



AYDIN ADNAN MENDERES UNIVERSITY

FACULTY OF VETERINARY MEDICINE



BIOSAFETY MANUAL

POCKET GUIDE

AYDIN - 2023



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1. INTRODUCTION

1.1. Definition

The World Health Organization has defined “Biosafety” as “conservation principles, technologies and practices put in place to prevent unintentional exposure or accidental spread of pathogens and toxins”. While the World Organization for Animal Health defines “Biosafety” as “the implementation of measures that reduce the risk of transmission and spread of disease agents and the taking of effective measures by humans to reduce the risk in all activities involving domestic animals, exotic and wild birds and their products”, according to the definition of the Food and Agriculture Organization, “Biosafety is a broad topic that addresses the strategy and integrated approach to risk analysis of environmental hazards related to food safety, veterinary and phytosanitary and their management”.

1.2. Purpose and Scope

The purpose of Aydın Adnan Menderes University Faculty of Veterinary Medicine’s Biosafety Manual is to ensure the continuity of quality education and service. In this context, it is among the primary objectives to protect hospital staff, students and patient owners from zoonotic diseases, to ensure that students receive the best education on infection prevention and control and disease monitoring methods, and to inform patient owners and other people in the community about the prevention and prevention of infectious diseases in animals and humans. In addition, it is essential to inform the students and staff about the necessary biosafety measures and to provide control during laboratory studies while carrying out education and service works. In addition to all these, it is one of the priorities of Aydın Adnan Menderes University Faculty of Veterinary Medicine’s Biosafety Manual to collect, temporarily store, recycle, transport and provide the final disposal of medical wastes separately without harming public health and the environment. This manual prepared based on these purposes contains the basic biosafety principles that must be followed and applied during the education, research and service processes of the Faculty of Veterinary Medicine. Knowing and applying the basic rules in this manual by students, administrative and academic staff and patient owners will help reduce the risk of hospital-acquired infections and zoonotic diseases. The rules and principles in the biosafety manual primarily include measures to protect the health of students, staff, patient owners and visitors. In addition, in this manual, which was prepared in coordination with the Waste Management Plan, principles for public health and environmental protection were also given importance.

2. EDUCATION AND RESEARCH LABORATORIES

2.1. Educational Application Laboratories

Medical Botany, Medical Chemistry, Biochemistry I and II, Special and General Microbiology, Special Pharmacology, Toxicology, Poultry Diseases, Food Hygiene and Control, Dairy Science and Technology and Clinical Biochemistry courses are practiced in the application laboratories. The rules to be followed by the students who will participate in the applications of these courses are given below.

2.1.1. Priority Rules in the Application Laboratories

- Chemistry Laboratories should not be entered without an apron and goggles, and should be used continuously.
- Students who will enter the laboratory should have their hair tied, their aprons should be covered, and they should preferably not wear contact lenses. Since jewelry increases the contact time of the chemicals with the skin, they should be removed before starting the experiments.
- If there are open wounds, cuts, cracks, etc. on the hands, they should be covered with a bandage before starting work and gloves suitable for the work to be done should be worn.
- Food and drink should not be consumed in laboratories.
- Cell phones should not be used because volatile and flammable solvents increase the risk of batteries igniting and static electricity and solvents are at risk of igniting.
- Any material in the laboratory should not be used for non-experimental purposes.
- No distractions should be made in the laboratory. No games should be played or jokes should be made in the laboratory.
- Chemicals should not be smelled or tasted. They should never be touched with bare hands, they should be weighed and transferred with suitable material.
- Hands must be washed when leaving the laboratory.
- In the laboratory, the location of fire extinguishers and how to use them should be learned.
- The experiments should not be left without consulting the person in charge of the laboratory.

2.1.2. Rules to be Followed When Working with Chemical Substances

- Solid substances should always be taken from bottles with a clean spatula. The same spatula should not be inserted into any other material without being cleaned.
- While withdrawing liquid chemicals, a pump, pipette, etc. device should be used, never the mouth. The pipette used to pick up a solution should not be inserted into a different solution bottle.
- Bottle caps should never be placed on the table. The caps of the bottles should not be

changed.

- The substances in the containers with lids should never be heated, and heating and boiling should not be done in the containers that do not bear the fire-resistant mark.

Tongs should be used in the heating process with the test tube, and the open part of the tube should face the side where there is no one, and the heating process should be done by stirring constantly. In experiments with water bath heating, the experiment should not be left.

- Chemicals should not be mixed haphazardly.
- No container containing chemicals should be unlabeled in laboratories. No experiments should be performed with unlabeled chemicals.
- Flammable liquids should only be in the required amount in a closed container on the test bench and should be kept away from heat sources (burner flame, electric heater, etc.).
- Chemical wastes should be processed in accordance with the directives of the laboratory application supervisor.
- Inhalation of toxic vapors and gases should be avoided. It should be worked in a fume hood with acids such as sulfuric acid, nitric acid, hydrochloric acid and hydrofluoric acid, and substances containing toxic gases such as bromide, hydrogen sulfide, hydrogen cyanide and chloride. A fume hood should be used when experimenting with volatile substances such as ether, chloroform and ammonia.
- When diluting all acids and alkalis, they should always be poured over the water slowly and never vice versa.
- If mercury is spilled in any way, it should be collected with vacuum source or foam type synthetic sponges. If it is in trace amounts that cannot be collected, it should be rendered harmless by sprinkling powdered sulfur on it.
- The mercury parts or mercury residues of thermometer fractures should never be thrown into the trash or sink.
- If chemicals and/or samples are spilled into the laboratory environment, it should be cleaned immediately, and the laboratory technical staff should be notified when necessary.
- When transporting chemicals from one part of the laboratory to another, they must be transported carefully and safely. When handling chemicals, two hands should be used, one hand holding the cap tightly, the other grasping the bottom of the bottle.
- Chemical substances should never be taken out of the laboratory.
- Volatile (substances with low boiling point; ether, acetone, alcohol, etc.) and combustible materials should not be kept close to an open flame.
- All materials used during the experiment should be washed, placed next to other materials after cleaning, and the tables should be cleaned after the experiment is over.
- When working with chemicals, attention should be paid to the warning signs on them.

HAZARD AND HAZARD CLASSIFICATIONS OF CHEMICAL SUBSTANCES		
 Explosive	 Flammable	 Oxidising
 Gas Under Pressure	 Corrosive	 Acute Toxicity
 Health Hazard	 Serious Health Hazard	 Hazardous To The Environment

Figure 1. Chemical Warning Signs

2.1.3. Rules to be Followed When Using Glass Materials

- It should not be forgotten that laboratory glass materials are very thin and sensitive to breakage, and the glass materials should not be broken by applying random force.
- The labels on the chemical packaging used in the laboratory should never be torn off, blackened or deteriorated in any way. Packages with damaged labels should be reported to the technician or the relevant/responsible person as soon as possible.
- While pouring liquid from the bottles, the label side should be kept up. Otherwise, it should be known that the drops flowing from the mouth of the bottle will spoil the label and the writing on it, and it is best to wipe the last drops on the mouth of the bottle with its own cap.
- Broken glass materials should never be touched, the broken materials should be removed and disposed of in broken glass waste bins, not in the trash.

2.1.4. Rules for Device Use

- Devices whose usage is not clearly known should never be used. All devices to be used in the laboratory must be used under the control of the application course supervisor and the device usage instructions must be followed.
- Care must be taken to keep hands dry while connecting electrical appliances.
- Particular attention should be paid to experiments using a burner. Gas valves should be carefully controlled and closed immediately when not in use.
- Hair, clothes and notebooks should be kept away from the burner flame.

- Wooden tongs must be used in applications made by heating the burner.
- During heating or boiling process, care should be taken that the container is not completely closed, as explosion may occur due to pressure.
- The temperature of heating devices should not be controlled manually.
- The temperature setting should not be changed while using a stove or a bain-marie.
- The precision scale should be closed and unloaded when not in use.
- The balance of the precision scale must be checked. In a balanced water gage, the air bubble should be in the middle.
- Care should be taken not to spill chemicals on or around the precision scale. Chemical substance spilled should be cleaned with a brush.
- The ventilation system must be operated before using the fume hood.
- When working with the fume hood, chemicals should be kept at least 15 cm behind the front of the fume hood, and the glass should be kept closed as much as possible.
- When working in a fume hood with explosive or flammable chemicals, all devices must be electrically connected in advance.

2.1.5. Waste Control in Student Laboratory Practices

The wastes classified according to the Waste Management Plan of Aydın Adnan Menderes University Faculty of Veterinary Medicine, prepared in accordance with the “Medical Waste Control Regulation” dated 22.07.2005 and numbered 25883 of the Ministry of Environment, Urbanisation and Climate Change, are disposed of at the relevant place under the control of the laboratory application supervisor.

2.2. Research Laboratories

Biosafety is a definition that includes all the practices necessary to minimize or completely eliminate the exposure of health workers, other people and the environment to potentially dangerous infectious microorganisms and their genetic and toxic various components. Considering the purpose of biosafety to protect workers, other people and the environment from potentially dangerous microbiological agents, two separate protection/control mechanisms have been defined;

1. Primary protection
2. Secondary protection

Primary protection is the protection of staff and laboratory environment from infectious agents by acting in accordance with all standard or special microbiological practices of the laboratory staff. The most important element of primary protection is good laboratory practices and techniques. In this context, staff working with infectious agents or materials with a high risk of infection should be aware of the possible danger of contamination and should be trained to work safely with such material, and should be well-versed in applications and technical issues. Another element of primary protection is safety equipment. Safety equipment is designed to prevent exposure to hazardous biological materials. In this context, biosafety cabinets (BSC), which provide protection against infected droplets or aerosols formed during many diagnostic applications, are described as the most important safety equipment. Other safety equipment is gloves, aprons, shoe covers, boots, masks, face shields and safety glasses.

Personal protective equipment and BSC should be used in combination depending on the agent or material being worked.

