned**". The cage should also be cleaned as soon as possible.
  - Before patients are discharged, their owners should be informed about infectious diseases and their follow-up.
    - The cages of discharged patients should be marked "**To be cleaned**" and disinfected as soon as possible.

#### **2.3.6. Cleaning Protocol for the Cat and Dog Clinic**

- The parking lot and its surroundings should be regularly checked weekly and all debris should be removed.
  - Routine cage cleaning: The soiled cage, walls, doors, water and feed containers should be scrubbed or mechanically cleaned with water and detergent or soap. The

cleaned area should be rinsed to remove detergent residue. The rinsed area should be allowed to drain or dry if possible. The surfaces of soiled cages, walls, doors, water and feed containers should ideally be in contact with the disinfectant for 15 minutes. Excess disinfectant should be removed with water. The disinfectant should then be rinsed from all surfaces. After disinfection, the cleaner should remove their protective clothing and wash their hands.

### **Daily Routines**

- Basically, dirty cages should be cleaned immediately. All dirty places seen in the clinic should be cleaned immediately.

### **Weekly Routines**

- All examination rooms and the hospitalization area must be cleaned and disinfected.

### **Monthly Routines**

- All unused cages should be cleaned within one month.
- In a one-month period, little-used or unused areas (such as the ceiling) should be cleaned.
- The isolation unit must be emptied, cleaned and disinfected.

### **Annual Routines**

- The entire Cat and Dog Clinic must be cleaned and disinfected.

### **2.3.7. Management of Patients with Suspected Infectious Diseases**

- Animals with suspected infectious diseases should be treated as outpatients or without hospitalization as much as possible.
- Patients with acute vomiting, cough, runny nose or diarrhea should remain in their car until a student or veterinarian can check them. Patients at risk of infectious diseases should not be taken directly to the examination room. The patient should be transported here on a stretcher or in a cage. If such a patient is brought directly to the information desk, the person in charge of the information desk should immediately contact the veterinarian in charge and take the patient to the examination room immediately. The patient should be transported to the appropriate examination room by the shortest route. The examination room where such a patient is placed should be closed, no one except those in charge should enter and a "Do Not Use" sign should be posted on the door. The room must be cleaned and disinfected after the patient's procedure is completed. The room should not be opened for use before the disinfection process is completed.
- "acute diarrhea", "acute vomiting", "acute cough" or "possibility of infectious disease" should be written in the patient's file.
- Areas where treatment and diagnosis of suspected infectious disease animals, hospital equipment, staff and student clothing must be cleaned and disinfected immediately after contact with the animal, regardless of contamination.

- Owners of animals with infectious diseases should be prohibited from visiting their patients, except in cases such as euthanasia. Visiting hours for other patients are determined by the hospital administration and should be possible within the framework of general hygiene rules.

### **2.3.7.1. Hospitalization of animals with suspected infectious diseases**

#### **2.3.7.1.1. Movement of high-risk patients**

- Animals suspected of infectious diseases that require isolation should be sent directly to the isolation unit.
  - Care should be taken to minimize contamination during this transport.
  - The handler must wear the necessary protective clothing.
  - Any areas contaminated with infectious material during transport should be cleaned and disinfected immediately.
  - Transportation should be by cage or stretcher.

#### **2.3.7.1.2. Diagnostic tests required in patients with infectious diseases**

- Diagnostic tests for some infectious and/or zoonotic diseases should provide the necessary information for diagnostic treatment. This is in the interest of the patient owners to protect themselves and their families. Tests for the diagnosis of these diseases should therefore be mandatory.
  - Academics should be responsible for taking appropriate samples from the patient.
    - All protective measures (gloves, protective clothing, masks, etc.) should be mandatory when dealing with animals with suspected infectious diseases.
    - Samples for diagnostic tests should be taken either in the infectious disease examination room or in the isolation unit.
    - Samples from these patients should be placed in ziplock bags and the person handling them should wear the appropriate gown, gloves and mask. Specimens should be labeled as having a suspected infectious disease or having an infectious disease.

#### **2.3.7.1.3. Isolation**

- All patients with parvovirus and confirmed infectious respiratory disease should be kept in a small animal isolation unit. Movement in and out of this unit should be minimized except in extreme cases.
  - Staff working in the isolation unit should be informed about the patient.
  - Hygiene and barrier measures must be of paramount importance for the isolation unit.
    - Hands should be washed and rinsed in an alcohol-based sanitizing solution before and after the examination of each patient in this department.
    - Clean examination gloves must be worn in the isolation unit. All personnel are responsible for environmental hygiene. The environment must not be contaminated with dirty hands or equipment.
    - Patients hospitalized in the isolation unit should not be moved around in the common area.

- Students who come into contact with a patient with an infectious disease should not come into contact with an immunosuppressed animal or a young or very old animal.
- Only academics, responsible students and responsible staff should enter the isolation unit for patient care, cleaning and treatment. Appropriate barrier precautions (gloves, masks, rubber boots, disposable gowns, etc.) must be taken when working in this unit.
- Necessary warnings should be written and hung on the cages.
- In general, any material from the isolation unit should not be taken back to the main clinic building.
- Contaminated surfaces, equipment must be cleaned in accordance with the rule.
- Equipment used on a patient should only be used on that patient.
- Medicines used in the patient should be sent with the patient's owner when the patient is discharged and medicines should not be returned to the pharmacy.

**Entering the Isolation Unit:** The clinical gown should be removed outside the isolation unit. All necessary equipment should be with the academicians to minimize entry and exit to the isolation unit. Hands should be washed and disinfected with hand sanitizer. Barrier clothing (overshoes, disposable gowns, masks, gloves, gloves, caps) should be worn.

- Procedures that may contaminate the environment (such as rectal touch, rectal temperature measurement, abscess manipulations) should be performed last.
- Care should be taken not to spread organic material (urine, stool, etc.) in the room. Sharps or sharps should be handled appropriately and disposed of in yellow bins after the procedure is finished.
- Contaminated surfaces should be cleaned and disinfected after patient care is finished.
- After the procedure, the thermometer, stethoscope and other material should be disinfected with 70% isopropyl alcohol.
- When leaving the unit, barrier clothing should be removed and disposed of in the medical waste bag. Hands should be washed or disinfected.
- Door handles in the isolation unit must be disinfected daily.
- Patient transfer from the isolation unit to the clinic must be authorized by the head of the Biosafety Commission or the Chief Physician of the Hospital.
- If these patients are to be intervened in the Cat and Dog Clinic (ultrasound, X-ray examination, surgical operation, etc.), their intervention should be left to the end of the day if possible. Patients should be transported in the least contaminated way. All surfaces that these animals come into contact with should be cleaned and disinfected.
- The ultrasound should be cleaned and disinfected after the ultrasonographic examination of patients.
- If ECG is performed on patients, the ECG should be cleaned and disinfected with 0.5% chlorhexidine or 70% isopropyl alcohol.
- All materials used in the surgical intervention of animals in the isolation unit must be cleaned, disinfected and then sterilized. This material must be transported in sealed plastic bags.

- Patients who will undergo surgical operation or anesthesia should have or suspect infectious diseases and this should be written on their forms.
- The anesthesia machine must be cleaned and disinfected after administration.
- Tissue residues on the oxygen application apparatus should be cleaned with soap and water and then rinsed. It should then be soaked in chlorhexidine solution for 15 minutes and then rinsed.

#### **2.3.7.1.4. Anesthesia and surgical procedures of patients in the isolation unit**

- Staff or students who will come into contact with patients in the isolation unit must wear appropriate clothing.
- Surgical procedures on animals with infectious diseases should be postponed until the end of the day if possible.
- All surfaces must be cleaned and then disinfected after surgical procedures for patients in the isolation unit. All surgical equipment must be cleaned and disinfected. All surgical equipment should then be placed in a sealed plastic bag. Information about the infected or suspected infectious disease should be written on this bag.

#### **2.3.7.1.5. Small animal surgery and anesthesia procedures**

- Clean surgical gowns, caps, overshoes and masks must be worn before entering areas of the surgical unit.
- A high standard of hygiene and cleanliness must be maintained in the surgical unit.
- The area to be operated on should be prepared aseptically. Asepsis must be maintained throughout the operation.
- Unnecessary entries and exits should be prohibited.
- Transitions between the anesthesia area and the surgical area should be minimized.

**Preparation of animals with infectious diseases or suspected infectious diseases for surgery:** Preparation of infectiously diseased or suspected infectiously diseased animals for surgery should take place in the animal's cage or in the appropriate examination room for infectious disease patients. Waste materials used here should be disposed of immediately in the appropriate waste bin and all surfaces should be cleaned, disinfected and dried.

- All hands should be washed before contact between patients.
- Stool contaminated areas should be cleaned immediately after stool removal.

**Anesthesia of animals with infectious diseases or suspected infectious diseases:** The patient should be premedicated in the cage or isolation unit. The patient should be brought to the anesthesia preparation department immediately before anesthesia is administered. A cage or stretcher should be used during transportation. All contaminated equipment should be cleaned, disinfected and then sent for sterilization. The status of animals with infectious diseases or suspected infectious diseases should be written on the anesthesia form.

**Anesthesia application area:**



- It should be forbidden to shave the surgical area one day before the operation to prevent bacterial colonization.
- Unless otherwise decided, surgical patients should be brought to the anesthesia administration area one hour before the operation. The intravenous catheter should be inserted aseptically.
- After the operation, contaminated clothing should be placed in a plastic bag and sent to the cleaning unit.
- After the operation, patients who do not have an infectious disease or suspicion of infection should be able to be awakened in the anesthesia preparation or awakening department. Those with an infectious disease should be awakened in their cages.
- Stretchers should be cleaned and disinfected (15 minutes contact time) and then rinsed with clean water.
- Tissue waste from the oxygen application apparatus should be cleaned with soap and water and then rinsed. It should then be soaked in chlorhexidine solution for 15 minutes and then rinsed.
- The anesthesia machine should be cleaned and disinfected between cases.
- The surgical hall must be cleaned and disinfected. All contaminated equipment must be cleaned, disinfected and placed in plastic bags and sent to the cleaning unit.

#### **2.3.7.1.6. Surgical procedures for patients with infectious diseases**

- Surgical procedures on animals with infectious diseases should be avoided whenever possible. If surgical procedures are necessary, they should be performed at the end of the day if possible.
- Minimize traffic in the surgical theater and take measures to reduce contamination. After the operation, contaminated clothing should be placed in a plastic bag and a warning that it is infectious should be placed on it. It should be sent to the cleaning unit.

### **2.4. Biosafety Rules for Poultry And Exotic Animal Clinic**

#### **2.4.1. General cleaning and hygiene**

- It should be necessary to raise awareness of all staff on cleanliness and hygiene.
- Hands should be cleaned with an alcohol-based antiseptic before and after each examination.
- Equipment and surfaces contaminated with feces, saliva and blood should be cleaned and disinfected by the staff responsible for the patient. This is especially important for patients with infectious diseases.
- Equipment such as mouthpieces, speculum and forceps should be disinfected with 70% isopropyl alcohol or chlorhexidine. Equipment should also be sterilized every day.

#### **2.4.2. General rules for poultry and exotic animal clinics**

- Clinic-specific clothing should be used to reduce the risk of illness.
- All staff should be required to wear clean professional clothing.

- Clean clothes and appropriate footwear must be worn at all times when working in the Poultry and Exotic Animal clinic.

#### **Shoes:**

- All staff working in the Poultry and Exotic Animal Clinic should be recommended to wear sturdy boots or shoes. This type of footwear should be easier to clean and disinfect than footwear made of porous material (e.g. running shoes).
  - To ensure appropriate conditions, staff must be willing to disinfect their shoes while working.
  - Students going on site visits should change into civilian clothes that they have not had previous contact with birds, rodents or rabbits up to six days prior to the visit.
  - Students must be required to strictly follow the instructions of all staff.
  - All necessary clothing for visitors (disposable overalls, overshoes etc.) must be provided by the Poultry and Exotic Animal Clinic.

#### **2.4.3. General cleaning and hygiene**

- The cleanliness of the clinic and personal hygiene should be the responsibility of all staff.
- Gloves and appropriate clothing should be worn when using disinfectants.
- Gloves should be worn during regular patient examinations (examination gloves) or to provide protection when using disinfectants during routine cleaning procedures.
  - Coarse dirt should be removed before disinfection. The material should be washed with soap and water, and layers and residues that prevent or reduce the effect of disinfection should be broken by scrubbing or mechanical disintegration.
  - Rinse thoroughly to remove any detergent residue. The area should be allowed to drain or dry as much as possible to avoid dilution of disinfectant solutions.
  - This disinfectant should be allowed to contact surfaces for 15 minutes, especially if an infectious agent is suspected. Excess disinfectant should be removed by washing with water. Disinfectant should be removed from all surfaces before placing a patient in a cage or paddock.
  - After disinfecting, protective clothing should be removed and hands washed.
  - Multi-use areas where animals are examined or treated (stockpiles, examination rooms, etc.) must be changed, cleaned and disinfected after use by the staff responsible for the patient.

##### **2.4.3.1. General disinfection protocol**

- The general disinfection protocol should be applied for this work.

##### **2.4.3.2. Disinfectants**

- In case of suspicion of Newcastle or avian influenza, all materials must be disinfected by a disinfectant recognized for the control of these diseases.

#### **2.4.3.4. Disinfection protocol for devices and equipment**

- All instruments, equipment or other objects must be cleaned, disinfected or sterilized between different patients. Materials should be cleaned with soap and water and disinfected with 0.5% chlorhexidine solution after use on the patient. Necropsy materials should be sterilized every day. These materials should first be cleaned with chlorinated antiseptics, disinfected and rinsed, then sterilized according to the type of material.

#### **2.4.3.5. Food and beverages**

- Food and drink should be strictly forbidden in the hospital.

#### **2.4.4. Guidelines for admitting and managing Poultry and Exotic Animal patients**

##### **2.4.4.1. Outpatients**

- Serious precautions must be taken to prevent hospitalized patients from contracting infectious diseases other than their current illness. If this procedure has not been followed, or if the animal is still in the clinic, consultation can be carried out according to the following recommendations:
  - Other animals must be prevented from entering the consultation room.
  - A patient must be strictly prevented from entering the consultation room before cleaning. Disinfection of tables and equipment must be carried out by staff before the patient enters the room.
  - Reception of the owner and the patient,
  - Registration documents must be completed and the status of animals coming from other doctors or hospitals must be recorded. A complete physical and clinical description of the animals must be made. For exotic animals, it should be necessary to record the breed and species (in Latin). If a serious infectious and/or contagious condition is suspected, it should be necessary to inform other staff immediately and make an immediate decision. When a reptile arrives for examination, a specialist should be contacted to determine the genus and species. Venomous reptiles should be strictly forbidden to enter the clinic. These patients should not be admitted to the clinic even in the absence of students. Birds in cages should not be taken out of their cages without the presence of specialized personnel. A full general clinical examination should be performed if the physical condition, stress or danger level allows it, taking into account the other animals present in the clinic. If these conditions are not met, other personnel should be consulted for manipulations and examinations.

##### **Business visit**

- Students participating in these visits must be dressed in civilian clothes that do not come into contact with birds, rodents or rabbits from six days prior to the visit. They must be required to strictly follow the instructions of all staff.
  - All clothing required for the visit (disposable apron, shoe covers...) must be provided by the Poultry and Exotic Animal Clinic.

#### **2.4.4.2. Inpatients**

##### **2.4.4.2.1. Shelters**

- Patients admitted to the Poultry and Exotic Animal Clinic should be placed in cages by staff. Before placing the animals in the cages, day or night staff should be warned to familiarize themselves with where to find newly admitted patients.

##### **2.4.4.2.2. Patient records and drug administration**

- During the hospitalization process, all clinical data and medications should be recorded on specifically standardized forms (record).

##### **2.4.4.2.3. Feed and water**

- To reduce the risk of contamination, a small amount of bedding, feed and concentrates should be stored in the Poultry and Exotic Animal Clinic.

##### **2.4.4.2.4. Bedding**

- Students in charge of hospitalization should be responsible for the daily maintenance and cleanliness of the cages. Cages are washed and, if necessary, disinfected with chlorinated antiseptics. In all cases, waste should be disposed of in the yellow bins designed for biological waste to avoid contamination.

- Students should wash their hands and change their gloves for each animal. Tools and equipment used for each animal should be specific to that animal and should not be used on animals in different cages. At the end of hospitalization, cages should be washed and disinfected according to standard procedures before being made available to new patients.

##### **2.4.4.2.5. Discharge**

- Before discharge, animal owners should be instructed on the infectious disease risks associated with patients and recommendations for controlling these hazards at home. Cages used for patients with known or suspected infectious agents should be marked with a sign ("**Special Use, Special Cleaning Required**").
- Cages of animals carrying known or suspected infectious agents should be marked with a white band after discharge until full disinfection is completed.