Secondary protection covers all issues related to the design of laboratory structures so that both laboratory workers and the community outside the laboratory are not exposed to infectious agents as a result of possible laboratory accidents. Laboratory supervisors are responsible for establishing the necessary structures by considering the biosafety levels and laboratory functions of the agents working in that laboratory. What needs to be done within the scope of secondary protection varies according to the risk of contamination of the agents studied in the laboratories. For example, if there is exposure to infected aerosols, additional measures should be taken within the scope of secondary protection, such as a special ventilation system, in order to prevent the leakage of this agent into the environment.

2.2.1. Determination of Risk Groups

Classification of infectious agents according to risk groups is made according to the risk of transmission (Table 1). Which risk group a microorganism will be in and at what level the study will be conducted depend on four important factors:

1. Pathogenicity of the organism.

2. Transmission way and host diversity of the organism. The current immunity level of the people living in the region, the density and movement of the host population, the presence of appropriate vectors and the effects of environmental hygiene standards are the issues that should be evaluated under this article.

- Risk Group 1; No or very little individual and environmental risk: Microorganisms without the risk of causing disease in humans and animals.
- Risk Group 2; Moderate individual risk, low societal and environmental risk: Microorganisms that can cause disease in humans and animals but do not pose a serious threat to the environment, laboratory workers, pets and public health. Laboratory studies can cause serious infections, but there are effective treatment and protection methods. In addition, the risk of spread is limited.
- Risk Group 3; High individual risk, low social and environmental risk: Although it is a serious disease factor in humans and animals, there is generally no transmission from infected individual to another. Effective treatment and protection are possible.
- Risk Group 4; High individual, environmental and social risk: Microorganisms that cause important disease in humans and animals and can easily be transmitted directly or indirectly from one inactive individual to another, that is, they threaten public health, but there is usually no effective treatment and prevention method are included in this group.

Table 1. Classification of infectious agents according to risk groups

Risk Group 1 Agents	Risk Group 2 Agents	Risk Group 3 Agents	Risk Group 4 Agents
<p><i>E. coli</i>, <i>S. cerevisiae</i>, <i>Actinomyces</i> sp.</p>	<p><i>Campylobacter</i> sp. <i>Plasmodium</i> sp.</p>	<p>Bacteria <i>Bartonella</i> sp. <i>Brucella</i> sp. (<i>B. abortus</i>), <i>B. canis</i>, <i>B. suis</i>) <i>Burkholderia</i> (<i>Pseudomonas</i>) <i>mallei</i>, <i>B. pseudomallei</i> <i>Coxiella burnetii</i> <i>Francisella tularensis</i> <i>Mycobacterium bovis</i> <i>Pasteurella multocida</i> type B -"buffalo pasteurellosis" and other virulent strains <i>Rickettsia akari</i>, <i>R. australis</i>, <i>R. canada</i>, <i>R. conorii</i>, <i>R. prowazekii</i>, <i>R. rickettsii</i>, <i>R. siberica</i>, <i>R. tsutsugamushi</i>, <i>R. typhi</i> (<i>R. mooseri</i>) <i>Yersinia pestis</i></p> <p>Fungi <i>Coccidioides immitis</i> <i>Histoplasma capsulatum</i>, <i>H. capsulatum</i> var. <i>duboisii</i></p>	<p>Viruses Alphaviruses (Togaviruses) - Group A Arboviruses Chikungunya virus Semliki Forest virus St. Louis encephalitis virus Venezuelan horse encephalitis virus Arenaviruses Flexall viruses Lymphocytic choriomeningitis virus (LCM) (neurotropic strains) Bunyaviruses Hantaviruses Rift valley fever virus Coronaviruses Severe Acute Respiratory Syndrome associated coronavirus (SARS-CoV) Middle East Respiratory Failure Syndrome (MERS-CoV) Flaviviruses- Group B Arboviruses Japanese encephalitis virus West Nile virus (WNV) Yellow fever virus Orthomyxoviruses Influenza viruses 1918-1919 H1N1 (1918) H1N1, human H2N2 (1957-1968) and highly pathogenic avian influenza virus H5N1 Poxviruses Monkey pox virus Prions Spongy Brain disease virus (BSE) Retroviruses Human immunodeficiency virus (HIV) type one and 2</p>

In the laboratory, contamination occurs in four different ways:

- a. Contamination directly from the skin, eyes and mucous membranes.
 - b. Transmission by parenteral route or by bites of infected animals and arthropod vectors,
 - c. Contamination by ingesting solution liquids or rubbing contaminated hands into the mouth.
 - d. Airborne transmission of infected particles. The airborne transmission of the organism puts both the laboratory staff performing the study and other laboratory workers in a very risky position in terms of contamination. If working with a microorganism whose transmission route cannot be determined precisely, it should be assumed that the agent is transmitted by air and necessary precautions should be taken.
3. Availability of effective means of protection. Here, issues such as immunization with vaccines, various health measures such as hygiene of food and drink, control of animal reservoirs and arthropod vectors should be considered.
 4. Availability of effective treatment ways. At this point, passive immunization, post-exposure immunization and the use of antibiotics, antiviral and other chemotherapeutic agents should be evaluated.

2.2.2. Notifiable Animal Diseases

The faculty has to notify the notifiable and zoonotic animal diseases (Table 2, Table 3, Table 4) to the Provincial Directorate of Agriculture and Forestry. When the Biosafety Commission suspects or diagnoses a notifiable animal disease, it notifies the Provincial Directorate of Agriculture and Forestry. The responsible physician or the Biosafety Commission should be contacted directly.

Table 2. List of notifiable diseases (as of 18.02.2021)

Diseases of Land Animals		Diseases of Aquatic Animals
Alum (FMD)	Infectious anemia of equine	Epizootic hematopoietic necrosis
Bovine brucellosis	Equine encephalomyelitis (all	Epizootic ulcerative syndrome
Bovine tuberculosis	types, including Venezuela equine	Viral hemorrhagic septicemia (VHS)
Rabies	encephalomyelitis)	White spot disease
Bluetongue	African swine fever	Yellowhead disease
rinderpest	African swine fever	Taura syndrome _
Spongy brain of cattle	Classic swine fever	Infectious hematopoietic necrosis of fish (IHN) Infectious
disease (BSE)	Vesicular disease of pigs	salmon anemia
Sheep goat brucellosis	Small hive worm (Aethina tumida)	Infection with Perkinsus marinus
Sheep and goat plague (PPR)	American foulbrood of bees	Microcytos mackini infection (Infection with Microcytos
Sheep goat pox	Tropilaelaps mite (Tropilaelaps mite)	mackini)
Anthrax	Feline spongy brain disease (FSE)	Infection with Marteilia refringens
Scrapie	Nodular exanthema of cattle (Lumpy skin)	Bonamia ostreae infection (Infection with Bonamia ostreae)
Chicken plague (Avian influenza)	Infectious stomatitis (Vesicular stomatitis)	Bonamia exitiosa infection (Infection with Bonamia exitiosa)
False Chicken Plague (Newcastle)	Rift Valley fever	Koi herpes virus disease
Pullorum	Infectious bovine pleuropneumonia	Spring Viraemia of Carp (SVC)
Poultry typhoid (Chicken typhoid)	(Contagiousbovine pleuropneumonia)	Crayfish plague
Ruam (Dumb)	Enzootic bovine leukosis	Bacterial kidney disease (BKD)
Durin (Horse syphilis)	Epizootic hemorrhagic disease of deer (EHD)	

Table 3. Quarantine periods and diagnosis methods in notifiable diseases

NAME OF THE DISEASE	CORD DURATION (After Final Healing or Death)	DIAGNOSIS
Rinderpest	21 days	Clinical Diagnosis + laboratory confirmation
Alum	30 days	Clinical Diagnosis + Type Determination
Sheep-Goat Pox	21 days	Clinical Diagnosis/ Laboratory Diagnosis
Sheep-Goat Plague	21 days	Laboratory Diagnosis
Anthrax	15 days	Laboratory Diagnosis
Tuberculosis	Allergic testing is done at 60-day intervals in infected establishments. If the whole flock has received a negative response in the last two tests, the cord is lifted.	Clinical Diagnosis in Slaughterhouse + Allergic Test in Business
Ruam	20 days after the 1st test, if the 2nd test is negative, the cord is removed.	Live Animal Allergy Test/Serological Test
Beef Brucellosis	Action will be taken within the scope of the "Circular on Control and Eradication of Brucella with Conjunctival Vaccine".	Laboratory Diagnosis
Sheep Brucellosis	Action will be taken within the scope of the "Circular on Control and Eradication of Brucella with Conjunctival Vaccine".	Laboratory Diagnosis
Rabies	6 months in meat-eaters, equines and cattle, and 3 months in sheep-goats, pigs and poultry.	Laboratory Diagnosis
Bluetongue	40 days	Laboratory Diagnosis
Nodular exanthema of cattle	28 days	Laboratory Diagnosis
Newcastle	21 days after agreement and disinfection in disease detection / 30 days of surveillance and control in vaccine-related positivity.	Laboratory Diagnosis
Pullorum	If the herd is negative in the last two tests performed with an interval of 21 days, the quarantine is lifted.	Laboratory Diagnosis
Chicken Typhoid	If the herd is negative in the last two tests performed with an interval of 21 days, the quarantine is lifted.	Laboratory Diagnosis

2.2.3. Wearing an Apron

Aprons should be worn while working in the laboratory to protect the skin and prevent contamination of daily clothing. Aprons should be worked with shirred sleeves and with their buttons closed.

- You should not go out to areas outside the laboratory, such as lab coats and management offices and lounges. For this purpose, it should be hung on hangers in a suitable place at the laboratory entrances. Otherwise, microorganisms are dispersed to the external environment with contaminated aprons without being noticed. Necessary measures should be taken by the security officer to prevent this.
- One way to prevent environmental contamination is to wash and disinfect the equipment and aprons used by the personnel while working. You should not go out of the laboratory with the aprons used in the laboratory.

2.2.4. Hand Washing

- Although working with gloves, hands must be washed after contact with patient samples or microorganisms or in all cases where contact is suspected.
- Hands must be washed before removing old gloves and putting on new gloves, especially when changing gloves.
- After the work is done in the laboratory, hands should be washed and, if possible, wiped with a hand disinfectant to prevent microorganisms from being transferred to other environments at the final exit.
- Washing hands with normal soap is sufficient in routine laboratories. However, soaps with antimicrobial properties should be used for high-risk situations.
- In addition, hand washing facilities should be set up at the counter in the laboratory and close to the laboratory exit.