#### **2.5. Animals With Known or Suspected Infectious Diseases**

- Animals with symptoms of known or suspected infectious diseases should be triaged before admission.
- In some specific diseases, such as Newcastle, and in the case of notifiable diseases, more serious measures should be taken. In such a case, no equipment should be taken out of the examination room. The soles of shoes should be disinfected, clothes should be washed and contact with other birds should not be allowed for 6 days.
- In case of suspected zoonotic diseases, precautions should be taken more seriously, and quarantine measures should be implemented. The Ministry of Health authorities should be contacted.

### **2.5.1. Follow-up of high-risk patients**

- The movement of animals with suspected diseases such as Newcastle or avian influenza should be strictly prohibited. Rooms where such patients are housed should be closed until cleaning and disinfection is complete.

### **2.5.2. Diagnosis and surgical procedures in high-risk patients**

- Apart from legally required sampling and euthanasia, other interventions on animals with diseases such as Newcastle should be strictly prohibited.

### **2.5.3. Diagnostic tests required in patients with suspected infection**

- If infectious diseases are suspected, the disease must be reported to the patient's veterinarian and the animal's owner. The veterinarian or animal owner must be able to accept or refuse to take samples to confirm or deny suspicions.

### **2.5.4. Biological samples taken from animals with infectious diseases**

- Samples taken from animals with suspected Newcastle or avian influenza diseases should be followed according to the legal procedure. Samples from animals with suspected infectious diseases should be packaged in a way that prevents any contamination even if the primary wrapping (container, disinfected plastic bags, etc.) is damaged during transportation.

### **2.5.5. Notifiable diseases of poultry and exotic animal clinic patients**

- Mandatory samples for such diseases should be transported to the reference laboratory following legal recommendations within the relevant responsibilities of the Poultry and Exotic Animal Clinic.

### **2.5.6. Isolation for poultry and exotic animal clinic patients**

- When the diagnosis of an infectious disease is clearly established, a warning must be written on the animal's cage.
- Visits to animals in isolation cages should be prohibited.
- Equipment used for these animals should be kept in a plastic bag near the cage. This equipment should never be used for another animal until it has been properly cleaned and disinfected.
- It must be strictly forbidden to enter isolation units without wearing a disposable apron. It is also strictly forbidden to enter these areas with clothing used outside these areas.
- Hand washing and disinfection should be mandatory at the entrance and exit of hospitalization and isolation areas.
- Animals whose treatment is completed in hospitalization and isolation units should be disinfected before they are placed in the cages they were brought to.
- Ultrasonography, radiology or ECG examinations should be limited if there is a risk of death in animals with suspected infectious diseases.

### **2.5.7. Poultry and exotic animal clinic visitors**

- Visitors should only be allowed under the direct control of the Poultry and Exotic Animal Clinic team.

### **2.5.8. Children**

- Children must not be allowed in the Poultry and Exotic Animal Clinic, except for the owner's children, provided they are supervised by an adult.

## **2.6. Imaging Center Biosafety Rules**

### **2.6.1. General principles**

- In animals with suspected infectious diseases, radiologic procedures should not be performed but should be performed at the end of the day if necessary.
- It should be the primary duty of the responsible academicians to inform the staff in the imaging department and to implement the necessary procedures to prevent the transmission of infectious agents from the sick animal.
- If the examination cannot be left until the end of the day (such as a surgical operation), the examination room and instruments should be cleaned and disinfected after the examination by taking the necessary protective measures.
- It should be the duty of responsible academics to ensure the safety of staff and students involved in the examination of animals at risk of infectious diseases. Risks in radiography, ultrasonography and tomography consultation should be marked with a yellow label if necessary.
- It should be the duty of the responsible academics to organize the transport of the animal to the imaging department or to bring the radiologist if the patient cannot be brought to this department. At least one student should be assigned to follow the procedures.
- The academics in charge of the procedure should be responsible for applying protective clothing (apron, gloves) and effective disinfectants.
- Departments and instruments should be cleaned and disinfected as far as possible. Radiology staff should supervise the cleaning and disinfection of instruments.
- Ultrasonography probes should be protected in disposable gloves. Probes and cables should be carefully disinfected after the examination. Ultrasonography pillows for cats and dogs should be kept in a plastic bag and wrapped in a waterproof cloth. Waste must be disposed of in the yellow-colored waste container.
- Paper towels, gloves, disposable clothing, urine and feces used for drying animals and equipment should be disposed of in the yellow waste container. These containers should be sealed after cleaning.
- The ultrasonography device must be used with the user's clean left hand or by another person who has no contact with the patient. When imaging animals in the infectious disease unit of the Ungulates and Farm Animals Clinic, the device should be kept in the corridor and should not be brought into the paddocks. The wheels of the device must be disinfected after the examination. Only necessary materials should be

taken into the unit. Alcohol and gels used for ultrasonography should be kept on the unit.

- The hands of the radiology examiner should be washed in every case, regardless of the patient's infectious status.
- Staff and students should wear disposable gowns and gloves when handling patients.
- All persons who come into contact with the patient should wash their hands thoroughly when the procedures are completed.
- After an examination for a known or suspected infectious disease, the radiography practice room should be closed and disinfected by technicians as soon as possible. Paper towels, gloves, disposable clothing, urine and feces used for drying animals and instruments should be disposed of in the yellow waste container. These containers should be sealed after cleaning.
- The number of people participating in the screening exercise should be limited as much as possible.
- All staff and students working with radiology should wear radiation protective clothing and a staff name badge.

#### **2.6.2. Single clawed and farm animal clinic cases**

- Portable radiographs should be used whenever possible when the number of animals with known or suspected infectious diseases is large.
- Small ruminants should be transported to the imaging department on a stretcher if possible.
- Students and staff entering the Ungulate and Farm Animal Clinics should dress according to the protocol for this area.

#### **2.6.3. Cat and dog clinic cases**

- If there is known or suspected infectious disease, patients should be kept in their own shelter until imaging is performed.
- The hospital should have as many stretchers and transport cages as possible to minimize contamination.

#### **2.6.4. Imaging rooms and instruments**

- Disinfectant sprays or mops should be used after known or suspected cases of infectious diseases.
- Lead aprons and gloves should be cleaned with disinfectant sprays after known or suspected cases of infectious diseases.
- All instruments must be cleaned and disinfected daily.

# BIOSAFETY GUIDELINES

## CHAPTER 3



**VETERİNER FAKÜLTESİ**  
Faculty of Veterinary Medicine

### FOOD HYGIENE AND TECHNOLOGY

**BIOSAFETY RULES FOR PRACTICAL TRAINING  
IN DEPARTMENT LABORATORIES, DAIRY AND  
DAIRY PRODUCTS FACILITIES AND ABATTOIRS  
AND SLAUGHTERHOUSES**





### **3. BIOSAFETY RULES FOR FOOD HYGIENE AND TECHNOLOGY DEPARTMENT LABORATORIES**

#### **3.1. General Issues**

- In the Food Hygiene and Technology discipline, products of animal origin (milk and dairy products, eggs, honey, meat and meat products, fish, animal fat) are analyzed. Products of animal origin are purchased from the agri-food market, processing units and local market authorized by the Ministry of Food, Agriculture and Livestock.
- Foods (consisting of raw materials and final food products) should be processed by students only in the presence of the instructor and only in laboratories.
- Students should not be allowed to take food samples outside the laboratory.
- Food samples should be stored in refrigerators or deep freezers before and after hands-on laboratory work.
- Students' activity should start with training on general and specific safety and biosafety rules in laboratory work. The teaching staff should complete the collective instruction form and the students should sign that they have noted the information presented and undertake to comply with the general and specific rules of laboratory work.
- Protective equipment for students consists of long-sleeved gowns. Students should wear their hair pulled back. Students should be provided with protective gloves when necessary.
- Sensory evaluations and physical-chemical analyses of food products (raw and processed food) should be carried out on tables and in practical laboratories under the supervision of instructors.
- Microbiological analysis of food products should be carried out under the strict supervision of instructors, with special care taken to prevent contamination of both the samples and the laboratory environment.
- The resulting waste (analyzed food samples and resulting microbial cultures) should be decontaminated by sterilization (autoclaving).
- After handling food, worktables should be cleaned and decontaminated with solutions specially designed for surfaces.
- Laboratory glassware should be washed with hot tap water and detergent and disinfected with appropriate solutions (sodium hypochlorite) and then rinsed with tap water.
- Disposable materials should be disposed of in the trash bin.
- Teaching staff and support staff should be appropriately equipped (long-sleeved protective apron) when entering the practical working rooms.
- Failure to comply with the working conditions in the laboratory may lead to accidents (burns, injuries, electric shocks). In such cases, the instructor intervenes, assesses the situation and, if necessary, the student should be referred for a specialized examination.

### **3.2. Food and Beverage**

- Eating, drinking and smoking are prohibited in all laboratories.

### **3.3. Culture Media, Reagents, Storage of Chemicals**

- Reagents, culture media, glassware, equipment, tools and laboratory utensils should be handled and used under the supervision of teaching staff, depending on the destination.
  - Laboratory glassware should be cleaned, washed and dried after each use.
  - Removal of organic residues from laboratory containers (glass or aluminum) should be done with hot water or, if necessary, organic solvents (e.g. ethylic ether, benzene, alcohol, etc.), after which the residue should be collected in special containers.
    - Bottles containing liquid or solid chemicals should be properly labeled. Chemicals or reagents should not be left in unlabeled containers.
    - The name, chemical formula, concentration, solution factor of the chemical substance should be indicated on each label. The labeled bottles should be prepared on the laboratory table where the analysis will be performed.
    - Reagents used in practical studies should be stored in bottles with ground or rubber plugs (alkaline solutions). Photosensitive solutions should be stored in brown laboratory bottles and in dark places.
    - In case of accidental spillage of a solution/reagent, it should be removed immediately, and the area cleaned (neutralized if necessary) to avoid chemical traces.
      - After use, reagent containers should be stored in the reagent cabinet.
      - Clean pipettes should be placed on special vertical stands with the tips down and used pipettes should be collected in special containers.

### **3.4. Disposal of Waste**

- All waste from laboratory activities should be collected in containers specific to the waste category and enter the faculty waste unit until it is received by specialized companies contracted to provide waste disposal services.

### **3.5. Decontamination of Laboratory Surfaces**

- After each activity, work surfaces (tables and floors), equipment and materials should be cleaned and disinfected with solutions specifically prepared for this purpose.

### **3.6. Pets**

- Faculty members and students are not allowed to bring their pets to the laboratories.

## **3.7. Biosafety Rules for Practical Training in Dairy and Dairy Products Facilities and Abattoirs and Slaughterhouses**

### **3.7.1. General issues**

- The procedure provides students with basic information on measures to protect against the transmission of zoonotic agents originating from animal slaughter and food

processing units of animal origin during practical non-faculty activities provided for teaching purposes.

- The transmission of biological agents (viral, bacterial, parasitic) can occur in slaughterhouses (slaughterhouses for production animals: sheep and goats, cattle and poultry), meat and milk processing units or any other unit processing meat or animal products (edible and non-edible) and by-products.

- Training activities on slaughter technology and hygiene requirements during slaughter take place in different slaughterhouses (sheep-goat, cattle and poultry). In addition, the acquisition of knowledge on general and specific hygiene requirements, processing technologies and quality control and animal food safety takes place as an intermediate stage in different meat and milk processing units as well as in cold storage.

- The teaching-learning process should generally take place in small groups (10-12 students), repeatedly, almost weekly, according to a predetermined schedule and depending on the year of study, until the completion of the number of students.

### **3.7.2. General hygiene principles for visits**

- General hygiene principles during visits Before entering the unit, students, accompanied by their instructors, receive specific instructions from the designated staff of the unit visited. The following persons are then responsible for receiving and accompanying the visiting group (usually the official veterinarian or staff responsible for product quality management).

- In the first phase of the visit, each member of the visiting group should fill in a health declaration. The document requires answering several YES or NO questions related to

- The presence of illnesses in the last 7 days, such as diarrhea, colds, skin conditions, symptoms of infectious-communicable diseases or other symptoms that would prevent illness (food poisoning);

- Visiting a livestock or other food processing facility in the last 48 hours (animal fairs, animal product warehouses, non-professional or professional Type A animal enterprises, slaughterhouses, ungulate or game processing units);

- Visitors are also required to provide signed written responses to the COVID-19 questionnaire;

- Contact with persons diagnosed with COVID-19 or suspected of COVID-19 infection in the last 7 days;

- At least one of the symptom characteristics of SARS-CoV-2 virus infection (cough, fever, sore throat, difficulty breathing, loss of taste and/or smell) in the last 7 days.

- If any member of the visiting group declares/recognizes that any of the symptoms characteristic of an infectious disease (digestive, respiratory, urogenital, cutaneous disease) pose a potential contamination risk to food or live animals, their access to the unit should be restricted.

- Visitors with skin lesions (accidental wounds, cuts) should only be allowed to enter the production facility if they cover the lesions with a waterproof bandage and wear protective, waterproof gloves.

### **3.7.3. Good practice and hygiene rules for students**

- During the visit, the person responsible for group management should inform students and teaching staff in the entrance area before entering the unit about:
  - General good practice and hygiene rules of the unit and the need to follow them;
  - Prohibition of entry to the production facilities if jewelry such as rings (except engagement rings), necklaces, bracelets, watches, piercings, etc., are worn.
  - It is also forbidden to enter the facility with drinks, food or chewing gum, false nails, drugs;
  - Prohibition of disrupting the activities of personnel working in work areas;
  - Prohibition of touching machines, tools, work equipment and foodstuffs;
  - Indication of the presence and precise location of any biological, chemical or physical hazards in the establishment so that visitors can avoid contact with or exposure to these hazards.
- The acceptance and understanding of the specific information provided is documented by the completion and signature of a collective training form on occupational safety and health by all members of the visitor group. The signed document should be archived within the unit.
- Access to the unit depends on maintaining a high level of personal hygiene and should always start from the changing room area. After using the toilets or when visibly soiled, hands should be washed with water and antibacterial soap using a knee-operated sink, followed by decontamination or wiping with antibacterial wipes and/or hydro-alcoholic solutions approved for skin. The hand washing protocol is presented schematically at all hand washing points. Hand drying will be done with hot air blowers or disposable paper towels, which should then be disposed of in waste containers.
  - Visitors should enter all production areas wearing full protective equipment (apron, overalls, disposable headgear, overshoes) to comply with hygiene rules.
  - Teaching staff, together with the official veterinarian, should ensure that all students comply with the rules set during admission to the unit from entry to exit.
  - During the visit, students are obliged not to leave the group they belong to or the company member responsible for the visiting group.
  - At the end of the visit, visitors should leave the workspaces in an orderly manner, passing through the changing rooms, where only students and accompanying lecturers should remove their scrubs and place them in the dirty laundry collection container and discard overalls, capes and overshoes in the trash.

### **3.7.4. Other aspects depending on the characteristics of the unit visited**

- In all units, the visit should start in clean areas and end in dirty areas.
- During practical work in slaughterhouses, students perform autopsy examinations of organs and carcasses together with the official veterinarian of the unit. In case of injury or injury due to incision, the student should stop working and immediately wash the injured area in a knee-operated or sensor sink. After washing, the lesion should be disinfected with alcohol or another suitable compound (e.g.

chlorhexidine, betadine) in a dedicated area of the unit, then the wound should be closed using a waterproof bandage. The person in question should then wear protective gloves to be able to resume activity.

# BIOSAFETY GUIDE

## CHAPTER 4



**VETERİNER FAKÜLTESİ**  
Faculty of Veterinary Medicine

**ATATURK UNIVERSITY**  
**FOOD AND LIVESTOCK APPLICATION AND**  
**RESEARCH CENTER**  
**BIOSAFETY RULES**



#### **4. BIOSAFETY RULES FOR FOOD AND LIVESTOCK APPLICATION AND RESEARCH CENTER**

The Center is managed by a director appointed by the Rectorate of Atatürk University. The administrative bodies of the Research Center consist of the director of the Center and 4 deputy directors selected from the faculty members of the Faculties of Veterinary, Agriculture and Food Engineering. There is also a board of directors consisting of faculty members from AtaVet and Faculty of Agriculture. There are 2 veterinarians, 9 civil servants and 56 staff working full-time in the research center.

Ataturk University Food and Livestock Application and Research Center has 7 separate units.

- I. Aziziye Dairy Cattle Unit
- II. Yakutiye Dairy Cattle Unit
- III. Sheep Husbandry Unit
- IV. Poultry Unit
- V. Beekeeping Unit
- VI. Pilot Milk Factory
- VII. Pilot Bread Factory

- In addition to these units, there is an Equine Unit within the Directorate of Manege Area and Equestrian Facilities under the Rectorate of Atatürk University.

There is sufficient distance between these units to avoid biosecurity problems. Additionally, employees were hired separately for all facilities as required by biosafety measures.