2.2.5. Eye and Face Protection

Safety glasses with side shields, mask goggles and face shields or face shields should be used in any process that is thought to be splashed into the face and eyes during laboratory studies. Among these, safety glasses provide partial protection, but their effectiveness is relatively weak. Mask glasses, on the other hand, can be used with glasses worn due to accommodation defects.

2.2.6. Mask Usage

Aerosol may occur during some procedures in microbiology laboratories. Aerosol formation can be transmitted by both respiratory and direct contact. For this purpose, it is recommended to use a surgical type mask in order not to contaminate the environment during the operations of the employees and to prevent the employees from being infected with the droplet core.

2.2.7. Necropsy Laboratory Biosafety Procedures

Necropsy is a high-risk procedure as it involves contact with infectious agents, aerosols, and contaminated sharps. During the necropsy, the person or persons who are not on duty should not be present. Everyone participating in the necropsy procedure should wear gloves, masks, face shields, safety glasses and impermeable clothing. In addition, veterinarians should use gloves that are resistant to cutting tools. Precautions regarding ventilation and respiration should be taken before the risks of diseases that can be transmitted through the respiratory tract or the use of tools that release particles into the air, such as a chainsaw.

The decision whether to perform necropsies of animals with suspected or signs of an infectious disease or carrying a foreign infectious disease should be taken under the consultation of an official veterinarian. Anthrax requires special attention with diseases such as Hendra virus, Q fever, Rift valley fever, rabies, Australian bat lyssa virus, Murray valley encephalitis, kunjin virus, Japanese encephalitis virus, highly pathogenic avian influenza virus and west Nile virus.

Students should use white lab coats in pathology laboratories.

When the animal dies or is euthanized, the cadaver should be removed from the paddock as soon as possible (same day on weekdays, in the evening or on weekends the next morning or Monday morning) and taken to the necropsy department by forklift or a sheltered transport vehicle.

If possible, the animal should be euthanized in the autopsy room.

After transporting a cadaver, the forklift must be thoroughly cleaned and disinfected in the necropsy department.

- The risk of infection in the necropsy area is high. Students and faculty staff should be protected from dangerous infections in practice areas.
- If there is a risk of serious human infection, prophylaxis, treatment and counseling protocols should be implemented with the University Hospital.
- If there is a risk of carrying important animal diseases, protocols should be applied to minimize the possible spread of microorganisms.
- Risk assessment, situational protocols and raising universal protection levels are required here.

Protective Measures to be Applied in Procedures in the Necropsy Laboratory

- Cut-resistant gloves, face shields and impermeable clothing should be used.
- Only the necessary person or persons should participate in necropsy applications.
- A suitable mask should be used when using tools such as a chainsaw.
- If there is a suspected infectious disease or a foreign disease, official authorities should be consulted before necropsy.
- Official veterinarian or emergency services should be consulted for information.

Students and faculty staff should wear the following during autopsy;

- Waterproof disposable apron that completely covers the arms, chest and legs,
- Latex gloves,
- Rubber boots (reinforced toe),
- Mouth-nose mask and goggles when cutting hard bones to prevent splashing contamination,
- Apart from hand and respiratory protection where there is a very high level of protection, applying these standards reduces the risk of acquiring a group 2 and 3 infection to an acceptable level, even if they are unknown.
- The pathologist should be aware that he or she is responsible for minimizing the risk of people touching the cadaver during and after necropsy.

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

- Dressing room
- Hall
- Working area
- Disinfection area

These areas should be navigated as follows:

- Students put their personal belongings in lockers and wear disposable aprons and yellow boots.
- Holden pass,
- Access to the work area with disinfected dissection instruments and disposable gloves.
- Faculty staff and students should be informed about how to use the specified areas.

Waterproof shipping containers

- The transportation of cadavers in the faculty is done with forklift (fork lifter) compatible waterproof transport containers.
- Cadavers should be taken under control at the entrance of the necropsy room.
- Cadavers should be kept in the refrigerator by responsible technicians.
- Containers and forklift wheels should then be washed with hot water + disinfectant and high pressure.
- The same procedure should be applied to truck wheels and containers that bring cadavers from outside the faculty to the faculty.

Catching an infection

In the necropsy rooms, the ways of getting infection occur in 5 ways.

- Intradermal inoculation
- Breathing
- By mouth
- Skin contamination without inoculation
- Contamination of mucosal surfaces (eyes, mouth, nose)

* The main risks during animal necropsy are rabies virus, Mycobacterium spp, Salmonella, Clostridium and Prions. The main risk in autopsy of primates such as monkeys is inhalation of blood-borne viruses and pathogens such as Mycobacterium tuberculosis.

Classification of pathogens

Infectious agents are divided into 4 groups in terms of human and animal health. Important groups for students and faculty staff are Group 3, Group 4 human and Group 4 animal pathogens.

Group 2 pathogens

The main transmission route of these biological agents in necropsy rooms is hand-mouth route. Practicing good hygiene procedures, especially proper hand washing, can prevent transmission.

It can also be by inoculation (vaccination), but transmission can be minimized with standard precautions.

Using a mask during the autopsy of animals with granulomatosis lesions with a low risk of inhalation is sufficient to prevent Tuberculosis/Tularemia and antibiotic treatment can be applied depending on the situation.

Group 3 human pathogens

These are biological agents that can cause severe human diseases and cause serious damage to autopsies and there is a risk of spreading to the community.

In practice, this only concerns the autopsy of primates. In such cases, students should be prevented from entering the autopsy areas.

Autopsy and sampling procedures should only be performed by qualified personnel wearing goggles and masks.

Group 4 human pathogens

This group includes viruses for hemorrhagic fever, such as Marburg, Ebola, Lassa-fever, Crimean-Congo hemorrhagic fever and Nipah virus, for which vaccines are not available.

2.2.8. Waste Management in Research Laboratories

Wastes classified in accordance with the Waste Management Plan of Aydın Adnan Menderes University Faculty of Veterinary Medicine, prepared in accordance with the “Medical Waste Control Regulation” of the Ministry of Environment, Urbanisation and Climate Change dated 22.07.2005 and numbered 25883, are disposed of at the relevant place under the control of the laboratory medical waste responsible.

2.3. Department of Anatomy Biosafety Rules

2.3.1. Origins of Animals Used as Cadavers

Only animals approved by the Department are accepted to the Department of Anatomy. Equipped and ruminant animals to be used as cadavers are obtained from animal vendors or from Aydın Adnan Menderes University Veterinary Faculty Farm. After the clinical examination of the animal to be cadaverized by the responsible veterinary research assistant of the Anatomy Department, the cadaver preparation process should be performed after the blood is drained from A. carotis communis under anesthesia.

Rabbits and poultry to be used as cadavers are procured from animal breeders. These animals should be euthanized and used as cadavers after examination by the responsible veterinary research assistant of the Department of Anatomy. Animals that have died in our faculty's clinics or private clinics must receive a document from clinical veterinarians that there is no contagious disease. In addition, a letter should be obtained from the patient's owner stating that he donated it to our department. Cadavers obtained from deceased patients should be stored in the refrigerator or freezer before use. If necessary, it should be kept in benzalkonium chloride solutions for 1 week. Afterwards, it can be embedded in the fixation solution of our department. The cadaver parts stored in the refrigerator during the dissection week should be disposed of in the medical waste container at the end of the dissection week. Refrigerators and freezers should be cleaned and disinfected regularly.

2.3.2. Departments in the Department of Anatomy

Part of the chapter is directly related to biosafety measures (risk zone). These sections consist of dissection room, euthanasia section, maceration room, plastination section and cold room.

- Students bring dissection materials according to the order of the lesson. On the days of dissection, students bring their own plastic boots, latex gloves and dissection materials.
- Students should never use dissection materials at home. How to use dissection materials and how to insert and remove scalpel tips should be explained in the lessons. If there is a locker, students should keep the dissection materials in the cabinets and not take them home.
- Students should put on their aprons and boots as soon as they enter the dissection room, and take off their boots and put them on the shelf immediately after leaving the risk area after each dissection. Rubber boots and dissection instruments should be

thoroughly washed and disinfected at the end of each dissection week before students take them home. Used scalpel tips should be disposed of in yellow boxes and dirty latex gloves in a medical waste container (materials at risk).

- Personnel should wear apron and rubber boots as soon as they enter the risk area. Rubber boots should be stored in the closet placed in the entrance hall.

2.3.3. General Cleaning and Hygiene

- Before leaving the risk area, hands should be washed and disinfected (the washing and disinfection process is explained in the first lesson of each year). The use of latex gloves during dissection is mandatory, but this does not relieve the obligation to wash and disinfect hands before leaving the risk area.
- If a potential infectious disease is suspected, students are requested to leave the dissection room after disposing of their latex gloves and gowns in a separate medical waste container. Hands, tools and rubber boots should be washed and disinfected. If the cadaver is not used later, it is thrown into a special medical waste container inside the dissection room by the personnel. Tables and dissection chambers should be thoroughly washed and disinfected, as well as instruments, rubber boots, and personnel's special shoes.

2.3.4. Foot Bath

- Students should put on their boots as soon as they enter the dissection room and these should be removed as soon as they leave the risk area and placed on the shelves after each dissection.
- Students should wash and disinfect their boots after each dissection week before taking them home.

2.3.5. Disinfection Protocol for Device and Equipment

- Dissection instruments used by students should be thoroughly washed and disinfected at the end of each dissection week before being taken home.
- Used scalpel tips should be disposed of in yellow boxes and dirty latex gloves in medical waste container.
- Dissection instruments used by personnel should be washed and disinfected at the end of each dissection week, as well as daily.
- Dissection rooms should be washed with machines and detergents at the end of each dissection week. In addition, the dissection chambers should be washed, rinsed with water and scraped with a brush every day.
- Dissection tables should be washed with detergents by the person using them every day (at the end of the lesson, each student group's own desk) and disinfected at the end of each dissection week.