- Animal assets in animal husbandry units are shown in the table below. The number of animals may vary according to the season and experimental protocols.
- Cattle and sheep on the farm are housed and routinely inspected according to Turkish Ministry of Agriculture and Forestry regulations, similar to a commercial enterprise, until retail sale, slaughter or culling. All these animals are healthy animals.
- Animals used for experimental purposes are housed in separate sections within the application area under the responsibility of the researcher with additional biosafety rules.
- The Food and Livestock Application and Research Center applies biosafety procedures in accordance with HACCP procedures in pasteurized milk (Business Approval No: TR251016353) and egg production (Business No: 25-0116).

<b>ANIMAL HUSBANDRY RESEARCH AND APPLICATION UNITS</b>	
<b>Aziziye Cattle Breeding Unit</b>	<b>Number of Animals</b>
Dairy Cow in Milking	36
Cow in Dry Period	6
Heifer	29
Bull	0
Female Calf (>6 months)	11
Male Calf (>6 months)	17
Female Calf (<6months)	12
Male Calf (<6months)	8
Total	119
<b>Yakutiye Cattle Breeding Unit</b>	<b>Number of Animals</b>
Dairy Cow in Milking	66
Cow in Dry Period	20
Heifer	41
Bull	2
Female Calf (>6 months)	24
Male Calf (>6 months)	17
Female Calf (<6months)	20
Male Calf (<6months)	10
Total	200
<b>Sheep Husbandry Unit</b>	<b>Number of Animals</b>
Sheep	350
Female Yearling Lamb	122
Male Yearling Lamb	112
Ram	60
Goat	13
Female Yearling Goat	7
Male Yearling Goat	5
Billy Goat	1
Lamb	0
Yeanling	0
Total	670
<b>Poultry Unit</b>	<b>Number of Animals</b>
Laying hens	4320
<b>Beekeeping Unit</b>	<b>Number of Animals</b>
Beehive	300
<b>Equine Unit</b>	<b>Number of Animals</b>
Mare	5
Foal	0
Stallion	14
Total	19



#### **4.1. Identification, Registration and Animal Movements**

- This process aligns with the regulations followed in commercial enterprises.
- There are enterprise registration numbers for cattle, sheep and poultry flocks.
  - Aziziye Cattle Breeding Unit: TR251016353
  - Yakutiye Cattle Breeding Unit: TR253066
  - Sheep and Poultry Unit: TR251029296
- The Center has an Experimental Animal Unit (Work Permit: 150).
- Every animal is registered in the TURKISH VET/E-ISLAH system, creating an official inventory with an ID (passport) for each animal on the farm.
  - Each newborn calf receives two tags within 7 days of birth, before leaving the herd. In case of tag loss, TURK VET/E-ISLAH issues a replacement tag with the same number, ensuring consistent identification throughout the animal's life.
    - Cattle movements in the farm (herd entry-exit, transfer to slaughterhouse and animal death) are documented and reported to the District Directorates of Agriculture.
    - New animal entries to the herd are limited. Animals are purchased according to experimental protocols to be used only in research.
    - When a new animal enters the herd, it is placed in the quarantine unit. Identity registration is made to the farm. They are clinically examined and a tuberculin test is performed. Blood samples are taken and sent to District Directorates of Agriculture to be tested for brucellosis and tuberculosis.
      - The cattle breeding unit is officially free of brucellosis and tuberculosis.

#### **4.2. Epidemiologic Follow-up**

- The technical supervisors of farm cattle, ovine and poultry are the deputy directors assigned by the central directorate.
- Veterinarian(s) are responsible for procuring and implementing epidemiological screenings, including suspicions of infectious diseases.
  - Within 48 hours of purchasing an animal, the responsible veterinarian is contacted. They conduct an examination and take a blood sample if the animal is over one year old and not intended for fattening. Additional samples are taken based on the intended use or working condition of the cattle.
  - Workers or students who observe abnormal signs in one or more animals report the situation to the veterinarian for examination. If a notifiable disease is suspected following the clinical examination, official notifications are made to the Dean's Office and the Ministry of Agriculture and Forestry.
    - In cases of suspected infectious diseases, sanitation and disinfection practices can be implemented, and movements of animals and humans into and out of the farm can be restricted.
      - Periodic applications are carried out against insects, mice, and other pests.
      - Medicines are stored in a designated special room on the farm under the veterinarian's responsibility (Permit for the Supply of Veterinary Medicinal Products for Business Veterinary Medicine 25/04).

### **4.3. Livestock Units**

- All units are monitored by cameras for 24 hours.
- Hygiene rules and disinfection processes are to be strictly implemented in each unit.
- Disinfection schedules for units should be established on a daily, weekly, and monthly basis.

#### **4.3.1. Cattle breeding units**

- In dairy cattle farming, there is an electronic herd tracking system and a fully automatic milking system.
- Animals must be routinely vaccinated for diseases such as IBR, BVD, Foot and Mouth Disease, Clostridial and Botulismus..
- Animals should be routinely screened for IBR, BVD, Foot and Mouth Disease, Tuberculosis and Brucella.
- Animals should be grouped according to their breeding type and age and kept in separate paddocks.
- Calves should be housed separately from birth until weaning. Before calves are placed, calf hutches should be thoroughly cleaned and disinfected with a disinfectant.
- Calves should be kept in calf hutches for the first 2-3 months and shared colostrum and milk application method should be applied after birth.
- Calf sheds should be routinely maintained, repaired and cleaned.
- The milking parlor should be cleaned with water at every milking. The entire milking parlor should be washed weekly with disinfectants.
- Before each milking, cows' udders should be applied pre-milking teat dipping and dried with disposable paper towels. Teat dipping should be applied to the udders after each milking.
- Routine maintenance and repair of the milk collection tank and milking equipment are necessary. Monthly cleaning using appropriate disinfectants is crucial.
- Feed production facilities are ideally designed for feed hygiene. Measures must be taken against mold and spoilage.

#### **4.3.2. Sheep breeding unit**

- Rams and ewes must be kept separate from each other.
- Automatic milking system is available in sheep farming and hygiene rules should be followed in milking.
- The milking parlor should undergo a preliminary cleaning with water before each milking session. Complete disinfection of the parlor should occur weekly using appropriate disinfectants.
- Maintenance and repair of the milk collection tank and milking equipment should be done routinely. Cleaning should be done with appropriate disinfectants once a month.
- Animals must be routinely vaccinated for diseases such as Smallpox, Brucella and Bluetongue.

- Animals should be routinely screened for Pseudotuberculosis, Sheep and Goat plague and Brucella diseases.
- Animals should be grouped according to their breeding type and age and kept in separate paddocks.
- No animals should be allowed to enter the facility from outside.
- Disinfectant-containing water pools should be placed at pen entrances, changed at regular intervals, and maintained with suitable disinfectants.

#### **4.3.3. Poultry unit**

- Cage farming is carried out in the unit and feeding, manure cleaning and egg collection operations are carried out automatically with mechanisms integrated into the cage system.
- Vaccination of animals for diseases such as CRD, Egg Drop Syndrom and Gumboro must be routinely applied.
- At the time of flock renewal, blood samples should be taken and analyzed for ILT (Infectious laryngotracheitis), MS (Mycoplasma synoviae), MG (Mycoplasma gallisepticum), AI (Avian influenza), ND (Newcastle disease), IB (Infectious bronchitis) and Salmonella before delivery to the poultry house.
- Maintaining a safe and healthy environment within the poultry house should be provided for disease prevention and control.
- Other types of poultry should not be allowed to enter the facility.
- Sick and dead animals should be safely removed from the poultry house.
- Cleaning and disinfection of poultry house and equipment should be done meticulously. Appropriate disinfectants should be used for routine disinfection, and in case of any disease, agent-specific disinfectants should be applied.

#### **4.4. Measures for Environmental Health**

##### **4.4.1. Manure management**

- Solid and liquid manure is temporarily stored in a specific area on the farm. In cattle sheds, manure is scraped off without waiting by automatic scrapers. The manure accumulated in the manure pond is recycled through slurry tanks. Fertilizers are used for crop production through separators in agricultural fields within Atatürk University Crop Production and Application and Research Center.
- Animal feces involved in experimental protocols are considered risky waste and are not deposited on the farm.
- Fly, pest and rodent control is applied throughout the farm.

##### **4.4.2. Medical waste management**

- Medical waste generated during diagnosis, treatment and production must be placed in plastic bags designed for this purpose and disposed of in medical waste containers. These containers must be kept in sufficient number at remote points of the facility. Medical and biological wastes must be disposed of within the scope of the protocol made with Erzurum Metropolitan Municipality ÇETAŞ companyr.

- Yellow colored boxes should be placed for sharps such as syringes, cannulas and scalpels, these materials should be thrown into these boxes and new ones should be placed as they are filled.

#### **4.4.3. Biological waste management**

- Natural waste from animals such as pup membranes, nails, horns, blood, etc. should be placed in biological waste bags and treated like medical waste.