3. TRAINING AND RESEARCH HOSPITAL

Risk Categories

Biosafety measures are of paramount importance in animal hospitals due to the possibility of the arrival of patients with potentially infectious diseases. Strict rules should be applied in animal hospitals to prevent sick animals from being a source of contamination to other patients, and to protect patient owners and hospital staff from zoonotic diseases. For this purpose; The following risk categories (Table 5) have been established depending on the infectious agents encountered, their transmissibility to other animals and/or their zoonotic potential.

Table 5. Classification of risk categories

CLASS 1	Normal Care	Infectious diseases caused by factors that are unlikely to be transmitted to other animals and humans.
CLASS 2	Normal Care	Infectious diseases caused by bacterial agents with a low probability of transmission and/or non-resistance.
CLASS 3	Situations requiring measures to prevent contamination	Infectious diseases and/or potential human pathogens caused by a moderately infectious agent, Resistant bacteria. Infections caused by bacteria that are highly resistant to antibacterials. Those detected by bacteriology laboratories.
CLASS 4	Situations requiring isolation	Infectious diseases caused by highly contagious agents and/or pathogens very serious to humans

3.1. Clinics

3.1.1. General Rules and Considerations in Clinics

- In the clinic, staff and students should be trained on issues including hand hygiene, use of personal protective equipment, cleaning and disinfection of the environment and equipment, waste management including cutting and piercing waste, and patient owners should be informed when necessary.
- All staff and students should minimize contact with patients for whom they are not directly responsible for their care to minimize the risk of hospital exposure. Staff and students should not enter stables/cages unless necessary, and should avoid touching or petting animals unless necessary.
- The clinician may allow and request contact with animals for the purpose of education and training of students. When students are asked to examine multiple patients or assist with procedures for instructional purposes, students should wash their hands

and apply disinfectant between patients. Cleaning and disinfection of the examination materials they use should also be provided.

- To reduce the risk of inadvertent transfer of infectious agents, staff and students should minimize movement between areas used for different purposes, if possible.
- All staff and students should work in areas where they are most likely to be contaminated, last day if possible.
- It is not allowed to enter any part of the clinic with human food and it is forbidden to eat or drink. This prohibition also includes patients' relatives.
- No personal belongings of staff and students should be in the clinic. Students should leave their personal belongings in the areas reserved for them.
- All clinicians, students and technical personnel should wear their badges during working hours.
- The use of jewelry (rings, watches, bracelets, etc.) while working makes it difficult to wash hands adequately, reduces both the mechanical cleaning effect of soap and water against bacteria and viruses, and the antiseptic effect of alcohol-based hand disinfectants. Therefore, jewelry should not be worn during patient contact.
- Long nails are difficult to clean, they can puncture gloves and can host more microorganisms than short nails. Therefore, nails should be clean and short in the clinic. Artificial nails or nail polish should not be used by anyone directly involved in patient care. These precautions should be considered especially when performing invasive procedures where the hands are placed inside the body cavities with gloved hands.
- All long-haired staff and students working in or around the patient should be requested to collect their hair.
- Planned visits to the clinic for a specific institution or person from outside should be coordinated by the dean's office and managed by the clinical staff.
- Patient owners and visitors who have patients in the clinic are prohibited from contacting other patients. Visitors are not allowed to enter the anesthesia preparation area, operating room, emergency room and isolation units.
- The transfer of patient owners from the area where the animal is kept to other areas should be courtesy of the responsible staff and students.
- In addition to examination, diagnosis and treatment, no healthy animals should be allowed to enter the clinic other than justified purposes such as scientific research, education-research work, blood transfusion. The contact of healthy animals brought for the stated purposes with other sick animals must be prevented and kept in a separate area.
- In case of clinical exposure to a suspected or identified case of zoonotic disease, all known owner, physician, student and ancillary personnel contacts should be recorded and reported to the responsible biosafety officer/commission. The person/commissioner responsible for biosafety and the clinician responsible for the case should ensure that all individuals potentially exposed to zoonosis and appropriate healthcare facilities are contacted.
- Any person with known or suspected infections related to a procedure performed in the clinic should report the situation to the biosafety officer/commission and subsequently seek medical advice. Likewise, all staff and students who have concerns or

questions about exposure to a zoonotic agent should contact their healthcare provider.

- Before any intervention, all personnel and students should notify the relevant unit supervisor/head if there is any special health problem (such as pregnancy, immunosuppression) that may affect the risk of infection with zoonotic agents or its results.

Hand Hygiene and Glove Use

- Hand hygiene is generally the most important measure in preventing the spread of infection in healthcare facilities. There are two methods to remove/kill microorganisms on hands, which consists of washing with soap and running water or using an alcohol-based hand sanitizer.
- Each examination room in the clinic should have a sink with running water, soap dispensers and paper towels. Bar soaps cannot be used in the veterinary clinic due to the potential to transmit pathogens from person to person. Instead, liquid/foam soap should be used and soap containers should not be filled without disinfecting.
- Antibacterial soaps should be used in critical areas such as intensive care, isolation and operating room and other areas where invasive procedures are applied.
- Washing hands is the most important procedure that reduces the risk of spreading pathogens. All clinical staff and students should use their hands before and after the study, before and after contact with each patient, after contact with biological materials such as blood and other body fluids, and after contact with contaminated objects, when protective gloves are removed, in the same animal when switching from dirty procedures to clean procedures, to prevent transmission of infection into the body. between different procedures on the same patient, after handling laboratory samples, after cleaning cages or boxes, before taking breaks from work and meals, before and after using the toilet.
- After washing the hands before and after the patient examination, hands should be disinfected with alcohol-based hand disinfectants. Hand disinfectant should be applied to dry hands, and the disinfectant should be spread on all surfaces of the hand so that it goes over the wrists. After applying the hand disinfectant, it should be allowed to dry on its own, should not be wiped or rinsed. Every examination room in the clinic should have an alcohol-based hand disinfection point. In the event that the hand sanitizer runs out, the responsible person should be informed immediately and it should be ensured that it is ready for reuse.
- In emergencies where hand washing is not possible in the clinic, firstly hands should be wiped with damp towels or cloths and mechanical cleaning should be provided, and then skin disinfectants should be used. Staff and students should then wash their hands immediately as soon as suitable conditions are established.
- If the senior clinical staff deems it necessary, clean gloves should be worn during the examination and treatment of patients with high risk of infectious disease or newborn calves, when contacting blood and various body fluids and mucous membranes of the patients. Surfaces that can be touched by people without gloves and personal items such as phones and pens should not be touched with gloved hands. Gloves should be removed immediately after use, contact between the skin and the outer surface of the glove should be avoided and discarded immediately. Wash hands or use hand sanitizer immediately after gloves are removed.

- If commonly used latex gloves pose an allergy risk, nitrile or vinyl gloves can be used as an alternative.
- Repeated hand washing and wearing gloves may cause skin irritation or sensitization, resulting in allergic dermatitis. In this case, the washing technique can be evaluated, appropriate hand creams can be used, and measures such as appropriate glove selection can be applied.

Personal Protective Equipment

- It is mandatory for staff and students to wear clean aprons (Scrubs) during all procedures in the clinic to prevent the transmission of infectious agents to humans and animals outside the clinic. The attire of staff and students should be appropriate as it affects the image of the faculty.
- It is forbidden to enter the clinic areas with clothes used outside, and it is forbidden to use the clothes used in the clinic outside the clinic. All staff and students at the clinic should always have spare outdoor clothing with them.
- Clinical gowns should be changed whenever they are visibly soiled or contaminated and at the end of each day. Aprons worn when working with potentially infectious animals should also be washed after each use, even if they are not contaminated. Since the personnel and students take the aprons home to wash, they can carry the pathogens from the clinic to the house, so the aprons should be kept in a plastic bag at home until they are placed in the washing machine and washed separately from other laundry.
- Closed shoes should always be worn to prevent injury from sharps, such as scalpels and needles dropped in the clinic, and to protect feet from contact with potentially infectious materials such as faeces, urine, or other body secretions. For this reason, it is mandatory for all staff and students to wear boots in the patient examination/treatment and care areas in the clinic. Staff and students without boots are not allowed to enter the clinic. The boots to be used should be clean, washable and have a structure that will protect the foot against trauma. The use of these boots in non-clinical areas is prohibited. It should be ensured that the animal owner/caretaker also abides by these rules.
- Boots should be cleaned and disinfected regularly or when they are visibly soiled or contaminated. The disinfection instruction should be placed next to the disinfection station and each person performing the disinfection process must follow the instructions.
- Staff and students should use additional personal protective equipment (such as protective gloves, disposable overalls, liquid-proof overalls, masks, goggles, face shields, bonnets) in addition to clinical gowns, when necessary. These additional personal protective equipment may be needed when working with patients diagnosed or suspected of infectious disease (hazard class 3 or 4), when there is a risk of biological material splashes, and when performing activities that may cause dust generation or aerosol generation. Safety glasses should also be used if there is a possibility of contamination of the eyes with organic material or pathogens.
- Personal protective equipment should be used effectively and economically in accordance with its purposes. Staff and students should learn to wear and remove personal protective equipment appropriately to avoid contaminating themselves and the envi-

ronment. Patient owners should also be provided with the necessary personal protective equipment in cases where they assist the veterinarian and where there is a risk of infection.

- Hand hygiene must be ensured before and after the use of personal protective equipment. In case of splashes or exposure to large amounts of body fluids, liquid-proof gowns should also be used to provide additional protection.
- Disposable N95 masks should be used as an alternative to surgical masks in airborne zoonoses, these masks should be placed and worn as they should be.

Hygiene

- All multi-use areas where animals are examined or treated should be cleaned and disinfected after use by personnel responsible for the patient, regardless of the infectious disease status of each animal. Cleaning tools should also be cleaned and disinfected after use.
- Routine Cleaning-Disinfection;
 - On a weekly basis; The sink and sewerage drain in feed stores, general treatment and examination rooms and intermediate walking areas should be cleaned and disinfected.
 - On a monthly basis; areas that are not used daily (such as the tops of the walls) should be washed with pressurized water against dusting, cleaning and disinfection tools should be maintained.
 - Annually; the entire clinic should be thoroughly cleaned and disinfected, including all equipment.

Admission of Sick Animals and Referral to Outpatient Clinics

- The patient who comes to the clinic is first registered and evaluated by the responsible physician with a preliminary clinical examination in order to determine the risk category.
- Animals that do not show signs of notifiable disease and are in Class 1 and 2 groups as risk groups are unloaded and taken to the practice or hospitalization depending on the patient's condition.
- Patients infected with bacteria resistant to major antimicrobial drugs or to more than one drug class are managed as Class 3 infectious diseases and admitted to hospital.
- Special precautions need to be applied in patients with detected or suspected communicable disease (Class 4). Especially acute gastrointestinal diseases, acute respiratory system diseases, BVD, bacterial infections with multiple antibiotic resistance should be considered. Inspection of animals suspected of these diseases should be carried out in the transport truck or trailer used as an ambulance.
- Patients at high risk of communicable diseases should either be considered as outpatients or hospitalized in an isolation unit, and the examining clinician should decide whether the patient should be isolated and/or accepted for treatment.
- If the patient who comes to the clinic suspects an infectious disease during the preliminary clinical examination, the patient should be recorded as the last patient of the day

and the owner should be asked to wait outside or in the car until the examination room is called. In this case, if it is decided to admit the patient to isolation, the animal should be moved to a designated isolation room, the risk of contamination in the clinic should be minimized, and a “contaminated room” sign should be placed on the door. This room should not be reused until it has been thoroughly cleaned and disinfected. The contact of all staff and students with the patient should be minimized, especially those who are not directly responsible for the patient’s care should be prevented.

3.1.2. Examination Room

Patient Examination, Treatment and Discharge Procedures

- Outpatients who are not admitted to isolation or hospitalization, but only to be examined, are taken to the examination stops and their procedures are carried out.
- Patients in the practice can be watered with buckets belonging to the faculty and previously disinfected, but should not be fed. Buckets should be cleaned and disinfected after each use.
- After the patient is discharged following the examination and treatment process, the examination station should be cleaned and disinfected as soon as possible.

Cleaning-Disinfection and Wastes

- All examination materials or equipment must be cleaned and disinfected between different patients and after each use, placed in their original place and replaced if necessary.
- It is recommended to disinfect examination materials and equipment with alcohol or chlorine disinfectants before use.
- Instruments suitable for sterilization should be used while they are in sterile condition, they should be cleaned with soapy water after each use and disinfected with chlorinated disinfectants, then sent to the sterilization unit again.
- Clinicians and students can use their own various examination tools such as stethoscope in non-infectious areas. These equipment should be disinfected regularly, and disinfected immediately when there is visual dirt or there is a suspicion of class 3-4 infection.
- All wastes produced in the clinic should be separated and destroyed in accordance with the legislation. Clinical waste should be separated immediately at the point of production and disposed of in waste bins with labels and colors that match the description.
- For sharp waste, the person producing the waste is responsible for its safe disposal. Sharp wastes should not be passed between people, but should be thrown into their own waste bins and replaced when these bins are full. Cutter waste bins should be located in every area where animal care is carried out, out of reach of children and animals.
- Needlestick injuries are among the most common accidents in the veterinary clinic. For this reason, when throwing the needles into the waste box, the needle removal parts on

the waste box should be used and the needles should be allowed to fall directly into the container.

- Movement of people, transportation vehicles and equipment around the patient is an important point in the spread of communicable diseases. Pathogens in the ground can be transported over great distances through these factors. For this reason, there should be foot mats or baths for washing and disinfecting the boots in the clinic and must be used by all staff and students in accordance with the instructions.
- The activity and levels of foot mats and bath solutions should be constantly monitored. Instructions containing information about the disinfectant change and refill process and the person responsible for this process should be available at the disinfection station. Disinfectant solutions should be changed regularly in accordance with the instructions and their levels should be checked.
- Areas such as tables, counters, sinks and floors in clinics should always be kept neat and clean.
- Cleaning and disinfection equipment should be in every room and ready for use. Cleaning equipment should be cleaned before disinfection.
- Disinfectants used should be prepared and used in accordance with the manufacturer's instructions for dilution and contact time. Disinfectants must be applied to clean surfaces to ensure effectiveness and personnel must be trained in safe practices.
- Cleaning and disinfection of the used examination areas, tables and litter should be done as soon as possible after use, regardless of the animal's infectious disease status. Peripheral surfaces should be cleaned between uses and when visibly soiled. After the cleaning is completed, all areas should be left in the proper order.
- After the patient examination is completed, surfaces and equipment contaminated with feces, urine, blood, and other secretions should be cleaned and disinfected immediately by the personnel in charge. During cleaning and disinfection, it should be ensured that all areas are well ventilated, and care should be taken not to create dust and aerosols that may contain pathogens.
- Since solid wastes reduce the effectiveness of disinfectants during cleaning, first of all, solid wastes should be removed mechanically with a broom or dustpan and the drains should be cleaned. In cleaning, the area should be washed with warm foamy water, rinsed, disinfected and washed again with water. The staff in charge should apply this process systematically each time, then perform a visual control and sign the control card. After cleaning, all surfaces should be allowed to dry completely or, if possible, dried with suitable materials. Slippery floor warnings should be placed by marking the boundaries of the area until it dries against any risk of slipping.
- The physician in charge should make sure that the cleaning and disinfection in the area is provided.
- The animal transport trailer belonging to the hospital should be cleaned and disinfected after each transportation process.
- The animal lowering ramp should be cleaned routinely once a day, and should be cleaned immediately if animals defecate or urinate.

3.1.3. Operating room

General rules

- Only patients to be operated should be admitted to the operating rooms, and personnel and patient traffic should be kept to a minimum. For this purpose, the entrance and exit times for the operating rooms are determined and only the personnel and students on duty should be allowed to enter and exit during these hours.
- All staff and students entering the operating theaters should be familiar with the general rules of the clinic and should also be trained in aseptic technique and surgical procedures beforehand. Aseptic technique should be maintained during surgery.

Personal Protective Equipment

- During all surgeries, the operating rooms must be entered with predetermined clean surgical gowns. These gowns should not be used while performing other procedures or working with other patients, and a clean white gown should be worn outside the operating room. A clean white coat should be worn over the operating room gown in pre/postoperative interventions applied to the patients.
- All staff and students should wear surgical caps, masks and shoe covers, in addition to the surgical suit aprons designated for use in the operating room. This equipment should be removed when leaving the operating room. If only shoes to be used in the operating room are worn, overshoes should be worn when going out of the operating room.
- Personnel directly participating in the surgery should also wear sterile surgical gowns over clean aprons.
- Sterile gloves make an important contribution to the prevention of contamination in surgical operations and reduce the risk of pathogen transmission from the patients to the surgical team. Therefore, sterile gloves should be used in all surgical operations.
- Clean and easily dis-infectable, waterproof aprons should be worn over surgical suit aprons in laparotomic operations performed on outpatients in cattle.

During preparation for surgical operations;

i. Before entering the preparation area, clean surgical gowns to be worn in the operating room must be worn. Accessories such as watches and jewelry on the person should be removed. The upper parts of the surgical gowns should be put inside the trousers to prevent contact. Shoes designated for the operating room should be worn, masks, bonnets and shoe covers should be worn.

ii. Hands should be visibly clean and dry, and nails should be short. Normal washing should be done to remove visible dirt on hands and arms. Then the surgical washing area should be passed.

iii. Hands and arms should be washed with iodinated soap up to the elbows for 5 minutes in accordance with the technique, then rinsed should be done with the hands and fingers higher than the elbow level. Afterwards, hands and arms should be dried from fingertips to elbows with a sterile towel up to the elbows.

iv. After the hands are dried, rubbing should be done with alcohol-based hand antiseptics for the time and amount in accordance with the manufacturer's instructions. Finally, sterile gowns and gloves should be worn, respectively, and proceed to the operating room.

Patient Preparation and Surgery Procedure

- High standards of cleanliness and hygiene should be applied throughout the operating room, the patient's surgical site should be prepared aseptically, and aseptic technique should be maintained during the surgery.
- Movement of students and staff in the anesthesia preparation area should be minimal.
- Before patients enter the anesthesia induction area, pre-anesthesia examination forms should be filled, and all known or suspected infectious diseases should be stated on the form.
- Before entering the anesthesia induction area, patients should be thoroughly brushed, cleaned or, if possible, bathed. In very urgent surgeries, the patient should be cleaned as much as possible. All personnel should take primary responsibility for ensuring that biosafety measures of surgeries are completed as required.
- Before entering anesthesia induction or outpatient surgery areas, patients' feet should be cleaned with disinfectants, disposable gloves should be worn while handling the feet, and hands should be washed thoroughly after completion.
- Clean examination gloves should be worn during catheter or endotracheal tube placement procedures.
- During surgeries, hands should be washed and/or hand disinfectant should be used between all patient contacts. Alternatively, examination gloves can be used and should be discarded after each patient contact.
- Open wounds or incisions of patients undergoing surgery should not be touched with bare hands.

Cleaning and Waste

- After each procedure in the operating room; surgical equipment, trolleys and stands are set aside and properly cleaned. Waste is disposed of in appropriate waste bins. The floor is first washed and rinsed, then cleaned with disinfectant and mopped.
- At the end of the day in the operating room and after invasive contaminated procedures; Before the operating room is cleaned, all trolleys, tables, supplies and trash cans are emptied. Any blood or dirt on the floor is cleaned and disposed of in infected waste bins. The floors and walls are then washed, scrubbed with disinfectant, rinsed and left to dry. The wheels of the items taken out of the operating room are cleaned and disinfected. Operating room doors should be kept closed at all times.
- Operating room once a week; In a spare moment, the walls are brushed to body level, the drains are cleaned and disinfected, the dust on the lights and other areas is also cleaned.
- Of all the instruments and materials used after the surgeries performed in the clinic, those that can be sterilized must first be cleaned and disinfected and then sent to the

sterilization unit.