#### **4.5. Precautions for Human Health**

- In terms of the health of all personnel working in the facility, students and researchers, warnings should be made periodically and the rules to be followed should be announced in writing on posters.
- Staff should be monitored in terms of health status, personal hygiene and personal behavior.

#### **4.6. Personnel**

- Workers must wear specialized overalls, jackets, and safety boots strictly for work purposes. These garments are only used within the farm and are regularly laundered.
- Staff wash their hands regularly according to the procedures described.
- If staff need to visit other farms, they should use different clothing (overalls, jackets and boots).
- Each unit is equipped with showers, changing rooms, and rest areas. Consumption of food or drink is prohibited outside the administrative building and unit rest areas.

#### **4.7. Student Activities**

- Students participate in the practices carried out by different departments on the farm. In these applications, they follow practical work and also take part in the treatment and observation of animals.
- Activities are pre-planned and primarily involve observing and performing prophylactic and diagnostic procedures (vaccination, blood sampling), hoof care and trimming, dehorning, rectal examinations, castration, and basic animal care.
- Students are also involved in the care and treatment of sick animals.

#### **4.8. Instructions for Students**

- Students change into overalls and boots in the farm changing rooms before entering the animal shelters, these should only be worn on the farm.
- Students use their own thermometers and stethoscopes for clinical activities. These items should be cleaned regularly with soap, water and hand sanitizer.
- Students should have one boot to be used only in the farm. If students do not have boots, they should wear overshoes over their shoes. After the shoe covers are used, they must be disposed of in the waste containers on the farm.

- Boots must be washed in the boot washing section at the entrance to the animal shelters and disinfected in the foot bath filled with disinfectant. These procedures are mandatory before entering the facility and at the end of the activities. Hands should be washed at the end of the work.

- The water in the footbath should be changed regularly when it becomes dirty. Feet must be fully immersed in the footbath and therefore the boots used must be waterproof. Students should wash their hands with soap after visiting the farm.

#### **4.9. Special Precautions**

- Only small groups may be allowed to visit the facility under the supervision of an authorized officer.

- Visitors are allowed contact only with healthy animals; no food or drink is permitted in the shelters.

- During the visits, the designated biosafety rules must be followed:

- Clean boots or disposable overshoes must be used.
- Boots should be washed at the boot washing station located at the entrance of the facility and disinfected in footbaths with appropriate disinfectant.
- These applications are mandatory at the entrance and exit of the farm.
- Hands should be washed at the end of the activity.
- If disposable overshoes and aprons are used, they should be disposed of in medical waste.

# BIOSAFETY GUIDE

## CHAPTER 5



**VETERİNER FAKÜLTESİ**  
Faculty of Veterinary Medicine

**ANATOMY DEPARTMENT**  
**BIOSAFETY RULES**



## **5. GENERAL RULES FOR ANATOMY DEPARTMENT**

### **5.1. Dissection Hall**

- Only healthy animals are admitted to this hall to be used as cadavers.
- In this hall, only carcass parts, extremities and trunks of animals used as cadavers should be dissected. Only when deemed appropriate by the Head of the Department, cadaver parts may be taken out of the hall.
  - Animal carcasses can be obtained from slaughterhouses. Animals obtained from animal breeders or AtaVet Farm should be euthanized immediately after being brought to the Anatomy Department. Animals obtained from shelters or the Department of Pathology may be brought to the anatomy department dead.
  - Latex gloves are mandatory during cadaver dissection.
  - It is still necessary to wash hands after using gloves.
  - After dissection, students should dispose of their latex gloves and disposable aprons in the medical waste bin.
    - After dissection, the tools and equipment used are washed and disinfected.
    - Used scalpel blades should be placed in a special yellow sharps waste bin.
    - Personnel on duty must wear aprons and rubber boots when entering risk areas.
    - Rubber boots should be stored in lockers until the next use.
    - Long pants (ankle length) or other clothing that covers exposed skin should be worn in the dissection room.
    - Appropriate shoes with closed toes that cover the top of the feet should be worn.
    - Everyone working in the hall must wear appropriate protective equipment.

### **5.2. Animals To Be Used as Cadavers**

- Only healthy animals approved by the Department of Anatomy are accepted to be used as cadavers.
  - Animal carcasses and body parts can be obtained from slaughterhouses to be used as cadavers. These portions are used after being properly fixed or kept in cold storage. Single-hoofed and ruminant animals to be used as cadavers are obtained from animal dealers or AtaVet Farm. After the clinical examination of the animals to be cadavers by the responsible veterinary research assistant of the Department of Anatomy, the cadaver preparation process should be carried out by euthanasia.
  - Rabbits and poultry to be used as cadavers are obtained from animal breeders. These animals should be euthanized after examination by the veterinary research assistant in charge of the Department of Anatomy and then prepared and used as cadavers.

### **5.3 Storage of Cadavers**

- Cadavers should be stored in a cold room and removed when they are to be used.
- All cadavers and organs that have not been treated with any preservative should be stored in a cold room or deep freezer until use, removed and used during the dissection week.

- At the end of the dissection week, cadavers should be disposed of in medical waste bags.
- Deep freezers and refrigerators used for cadaver storage should be cleaned and disinfected.

#### **5.4. General Cleaning and Hygiene**

##### **5.4.1. General disinfection protocol**

- Staff and students are prohibited from bringing pets into the anatomy laboratories.
- Hands should be washed and disinfected before leaving the anatomy laboratory.
- Latex gloves are mandatory during cadaver dissection.
- It is still necessary to wash hands after using gloves.
- After dissection, students should dispose of their latex gloves and disposable gowns in a separate medical waste bin.
- After dissection, the instruments and equipment used are washed and disinfected.

##### **5.4.2. Disinfection protocol for devices and equipment**

- Dissection instruments used by staff and students must be thoroughly washed and disinfected.
- Used scalpels should be disposed of in yellow sharps waste bins and soiled latex gloves in medical waste bins.
- Dissection instruments used by staff should be washed and disinfected every day.
- Dissection rooms should be washed with detergent water on the last day of the week.
- Dissection tables should be washed daily with detergent water and disinfected on the last day of the week.

#### **5.5. Detergents and Disinfectants Used in Anatomy Department**

- Chlorinated antiseptics should be preferred for tables and floors.
- Quaternary Ammonium compounds or Chlorhexidine should be preferred for dissection materials.
- Liquid soap should be used for hand washing. Solid soap should not be allowed.
- It is recommended that students enrolling in the first year of the faculty have their tetanus and rabies vaccinations and detailed information on the subject is mandatory. If any cuts and/or injuries occur during dissection, the dissection process should be interrupted, hands should be washed under the supervision of the relevant faculty member and information should be obtained about the extent of the cut. If the wound is deep, bleeding should be controlled and the patient should be transferred to the emergency room for suturing and dressing. If the wound is superficial, the wound is dressed to prevent infection. In both cases, the tetanus vaccination of students and staff should be questioned and tetanus anti-serum should be provided when necessary.



Food and beverages are prohibited in all parts of the anatomy laboratories.

## **5.6. Breaking the Transmission Pathways**

### **5.6.1. Visitors**

Visitors are only allowed in corridors and the clean area (areas outside the dissection hall) and are prohibited in other areas.

### **5.6.2. Children**

Children visiting the Department of Anatomy are allowed to be in the corridors and clean areas (areas outside the dissection hall) under the supervision of an adult.

Neither staff nor students are allowed to bring their pets to the Department of Anatomy. All animals used for purposes other than anatomy are strictly forbidden to enter the Department.

# BIOSECURITY GUIDE

## CHAPTER 6



**VETERİNER FAKÜLTESİ**  
Faculty of Veterinary Medicine

**BIOSECURITY RULES IN STUDENT AND  
DEPARTMENTAL DIAGNOSTIC AND RESEARCH  
LABORATORIES**



## **6. BIOSECURITY RULES IN STUDENT AND DEPARTMENTAL DIAGNOSTIC AND RESEARCH LABORATORIES**

### **6.1. General Rules**

#### **6.1.1. Laboratory general rules**

- Long trousers (up to the ankles) or other clothing that covers the exposed skin should be worn.
- Shoes suitable for the floor should be worn, preferably closed toe shoes which cover the top of the feet.
- Students should wear a long-sleeved white cotton lab coat, which should remain buttoned throughout the activity. The sleeves should completely cover the sleeves of the outer clothing.
- Students should wear long aprons, armbands, disposable gloves and tied plastic masks in the application laboratories.
- Students must wear disposable nitrile or latex gloves when working in laboratories.
- When working with Bunsen burners, not recommended to wear gloves.
- Gloves should be disposed of in red (medical) bins.
- Hands must be washed and disinfected after removal of gloves (disinfection instructions must be on the sinks in the disinfection area).
- An eye wash station must be available in the laboratory (except in microscopy laboratories). If biological or chemical materials enter the eyes during use, an eye shower should be used immediately.
- If an injury occurs during application, hands should be washed with plenty of soap before contact with the wound. The wound should then be allowed to bleed a little, the wound area washed and the health and safety representative informed.