- Disposable tools and materials should be disposed of in appropriate waste bins after use, taking into account the waste legislation.
- Materials that will be reused but cannot be sterilized should be cleaned, disinfected and placed in their original places in the operating room. For example, after endotracheal tubes are used, they should be cleaned inside and out with a hard brush with soap and water, kept in chlorhexidine solution for at least 15 minutes, rinsed thoroughly in warm water and left to dry in a specially designated cabinet in the anesthesia induction area.
- Anesthesia machines and ventilators should also be thoroughly cleaned and disinfected, both between cases and on a regular basis.
- If the gas hoses belonging to the anesthesia devices used in gas anesthesia and not in direct contact with the patient contain visible discharges or if there is a known/suspected respiratory system infection in the operated patient, they should be washed with hot water and detergent, immersed in a solution containing quaternary ammonium compound, rinsed with water and used again. must be installed first.

Deceased Patients

- When a patient dies in the clinic, the responsible veterinarian should inform.
- If a death occurs in units where Class 1 and 2 patients are accommodated, they must be cleaned and disinfected before a new patient enters the area. When a suspected Class 3 patient in hospitalization or a patient in isolation with or suspected Class 4 disease dies, the field should be marked "TO DISINFECT". No other patient should be allowed to enter this area without cleaning and disinfection.
- If the deceased animal died or was euthanized in its own paddock, the carcass should be removed as soon as possible. If the patient has died in the wake-up area, he or she should be removed as soon as possible and the area cleaned and disinfected.
- Animals that die on weekdays and working hours should be transported to the pathology unit immediately, and animals that die in the evening and on weekends should be transported to the pathology unit the next morning. After transport, the equipment should be thoroughly cleaned and disinfected.

Patient Care, Examination and Treatment Procedures

- Animals to be hospitalized should be housed in a suitable paddock or stall where basic hygiene is provided. Animals should be kept as clean as possible, and if water is not contraindicated, it should be provided by the person in charge immediately upon admission.
- If there is an automatic drinker at the stop where the sick animal is staying, it should be checked whether it works properly and it should be determined whether the animal drinks from the automatic drinkers. If the animal is drinking from the bucket, the presence of water should be checked regularly and filled when it is lacking.
- Patients should be fed with hay and/or concentrated feed by the staff in the morning and evening, and lactating animals should be milked morning and evening unless ot-

herwise stated. Feed storage areas should be cleaned and disinfected prior to new feed delivery in addition to the weekly routine.

- All feed and feed additives should be stored in tightly closed feed containers, and minimal litter and feed materials should be available in the hospital to reduce the risk of contamination and prevent nesting of wild animals.
- Animals should be kept as clean as possible, brushed regularly and their nails cleaned.
- Patients may exit hospitalization, walk or exercise only if authorized by the responsible veterinarian.
- Responsible personnel in the clinics should be informed about a patient who is in the hospitalization and is in class 3 risk category. Whenever possible, diagnostic, surgical or other procedures should be performed wherever these patients are present, rather than in common examination and treatment areas. All staff and students should take appropriate personal protective measures at this time. If the patient needs diagnosis or other procedures that can only be performed in the main clinics, these procedures should be performed at the end of the day whenever possible. Regardless of where the procedure is performed, tools, equipment and the environment should be thoroughly cleaned and disinfected after the procedure.
- More than necessary drugs and consumables should not be left in the hospitalization unit. Drugs used in Class 3 patients should either be sent with the patient or be prescribed at discharge. Medicines or intravenous fluids should not be returned to the pharmacy.
- It is the responsibility of the veterinarian responsible for the care of the patient to ensure that the samples are sent for the diagnostic procedures of the patients in hospital and that appropriate biosafety measures are taken with these patients.
- Medicines to be used in the treatment of the patient should be stored in a secure medicine room. Only active personnel should enter this room, and before administering anything to the patient, it should be known exactly what to give and in what concentration.
- Unlabeled medications left unused should not be used for another patient and should be discarded.
- Expired drugs should not be used, the opening date and time of opened drugs should be written. After opening the medicine, the expiry instructions specified by the manufacturer should be observed.

Discharge Procedures

- In isolation, technical personnel should be notified for cleaning and disinfection that patients will be discharged.
- When the patient is discharged, the station card should be cleaned and the records taken here should be archived.
- Rooms used to house Class 1 and 2 patients should be cleaned before a new animal enters the barn. A warning stating the necessity of disinfection should be hung in the rooms where Class 3 patients are accommodated, and new patients should not be allowed to enter before all areas are cleaned and disinfected.

- During the discharge process, personnel should inform the patient's owners about the communicable disease hazards in detail and make appropriate recommendations to reduce the risks to humans and animals.

Cleaning and Waste

- All areas of hospitalization, water and feeding containers, beds and bedding should be cleaned, disinfected or replaced regularly, between use by different patients, and immediately when soiled or contaminated. Door handles should also be cleaned regularly with disinfectant.
- During hospitalization, paddocks with patients are cleaned in the morning and evening by the predetermined paddock staff and new pads are laid. Feces or wet litter in newborn compartments should be removed immediately.
- Normal washing and disinfection of feed and water containers is sufficient for hospitalized patients. On the other hand, it is recommended to use disposable containers in patients admitted to the isolation unit.
- After a discharge, cleaning staff should be contacted for cleaning and disinfection before another patient is admitted.
- Dirty and clean materials should be kept separate from each other during cleaning processes.
- Cleaning personnel should use aprons, masks and gloves against infectious contaminants that may occur and chemical droplets that may arise from disinfectants while cleaning paddocks, cages, clinical areas and materials in these areas.
- Before starting disinfection, all materials such as feces and bedding should be thrown into garbage bins, dust and other small substances on the floor should be swept. Walls, doors and floors should be washed with a brush and water using soap or detergent. Brushing is important in terms of removing the film layer or residual dirt.
- After washing with detergent, the surfaces should be rinsed thoroughly and care should be taken to ensure that no detergent residue is left, as this can destroy the effectiveness of disinfectants. Then, disinfection should be done by ensuring that all surfaces are in contact with the surface for an appropriate time with appropriate quaternary ammonium compounds, and disinfectant should be rinsed at the end of the period.
- Corridors should be cleaned and disinfected daily in hospitalization.
- Cleaning materials should also be cleaned and disinfected when passing from one paddock to another, if necessary.
- After disinfection, the protective clothing used by the personnel should be removed and hands should be washed.
- Cleaning and disinfection should be carried out by the responsible personnel according to the same principles in multi-purpose areas such as the examination room, where animals are examined and treated.
- Garbage bins used in the clinic should not be used in the single-claw clinic.
- After the garbage is prepared and closed, it should be kept in an isolated area until it is collected.
- All materials in the hospitalization unit should be used for a patient and discarded if

possible. If non-disposable equipment or materials are used, they must be thoroughly disinfected before returning them to the main clinical facilities.

Visitation

- Patient owners are prohibited from being alone in treatment or patient accommodation areas and should not be allowed to touch other animals. If the owners have come with their children, the children should always be kept under the supervision of an adult.
- Visiting hours for inpatients are limited to predetermined times and patient owners must comply with this. In the event of euthanasia, patient owners are not allowed to visit animals alone unless exceptional permission is granted. Patient visits are carried out under the supervision of a responsible personnel and, if necessary, the owner is ensured to wear appropriate personal protective equipment.

3.1.4. Isolation

General Information

- The isolation area is dedicated to the care and housing of animals with contagious and/or potentially communicable diseases.
- The isolation area should allow for complete physical separation of the animal to be housed and have adequate areas to perform routine patient-related procedures, thereby reducing the risk of direct or indirect infection of other hospitalized animals or clinical staff.
- The isolation room is separate from the rest of the hospital, has an external entrance separate from the hospital entrance and has a special area at the entrance to store personal belongings and personal protective equipment. There should be a footbath filled with a suitable disinfectant between this area and the isolation room.

General rules

- The owner of the patient to be isolated should be explained to the owner that his/her animal has/may have a contagious disease and must be isolated for human health and safety of other animals.
- In case of suspicion of a notifiable disease, Faculty Management and Animal Diseases Branch of the Directorate of Agriculture and Forestry should be informed.
- In case of suspected or confirmed disease, the biosafety commission should be informed as soon as possible so that they can assist in communication and assess whether appropriate measures have been taken to house the animal.
- Any situation that occurs while patients at high risk of communicable disease (Class 4) are placed in isolation or while the patient is in isolation should be reported to the Faculty and Hospital Management as soon as possible.
- Once an animal has been decided to be placed in isolation, it should be transported on a stainless steel cart and not allowed to walk on the ground. Personnel carrying the

animal to isolation should wear disposable personal protective equipment and gloves. It is very important to clean and disinfect surfaces from fecal materials or bodily fluids that contaminate surfaces during the transport process.

- When the isolation room is used by animals with a contagious and/or potentially contagious infectious disease, patients' rooms, cages and/or stalls should be clearly labeled for the relevant communicable disease hazard. This marking should indicate the risk class of the disease, disinfection procedures for the control of the causative agent, hygiene requirements and whether there is a risk of zoonotic disease. If there are precautions to be taken in addition to routine isolation protocols, these should also be outlined.
- Personnel and patient traffic should be minimal in isolation areas. Access to the isolation room should be limited to the minimum number of personnel required to provide patient care. No unnecessary personnel should go into isolation and entry should be made when absolutely necessary. A maximum of 4 people can be in isolation at the same time.
- The authorized veterinarian is always responsible for the care of patients in isolation. It is at the discretion of the veterinarian to take the students here for teaching purposes. However, this should be minimized as much as possible. Students who care for/care for patients in Class 3 and 4 risk categories should not come into contact with other patients elsewhere in the clinic, if possible.
- It is best for the people caring for patients in this unit to be different from the people in the routine clinic, if possible.
- Special precautions should be applied in the management of patients with detected or suspected communicable diseases. Thermometers used in animals with suspected enteric infections such as BVD, Salmonellosis should have boxes. Patients with suspected Class 4 infection should also have a separate thermometer. Stethoscopes should be available for use in the examination of high-risk patients, and these stethoscopes should be cleaned and disinfected immediately after use.
- Infectious disease status should be updated as the condition of patients changes during hospitalization.
- Doors should be opened and closed with the key at the entrance to the isolation area, trying not to touch too much.
- In isolation, there should be shoes or disposable shoe covers for the personnel in the place where the patients are kept.
- Shoes should be worn when the person enters the contaminated area and should be removed when leaving the area and discarded immediately if possible. Foot baths must be used when entering and exiting the unit.
- All personnel entering the isolation area where the potentially contagious animal is staying must wear appropriate personal protective clothing at each entry, whether or not they come into contact with the animal. These personal protective equipment can be: disposable examination gloves, shoe covers, cap and P2 masks, disposable or normal gowns. Before leaving the isolation room, these equipment should be disposed of in the clinical waste bin located there. If washable and reusable aprons are used, they should be immediately thrown into the laundry bag at the exit. Staff should replace personal protective equipment when moving between patients in isolation.

- After removing the gloves at the entrance and exit to the isolation ward, hands must be washed in accordance with the technique.
- Only the equipment and materials necessary for the care and treatment of the animal should be kept in the isolation room. Materials to be used in subsequent isolation patients should not be kept in the isolation area.
- All products entering an occupied isolation area should be considered as a source of contamination, and disposable items should be discarded immediately after the patient is discharged, and those that cannot be disposed should be cleaned and disinfected. Items other than discarded items should not be removed from the room.
- The ventilation of the isolation rooms should be in such a way as to prevent the flow of air towards the other areas of the clinic, or if it is not, the HEPA filter system should be used.
- If necessary (if there is an unknown fire), tape insulation should be applied. All equipment such as gowns, gloves and boots to be used in patient-related procedures should be kept in this area. There should also be a litter box within the tape isolation area.

Patient Care, Medical Examination and Treatment Procedures

- Once an animal is placed in isolation, it must be housed there for the duration of its stay and should not be taken out of the isolation room.
- Patients remaining in isolation should not be walked in areas used by other animals and should not be allowed to urinate or defecate.
- Biosafety staff at clinics and on the Biosafety Committee should be informed if a patient is in isolation with a reasonable suspicion that they may be infected with Class 4 disease. Medical practices to be performed in these patients should be tried to be performed on site, and all personal protective equipment precautions should be taken during these procedures. The Biosafety people in clinics and the Biosafety commission should be consulted before moving any class 4 patient for diagnostic or surgical procedures. If an isolated patient must be compulsorily transferred to another part of the clinic for basic procedures such as radiography or operational procedures, this should be done at the end of the day, if possible, or when there are minimal animals and staff, and appropriate personal protective clothing should be worn during these procedures.
- These patients should be transported on a trolley to avoid contamination of the clinic floor. All staff performing these operations should use appropriate personal protective equipment. Other animals should be kept away from the processing area. As soon as the process is completed, the area where the process is applied and all tools and equipment should be thoroughly cleaned and disinfected.
- Only necessary drugs and consumables should be taken to isolation for treatment. The drugs used in the patients here should either be sent with the patient or discarded when they are discharged. Medicines or intravenous fluids should not be returned to the pharmacy.
- It is the veterinarian's responsibility to ensure that sending samples for the diagnostic procedures of patients in isolation and taking appropriate biosafety measures with these patients.
- Samples from isolation patients can be sent to the laboratory or examined on in-house

laboratory equipment. Samples should be collected with as little contamination as possible in sample cups, sprayed with disinfectant on the outside of the container, and then placed in a clean disposable glove. Staff analyzing the sample should always wear gloves. If the sample is being sent to an external laboratory, it should be double bagged and a warning should be placed stating that the sample may be contaminated with an infectious organism.

- In the samples to be sent in suspicious cases or disease agents and zoonotic cases, the situation should be clearly stated on the application forms and samples.

Discharge Procedures

- A warning should be placed on the need for disinfection after discharge of patients with a suspected or suspected disease in the Class 4 risk group and staying in the isolation unit, it should not be used for a new patient without detailed cleaning and disinfection of the entire area, tools and equipment here.
- Patients should be brushed when discharged, their faeces and body secretions should be cleaned, and their feet should be washed with chlorine disinfectants.
- All staff involved in patient movement during discharge procedures should wear appropriate personal protective equipment. Staff should avoid touching doors and door-knobs with contaminated gloves.
- During the discharge process, staff should inform the patient's owners about the communicable disease hazards in detail and make appropriate recommendations to reduce the risks to humans and animals.
- Fecal materials or body fluids that contaminate surfaces during the patient's movement should be cleaned immediately and these areas should be disinfected.

Cleaning and Waste

- All staff are responsible for the hygiene of the isolation unit. A technician or staff should not be expected to clean when necessary, the person(s) assigned to the patient should take this responsibility.
- Door handles to isolation rooms should be disinfected regularly.
- Suitable waste bins and bags should be available in isolation rooms for the disposal of bedding, disposable personal protective equipment and other garbage.
- All materials such as buckets, mops and spray bottles to be used for cleaning the isolation room should be kept in the isolation room and should not be taken out.
- Contaminated items and wastes in the isolation room should be packed and sealed before being removed from the isolation area. Waste from the isolation room should be considered potentially infectious and warnings indicating this should be placed on the waste packaging.
- Infectious or potentially infectious fertilizers and bodily fluids of patients in isolation should be stored and disposed of separately from other waste materials in special waste containers.
- All surfaces and materials which have been touched by the isolated animal or come

into contact with bodily fluids or exudates should be cleaned and disinfected immediately. All surfaces, including benches, feeders, drinkers, and feeders, should be sprayed with a suitable disinfectant, and floors should be properly wiped daily with a disinfectant. All organic matter must be removed before using the disinfectant.

- Any material taken into the isolation unit should not be returned to the main clinical facilities. Equipment such as beds and cages should not be moved to another point in the hospital, even for washing and disinfection.
- Tools such as feed and water bowls used for animals in the isolation room, and medical examination equipment such as thermometer and stethoscope should be cleaned and disinfected after each use and if taken out of the isolation ward.

Patient Owner

- It is forbidden for the relatives of the patients to enter the isolation section. However, in exceptional cases, they can be taken by making an appointment at certain times, under supervision and if strict personal protective measures are taken by the staff. The permission of this situation is the responsibility of the senior clinical staff.

3.1.5. Clinicar

For all staff, physicians and students who will participate in the procedure in all non-faculty clinical visits planned by the Veterinary Faculty for education-training or medical examination-treatment;

- All necessary personal protective equipment,
- Materials to be used in the medical examination and treatment attempt,
- Waste bins required for waste disposal
- Necessary materials for cleaning and disinfection measures to be taken at the entrance and exit of the procedure area should be prepared in advance and taken during the visit.
- It should be informed about the risks of diseases/infectious diseases that will be encountered according to the business and animal species to be visited.
- Suspicion of contagious and/or zoonotic disease when visiting the establishment if any;
- The clinic vehicle should be left off property or outside the area where the suspected case is located. A dirty area (the area where the suspected case is located) and a clean area should be determined, and an entry-exit point should be selected between these areas. At the entry/exit point, a small transition area should be determined to switch between clean and dirty areas.
- All materials and personal protective equipment to be used in the dirty area should be prepared in the clean area. If there is no water in the dirty area, a bucket filled with water should also be prepared.
- The transition zone should be prepared for cleaning and disinfection for use when returning from the contaminated area to the clean area. For this purpose; if applicable, a waterproof cover should be laid on the floor, a footbath filled with disinfectant, a buck-

et and/or spray bottle filled with disinfectant, a scrub brush, and 2 large plastic bags with ties for contaminated personal protective equipment should be placed on the dirty side. On the clean side, a bucket and/or spray bottle filled with disinfectant and 2 large plastic bags with ties for contaminated personal protective equipment should be placed.

- After washing and drying hands with soap or detergent and water, personal protective clothing should be worn in the appropriate order. Two pairs of gloves should be worn, and it should be ensured that the outer gloves fit the sleeves of the disposable overalls. If necessary, outer gloves should be taped to the sleeves of the suit with duct tape.
- All staff moving into the contaminated area must follow these procedures.
- All equipment and disinfection materials required for medical examination, treatment or sampling should be brought to the contaminated area.
- If the sample is taken, the sample containers should be closed, wiped and disinfected with disinfectant, put in a plastic bag and sealed. Afterwards, disinfection should be applied again and put in a second plastic bag and closed.
- After the procedure is completed, the contaminated area should be cleaned of coarse contamination, the waste should be placed in a plastic bag and sealed, the outside of the bag should be disinfected by dipping or spraying disinfectant. Then the waste should be placed in the second plastic bag, sealed and disinfected again. Waste should be sent to the clean area.
- The practitioner should clean himself and the equipment. For this purpose; the practitioner should disinfect the boots in the footbath, spray the outside gloves with disinfectant or dip them in the disinfectant bucket, send sample containers and other equipment to the clean side by dipping them in disinfectant or spraying disinfectant.
- Finally, the practitioner should move to the clean side and remove the personal protective equipment. For this, the outer gloves are removed respectively, and while the inner gloves are in hand, the hands are washed in disinfectant, overalls and boots are removed, head and eye protective equipment is removed, respiratory protection is removed after waiting for a while for the dust to settle. Removed equipment should be placed in the waste bag and the inner gloves should be removed and placed in the waste bag. The bag should be dipped in the disinfectant bucket or sprayed with disinfectant and sealed. Waste should be placed in the second plastic bag, sealed and disinfected again and placed in the clean area. Finally, hands should be washed and dried.
- Before leaving the business, the owner or manager should be briefed about the bio-safety procedures to be used to control the disease and the measures needed to protect people against infection. If necessary, the relevant authorities should be informed and samples should be sent.
- If accidental exposure to blood or bodily fluids or a sharp injury occurs in the management, the affected skin area should be thoroughly washed with soap and water, and mucous membranes with water or saline. If the suspected disease is zoonotic, medical assistance should be sought without delay.