#### **6.1.2. Student practice laboratory rules**

- Eating, drinking, smoking, wearing contact lenses, applying cosmetics and storing food are prohibited.
- After use, hands should be washed with soap when leaving the laboratory. Due to the possibility of contaminated hands in the laboratory, eyes, skin or hair should not be touched without washing hands.
- It is strictly forbidden to use mobile phones in the laboratory.
- The laboratory door must be kept closed at all times.
- Special transport boxes or additional containers should be used to transport samples in the laboratory. Biological and chemical samples should be regularly placed in transport containers to avoid the possibility of spillage or breakage.
- Mouth pipetting is completely prohibited and mechanical pipetting devices should be used instead.
- Work with sharp objects must be kept to a minimum.
- Hairs should be tied up and no jewellery should be worn and no accessories should be worn to avoid contamination.

- Before entering the laboratory, personal belongings should be left in the lockers provided for this purpose.
- It is strictly forbidden to wear the lab coat outside the laboratory.
- Sharps such as needles, scalpel tips, microscope slides and coverslips must be disposed of in the sharps container after use.

### **6.1.3. Diagnostics and research laboratory rules**

#### **6.1.3.1. General rules**

- Forbidden for anyone other than authorised personnel to enter the laboratory. For this purpose, access to the laboratory must be provided with card reader doors.
- Eating, drinking, smoking, contact lenses, cosmetics and food storage are prohibited in the laboratory.
- Eyes, skin or hair should not be touched without washing hands due to the possibility of contaminated hands in the laboratory.
- Oral pipetting of biological and chemical fluids is prohibited. A pipettor must be used for pipetting.
- Dispose of sharps (needles, scalpel tips, slides, coverslips) in the sharps container after use.
- Eyewash stations must be available in the laboratory. If the eyes become contaminated with biological or chemical materials during use, an eye shower should be used immediately.
- If a cut is made during application, wash hands with plenty of soap before touching the wound. The wound should then be allowed to bleed and the area washed. The occupational physician should then be informed.

Bringing personal items into the laboratory is prohibited.

#### **6.1.3.2. Personal protective equipment and general clothing rules**

- The Personal Protective Equipment (PPE) described below must be used prior to any work being carried out with infectious material in the laboratory.
- Long-sleeved white long apron or disposable apron tied at back,
- Disposable nitrile or latex gloves,
- Mask,
- Goggles,
- Glasses.
- Aprons must be fully closed at the front.
- Laboratory slippers or shoes that completely cover the feet should be worn.
- The sleeves of the laboratory coat should completely cover the sleeves of the clothing.
- It is not recommended to wear gloves when working with Bunsen burners.
- It is mandatory to wear gloves when handling biological material.
- Free hairs and hanging clothing can be a hazard when working with a Bunsen burner flame. For prevent, hair should be tied back and hanging items of clothing should be covered by an apron.

- Gloves should be disposed of in medical waste containers. Hands should be washed with soap and water after removing gloves.

#### **6.1.3.3. Equipment and materials rules**

- Material Safety Data Sheets (MSDS) should be available in the laboratory for all chemicals.
  - Virology: calculators are available in the laboratory, so mobile phones should not be allowed.
  - Taking notes:
    - Pencils are provided in the laboratories.
    - As far as possible, practices should be sequenced to allow for taking notes beforehand.
  - Disinfection of equipment used for laboratory work is the responsibility of the staff.
  - For activities in the microbiology laboratory, the platinum core should be disinfected between uses.
    - The biological safety cabinet is systematically surface disinfected at the end of the staff's practical work. The entire cabinet should be thoroughly cleaned at least once a month.

#### **6.1.3.4. Mechanical safety barriers**

- All infectious material should be handled in a Bunsen burner or biosafety cabinet.
  - Transport containers should be used for all infectious, biological and chemical materials in the laboratory.

Biological and chemical samples should be regularly placed in containers to prevent them from spilling or breaking.

#### **6.1.3.5. Biological materials**

- Staff are responsible for biological materials.
  - Petri dishes, bags, tubes, etc. containing cultures should be placed in the refrigerator reserved for storage after material processing has been completed.
    - This material should not be disposed of in the waste system without being decontaminated.
    - Students and unauthorised persons are not permitted to remove this material from the laboratory.

#### **6.1.3.6. Laboratory exit procedures**

- At the end of the laboratory procedures, the apron will be removed and should be hung in the apron cupboard.
  - Glove disposal should be in a medical wastebin.
  - Hands should be washed thoroughly with soap and disinfected.
  - Wearing lab coats outside the laboratory is prohibited.

### 6.1.3.7. Rules for visitors

- Keep visitors in corridors and safe areas only.
- To guide visitors, signage should be organised.
- Visitors should not have access to the laboratories with their domestic animals.

## 6.2. Classification of the Pathogens

A work permit has been obtained under the Regulation of the Ministry of Agriculture and Forestry on Veterinary Diagnostic and Analysis Laboratories, and the diagnosis of microorganisms at Biosafety Level 2 (BSL-2) is permitted. While the analysis of microorganisms of BSL-1 and BSL-2 levels is performed in the laboratory, the analysis of microorganisms of BSL-3 and BSL-4 levels and etiological suspicions of these microorganisms is prohibited. Micro-organisms for human and animal health are divided into 4 groups.

**BSL-1 Pathogens:** Biological agents that are unlikely to cause disease in humans or animals. In BSL-1, a non-pathogenic *Escherichia coli* is used as an example. Standard microbiological practices are followed. Personal protective equipment should be used if necessary.

**BSL-2 Pathogens:** Biological agents that can cause disease in humans and animals, may present a limited risk to public health, and generally have effective prevention or treatment. These micro-organisms are endemic to the geography. *Staphylococcus aureus* is an example of this level of micro-organism. Access to the laboratory is restricted during the trial. Personal protective equipment must be worn. Safety glasses should be used if necessary.

**BSL-3 Pathogens:** Micro-organisms that cause serious disease in humans and animals and have a high likelihood of spreading in the community. They are generally micro-organisms for which effective prevention or treatment is available. They can cause potentially fatal diseases that can be transmitted through the respiratory tract. *Brucella melitensis* is an example of a micro-organism in this category. Special laboratory conditions are needed.

**BSL-4 Human Pathogens:** These are micro-organisms that pose a high risk to humans and the community and for which there are generally no effective prevention and treatment methods. These micro-organisms are dangerous and exotic and carry the risk of aerosol-borne infection. This group includes haemorrhagic fever viruses such as *Marburg*, *Ebola*, *Lassa fever*, *Cribean Congo haemorrhagic fever* and *Nipah virus*, for which no vaccine is available.

**BSL-4 Animal Pathogens:** These pathogens lead to trade restrictions and require very strict control measures. These infections cause significant economic losses. If a case is suspected, the competent authority must be notified. Students and staff should avoid contact with farmers, farms and livestock for one week.

## 6.3. Sterilisation - Disinfection - Decontamination

### 6.3.1. Sterilisation

A sterilisation process must be used before sterilising liquid and solid materials used in the laboratory and before disposing of infectious materials used in the laboratory.

Depending on the nature and quality of the material, sterilisation should be carried out by one of the following methods.

- Dry hot air (pastor oven),
- Steam (moist hot air),
- Sterilization with filter,

#### **6.3.1.1. Dry air sterilisation**

- A pasteur oven should be used for sterilization with dry air.
- It should be used for sterilization of glass and metal materials.
- In sterilisation;
- 2.5 hours at 150 °C
- 2 hours at 160 °C
- 1 hour at 170 °C

#### **6.3.1.2. Steam sterilisation (autoclave)**

- For the sterilization of solutions should be used, media, glassware such as tubes, pipettes, petri dishes, and materials resistant to high heat and pressure, such as cotton and cloth.

- In sterilisation;
- 30 minutes at 115 °C
- 15 minutes at 121 °C
- 3-4 minutes at 134 °C
- Containers containing liquids to be sterilized should not be filled more than 2/3,
- The mouths of bags and bottles are left loose,
- Bags and containers are placed to allow free circulation of steam,
- Make sure that the autoclave lid is closed and the lid should not be opened until the temperature drops after the autoclave process.