3.1.6. Sterilization Unit

- Complete sterilization of surgical instruments used in the training and research hospital and all parts that may come into contact with the surgical field is an important procedure. Improper/poor sterilization or improper use of instruments after sterilization may result in contamination of sterile tissues during surgical procedures.
- Heat is the most common physical method used for the decontamination of pathogens.
- Dry air, which is completely non-corrosive, ensures the sterilization of materials that can withstand high temperatures, and for this purpose, there are dry air sterilizers in Aydin Adnan Menderes University Veterinary Faculty Training and Research Hospital.
- Dry air sterilizers are electrically operated ovens with thermostats and time and temperature settings. With dry air sterilizers, sterilization is provided in 1 hour at 170°C, 2 hours at 160°C or 2.5 hours at 150°C.
- Before sterilization, the materials to be sterilized should be prepared for this process. The materials should be washed with soapy water after use and the organic matter residues on them should be cleaned. It should then be disinfected with chlorhexidine and sent to the sterilization unit.
- The sterilized products should be stored in the sterilization unit in such a way that they will not be contaminated until they are used.
- The staff responsible for the sterilizers must ensure that the set temperature and times are maintained each time they use the device.
- Periodic maintenance and controls of the sterilizers used in the sterilization unit should be carried out regularly in accordance with the manufacturer's instructions.

3.1.7. Hospital Central Laboratory

General rules

One of the most likely hazards to occur in laboratories is the splashing of chemicals on workers and damaging them with their burning and penetrating effects. The simplest and most effective way to be protected from such dangers is to use aprons. Depending on the nature of the operation, gloves should be used when necessary. Comfortable and flat feet shoes should be worn and especially peep toe should not be worn.

It is one of the most important safety products with many different features to protect the eyes which are one of the most sensitive and most important organs, from chemicals, radiation or various harmful particles. Depending on the nature of the operation, protective glasses should be used when necessary. They are practical to use, skin-compatible masks designed to prevent laboratory workers from being affected by dust and liquid particles consisting of solid or liquid chemicals used during analysis. Apart from these, the things to be considered in the central laboratory are listed below.

- It is not necessary to go out of the laboratory with the apron and gloves used in the laboratory. Smoking should not be allowed in the laboratory.
- No cosmetics should be used in the laboratory.
- If the hair is long during the operation, it must be tied it up.
- No food/drink should be consumed in the laboratory.
- No food items should be kept.

- Laboratory equipment should not be used for food preservation etc. Purposes
- No chemical substance in the laboratory should be smelled or tasted.
- Liquid should not be taken orally while working in the laboratory.
- Attention and care should be kept in the foreground in the operations.
- No noise should be made or jokes should be made by thinking that others are working in the laboratory.
- Cracked and broken glassware should not be used in the laboratory.
- Due to the risk of transmission of diseases through the skin, open wounds must be covered with a band-aid while working in the laboratory environment.
- Solid substances should always be taken from the bottles with a clean spatula or spoon, and the same spoon should not be inserted into another substance until it is cleaned.
- Bottle caps should never be placed on the table with their undersides, otherwise, since the cap will be contaminated with foreign substances, these foreign substances may come into contact with the pure substance or solution in the bottle and spoil it when placed back on the bottle.
- Chemicals should be transferred from large containers to small containers
- Electric cables should be arranged in such a way that they do not interfere with the walking path.
- Before using electrical equipment, make sure that hands and the relevant area are dry.
- Do not insert anything into electrical outlets.
- The plug should be pulled out of the socket without pulling on the cable.
- All electrical equipment should be unplugged at the end of the laboratory work.
- The hazards of the materials to be used should be learned beforehand.
- Labels should be re-read to ensure you are using the correct chemical.
- Attention should be paid to the warnings about the materials used in the laboratory.
- Never work alone in the laboratory.
- It is necessary to have knowledge about safety equipment (Eyewash fountain, Shower, Fire extinguisher, Emergency exit)

Before Leaving the Laboratory

- All used materials and equipment should be put away.
- Work area should be cleaned
- It is necessary to know the procedure to be applied to the wastes.
- Hands should be washed thoroughly with soap and water before leaving the laboratory (even if gloves are worn)
- Biological/Medical wastes should be collected in bins with red bags.
- Household waste should be collected in garbage bins with black bags.
- Biological/Medical waste bags are filled to a maximum of $\frac{3}{4}$, their mouths are tightly tied, and when deemed necessary, each bag is placed in another bag with the same characteristics to ensure absolute sealing.

- The contents of the biological/medical waste bags are never compressed, removed, emptied or transferred to another container.
- Sharp and puncture tools should be collected in compression-resistant plastic boxes, separate from other medical wastes, and put in red bags by sealing the containers when they are full.
- These collection containers are filled to a maximum of $\frac{3}{4}$, their mouths are closed and placed in red plastic bags. Sharp-piercing waste containers are never compressed, opened, emptied or recycled after they are filled.

4. EXPERIMENTAL ANIMALS UNIT

The Experimental Animals Production and Research Center provides services with the work permit obtained from the Ministry of Agriculture and Forestry. As producers, users and suppliers, “mouse, rat, gerbil, rabbit, pig, sheep and goat” species are within the scope of work permit.

There is a full-time responsible veterinarian at the center.

The unit consists of a quarantine room, a feed and litter room, four procedure rooms, an operation room, a post-operative care room, two mouse production rooms, a rat production room, a gerbil production room, a rabbit production room, a medicine and medical equipment room, two washing rooms and an administrative section.

4.1. General rules

- Researchers are obliged to comply with the basic laboratory rules during working hours.
- Persons who do not have an “Experimental Animal Use Certificate” cannot perform any action on experimental animals.
- Researchers are required to sign the Visitor Confidentiality Agreement at the entrance and exit of the laboratory.
- Overshoes are worn when entering the laboratory.
- The laboratory should be clean and tidy, floors should be mopped at least every day, surfaces should be cleaned with appropriate cleaners and disinfectants, and should meet all requirements for biosafety.
- Appropriate clothing should be worn during working hours (closed-toe shoes should be used, movement-restricting clothing such as coats should not be worn), gloves and aprons made of personal protective materials should be used, goggles and face protection should be used when necessary, and these materials should not be left outside the laboratory.
- Hands should be washed after contact with infectious material or infected animals, after removing gloves, and before leaving the laboratory.
- All biological materials of the animal (body fluids such as tissue, blood, urine, feces, saliva) should be considered potentially infected, and contact areas should be washed with soap and water immediately after contact.
- Researchers carry out their studies in accordance with the instructions “Safe Working with Biological Substances”, “Safe Working with Chemicals”, “Cleaning” and “Waste Control”.
- It is necessary to pay attention to the clean use of the laboratory area, work benches and operation and post-operation rooms.
- While working with biological-chemical material, if any such substance is spilled or splashed around, precautions are taken and support staff are informed.
- All practices that may cause aerosol formation or splashing should be avoided.
- Practices should be made periodically against insects, mice and other pests.

- Notifiable diseases should be reported to official institutions and organizations immediately.
- When a zoonotic condition is suspected, disinfection of the environment and equipment should be carried out seriously by applying disinfectants and antiseptics known to be sensitive to the agent.
- For practices to be carried out out of working hours, the responsible veterinarian must be informed and approved in advance.
- Feed is procured from commercial companies. Feed should be stored in closed sacks in a dry and clean manner in the feed and litter room. To reduce the possibility of contamination, minimal litter and feed should be available. Litter should be stored in a clean and dry manner in the feed and litter room, in sealed sacks.

4.2. Waste Removal

- Household wastes are taken into a large black colored bag and disposed of in closed garbage bins.
- Medical-infected wastes are collected in double-layered red colored bags with 100 micron thickness or in boxes made of rigid PVC with a lid and the necessary warning inscriptions arranged for this purpose.
- Microbiologically contaminated wastes are sterilized by autoclave and then disposed of in red medical waste bags. Support staff are definitely notified when contaminated waste occurs.
- Sharp-piercing wastes are thrown into the yellow medical waste bucket only.
- Animals sacrificed at the end of the experiment are kept in a red medical waste bag in a temporary waste storage unit (at -20°C) until they are removed from the institution. The relevant project number and the name/surname of the person performing the operation are indicated on the red medical waste bag.
- The freezer in the temporary waste storage unit cannot be used except for the support staff.

5. FOOD / FOOD HYGIENE and TECHNOLOGY

5.1. Biosafety in Laboratory and Non-Laboratory Practices

The purpose of these procedures is:

- The risk of transferring animal or human-induced diseases to farm animals or foodstuffs from various facilities and resources where the lectures are held by the instructors and students who are in charge of the operation.
- It minimizes the risk of being infected by the instructors and students working in the operation from contaminated foodstuffs and animals.

Among the facilities where practice lessons are held, there are business units such as slaughterhouses, dairy farms (dairy unit within the faculty, private dairy farms), animal market, food processing units (aquaculture processing units, meat products production facilities, etc.).

5.2. General Hygiene Rules

- Food/Food Hygiene and Technology Department staff and students should know the general biosafety rules specified in Section 2 in education and research laboratories, and biosafety requirements should be followed in the practice areas.
- The responsible lecturer informs the students about the easy-to-understand rules about food hygiene in order to minimize the risks that cause food contamination. In addition, he/she explains the hygiene principles to be followed in the dairy unit within the faculty, and the responsible staff in the visited food processing plants visited are asked to give information about the hygiene rules that must be followed along the production line.
- The responsible instructor should give information about the guide that includes general hygiene rules.
- Students are required to comply with staff hygiene rules (hand washing, use of tools-equipment and protective clothing, etc.).
- If the students have been to the farm, barn and waste storage areas within 48 hours before their visit to the food processing plants, they should inform the responsible lecturers about the situation.
- If a farm or slaughterhouse is visited before the visit to the food processing plants, clothes and shoes should be cleaned and disinfected.
- The responsible lecturer makes sure that the students comply with the hygiene rules during the visit to the milk unit production line or facilities. In particular, students are asked not to touch food products without gloves and not to do post mortem inspection.
- It is forbidden to smoke, use alcohol or drugs in the operation areas. Jewelry such as watches, earrings, piercings, rings and fake nails should be removed.
- It is forbidden to eat and drink within the operation areas in food processing plants.

6. REFERENCES

It is summarized from the Biosafety Guide of Aydın Adnan Menderes University, Faculty of Veterinary Medicine. Aydın Adnan Menderes University, Faculty of Veterinary Medicine, Biosafety Guide.