#### **6.3.1.3. Filter sterilisation**

- Filter sterilization should be used in the sterilization of high temperature sensitive solutions.
- Disposable syringe filters with 0.22 µm pores should be used for sterilization.

#### **6.3.2. Disinfection**

- It is the process of removing most living organisms from laboratory work surfaces.
- Work surfaces should be cleaned and disinfected before and after analysis.
- Personnel are responsible for disinfecting the equipment used in the laboratory.
- Planned surface cleaning and disinfection of biosafety cabinets should be carried out.
- During disinfection, a disinfectant effective against the microorganisms analyzed in the laboratory should be used.
- For disinfection in the laboratory, 70% ethanol and bleach diluted at a ratio of 1:10-1:100 should be used.

- In case of spillage of the biological agent;
- The laboratory manager should be informed immediately and those who are not involved should be removed.
- Double layers of gloves should be worn.
- Liquid should be collected with an absorbent material.
- After all the liquid is collected, bleach diluted 1:10 is poured onto the absorbent material placed last and waited for 20 minutes.
- If there is any broken glass material, the pieces should be carefully collected with forceps and thrown into the sharps waste container.
- The surface should be cleaned with 1/10 bleach.
- At the end of the procedure, the first layer of gloves and used absorbent materials should be thrown into the medical waste bin. After all procedures are completed, the laboratory coat should be removed and hung in the appropriate place. The second layer of gloves is removed and hands should be washed with soap.

### **6.3.3. Decontamination**

- Biological culture wastes, liquid cultures and infectious samples resulting from laboratory processes should be decontaminated in an autoclave. Biological waste should not be removed from the laboratory without decontamination.
- Recommended autoclave temperatures and times for waste decontamination;
- 15 minutes at 121°C
- 3-4 minutes at 134 °C
- After the decontamination process, it should be placed in red plastic bags marked "Attention Medical Waste".
- When 75% of the medical waste bags are filled, they should be delivered to the personnel responsible for transporting medical waste.
- Medical waste should be delivered to the contracted medical waste company.

## **6.4. Waste Management**

### **6.4.1. Domestic waste**

- These are wastes that are generated as a result of human activities and are not contaminated with infectious materials.
- These wastes should be collected by placing them in black plastic bags.
- When 75% of the bags are filled, they should be tightly tied and handed over to cleaning personnel.
- Waste should be taken to the domestic waste storage.

### **6.4.2. Packaging waste**

- These are plastic, paper, metal and glass wastes that are not contaminated and suitable for recycling.
- This type of waste should be collected in blue boxes and/or blue bags.
- When the packaging waste bags are 3/4 full, they should be tightly tied and delivered to the cleaning personnel.



- These wastes are transported to the waste depot for recycling and must be delivered to the contracted company.

#### **6.4.3. Medical waste**

- These are infectious wastes generated in the laboratory.
- These wastes must be decontaminated by autoclave before being removed from the laboratory.
- During decontamination, waste should be placed in red plastic bags marked "Attention Medical Waste".
- When 75% of the medical waste bags are filled, they should be delivered to the personnel responsible for transporting medical waste.
- Medical waste should be delivered to the contracted medical waste company.

#### **6.4.4. Sharps waste**

- All kinds of sharp materials used in the laboratory, such as slides, scalpels, broken glass, etc., should be collected in the sharps waste container.
- When the sharps waste containers are 3/4 full, the lid of the container should be closed.
- It should be decontaminated in an autoclave.
- After decontamination, it should be delivered to the personnel responsible for transporting this type of waste. Medical waste should be delivered to the contracted medical waste company.

# BIOSAFETY GUIDE

## CHAPTER 7



**VETERİNER FAKÜLTESİ**  
Faculty of Veterinary Medicine

**NECROPSY UNIT**  
**BIOSAFETY RULES**



## **7. NECROPSY UNIT BIOSAFETY RULES**

- Since the necropsy hall is an area with a high risk of infection, students and staff who will participate in the necropsy should take personal protection precautions.
- The area where the necropsy will be performed should be an area where the risk for faculty, teaching staff, and students is minimized.
- When a risk assessment determines that the animal to be necropsied does not pose a risk of exposure to zoonotic or human pathogenic microorganisms, the procedure should be performed on the necropsy table.

Getting an infection at the necropsy stage; It occurs through intradermal inoculation, inhalation, mouth, skin contact and contamination of mucosal surfaces (eyes, mouth, nose). The main hazardous diseases for people who will perform necropsy are; rabies, tuberculosis, Salmonella, Clostridium, and prions.

- There are 4 danger groups of animal and human pathogens for personnel who will perform necropsy. Different procedures are required for each of these.

### **7.1. Risk Group 4 (RG4) Animal Pathogens**

- This group of pathogens can cause epidemics that cause economic losses large enough to restrict trade and require intensive measures to eliminate the disease in affected areas.
- If any suspicious situation is detected, in addition to all measures implemented by official health authorities, faculty students and staff participating in necropsy should not come into contact with farmers, farms and livestock for one week.

### **7.2. Risk Group 3 (RG3) Human Pathogens**

- These pathogens can cause serious human diseases and pose a major danger to necropsy participants, they also have the potential to spread within the community.
- In practice, situations that give rise to such concerns arise especially during necropsies of primates. In such cases, students are not allowed into the necropsy room.
- Only expert personnel should perform necropsy and sampling using adequate protective equipment, i.e. masks and eye protection.

### **7.3. Risk Group 2 (RG2) Human Pathogens**

- The most common way of transmission of these pathogens in the necropsy hall is from hand to mouth. Good hygiene procedures, such as hand washing and disinfection, should be implemented to prevent the risk of contamination.
- Although transmission through inoculation is also possible, the risk has been minimized with modern universal protection measures.
- When performing necropsy on animals with granulomatous lesions, it will be sufficient to wear a protective respiratory mask against risks such as tuberculosis and tularemia, since the risk of inhalation is low. Additional antibiotic prophylaxis may be considered on a case-by-case basis.

#### 7.4. Standard Precautions for Necropsy Procedure

- When carrying out necropsy and biological sample collection procedures, personnel protective equipment requirements should always be observed.

Below are personnel protective equipment considerations regarding the necropsy procedure.

- An apron or overalls that cover the back should be used for the necropsy. The apron or coveralls used must be liquid resistant.

- Latex or nitrile gloves should always be worn. Gloves should be replaced when damaged. Cut-resistant gloves should be used when using sharp tools.

- Safety glasses should be worn when performing non-infectious animal necropsy. A face shield should also be worn during autopsies where there is a risk of exposure to zoonotic disease or other hazards.

- When performing necropsy, waterproof disposable boots or rubber boots should be worn.

- For procedures that may produce biological or chemical aerosols, a mask should be used for respiratory protection when there is a risk of zoonotic disease or exposure to hazardous chemicals.

- Necropsy areas should be disinfected at the end of each necropsy.

- Before applying the disinfectant, remove solid tissue pieces, hair and feathers, etc. should be cleaned.

- High pressure washing of surfaces should be avoided until the disinfectant has remained in contact with the surfaces for the anticipated contact time.

- Carcasses and large tissue pieces should be placed in a medical waste bag and taken to cold storage.

- Instruments used in necropsy should be washed and autoclaved at the end of each necropsy. Autoclave sterilization phase cycle settings must be at least 121°C and 15 psi for 60 minutes.

- Personnel should be autoclaved in protective equipment. When autoclaving is not possible, it should be chemically disinfected.

- Hands should always be washed thoroughly with soap and water after removing personnel protective equipment and before leaving the necropsy area.

**Necropsy area; It consists of 4 different sections. These sections are as follows;**

1. Student entrance
2. Hallway
3. Necropsy hall
4. Animal entrance

**\*In these areas, action should be taken as follows;**

Students must go through the student entrance, place their personal belongings in lockers, and wear disposable aprons and boots.

- Passage from the hallway.
- Entrance to the necropsy hall.

- Leaving the necropsy hall after personal disinfection is achieved after the necropsy.
- Faculty staff and students should be informed about how to use these areas.
- Holden geçiş.

**Waterproof transport containers**

- Transportation of cadavers in the faculty should be done with waterproof transport containers.
- Cadavers should be kept under control in the cold storage at the entrance of the necropsy room.
- Containers and container wheels should then be washed with hot water + disinfectant and high pressure.
- The same procedure should also be applied to truck tires and containers that bring cadavers to the faculty from outside the faculty.

This guide has been prepared based on the Biosafety Guide recommended by the European Association of Establishments for Veterinary Education (EAEVE) and prepared by the Faculty of Veterinary Medicine of the University of Liege.