

General Principles of Biosafety

The principles mentioned below are followed by all units of the Faculty of Veterinary Medicine (FVM) at Warsaw University of Life Sciences – SGGW.

Biological Safety includes measures aimed at human and animal health protection against diseases and preventing diseases' spreading. The program of biosafety is introduced also to protect the visitors and surroundings of the Faculty.

According to FAO definition, biosafety is a broad issue addressing the strategy and integrated approach to the risk analysis of food safety, animal and plant health, as well as the related environmental hazards and their managements. It involves frameworks of policy and regulation, including various instruments and actions. Biological safety applies for the spread of plant pests, animal parasites and diseases, zoonoses, genetically modified organisms (GMO) and their products, as well as for the introduction of invasive species or genotypes. Biosafety is a comprehensive concept of great importance for sustainable agriculture development, food safety and environmental protection, including biological diversity.

Within the framework of the Biosafety Program, all mentioned hazards have been carefully analyzed.

Prevention and control of infections

The control of infections is one of the major elements of the biosecurity program which is crucial for the proper functioning for all Faculty units, i.e. both scientific and clinical units. If good practices of prevention of infectious diseases spread are not respected, it becomes impossible to assure appropriate care for the patients submitted to the clinic. The procedures applied at FVM are aimed to limit the risk of human and animal infectious diseases outbreak. The implemented Standard Operational Procedures (SOPs) are adapted to hazards which may occur in the specific environment of FVM.

The goals of the implementation of Standard Operational Procedures (SOPs)

- Protection of Faculty staff, students and clients against zoonoses,
- Establishment of a safe environment for patients which are under medical care of the Faculty units,
- Students' training trough demonstration and practical application of proper biosecurity principles,

- Influencing clients and the environment of the Faculty in a way to improve the prophylaxis of zoonoses,
- Ensuring a proper functionality of the Faculty units

The priorities of SOPs

The most important task of SOPs is to prevent the spread of diseases among patients, the movement of diseases from patients to clinic staff, from staff to patients, and among the staff.

It is achieved by the following measures:

- Good Hygienic Practices (GHPs) are implemented to improve hygiene through the application of basic GHPs rules, including hand washing, using protective cloths, isolation and limitation of direct contact with ill animals and proper utilization of infectious materials.
- The interruption of infection routes through: daily usage of proper SOPs and understanding of the spreading ways of infectious diseases; creation of direct and indirect barriers for infections; establishment of patients and staff communication routes in a way which would prevent the spread of pathogens.
- Providing information about hazards through warning pictograms.

Definitions

Infectious disease: diseases which can be transmitted from animals to animals or from animals to humans.

Disinfection agents (disinfectant, antimicrobial agent): a chemical agent which kills or inhibits the growth of microorganisms. It is used on surfaces of rooms, equipment and devices (e.g. floors, tables, patient nursing equipment).

Disinfection: a process aimed at reducing the number of microorganisms to the level at which they are harmless to health.

Protective cloth (working cloth): clothing, shoes and outer garments used only at work.

Frequently touched surfaces: surfaces of high significance for infectious diseases' spread due to frequent touch by many people, e.g. light and ventilation switch-keys, water taps, flush buttons, door handles, handrails, phones, elevator buttons, keyboards, any other push button.

Epizootic barrier: materials and barriers introduced to prevent microbes spread from patients to staff and cross-contamination of surfaces, clothing and equipment by pathogens. An epizootic barrier is implemented in zones categorized in Class 4 and in case of taking care of patients particularly susceptible to infections, including young animals, animals of decreased immunity, animals with extensive wounds or burns. **WARNING:** introduction of an epizootic barrier requires single-use protective clothing and equipment to prevent the contamination of skin and frequently touched surfaces.

Multiple Drug Resistance bacteria: bacteria which developed the ability to survive in the presence of antibiotics. Antimicrobial resistance is found if bacteria can reduce or eliminate the effectiveness of drugs, chemical agents and other agents aimed at treating or preventing infections. Often, antibiotics which remain effective against bacteria are toxic for animals. Examples of bacteria resistant to antibiotics: some strains of *Salmonella enterica*, Methicillin-resistant *Staphylococcus aureus* (MRSA), Vancomycin-Resistant *Enterococcus*.

Hospital-acquired infection (HAI): local or systemic infections induced by pathogens or their toxins which were neither present nor in incubation state in animal at the time of admission to a hospital (each infection which was not manifested or during incubation period at the time of patient admission to a hospital or other unit).

Personal Protection Equipment: all measures worn or hold by the employee for self-protection against one or more hazards related to the presence of dangerous or harmful agents at the work environment, including all accessories serving protection.

Sterilization: removal of all form of microorganisms, including endospores which may contaminate the equipment and materials.

Infection: pathogen's entry into an organism and break of its immunity

Local infection: the location of the infection is close to the entry site of the infection.

Septicemia (sepsis): a set of symptoms related to the generalized infection.

Staff: all employees of the Faculty of Veterinary Medicine, irrespective of the character of their job, i.e. supportive staff, veterinarians, scientific collaborators, didactic collaborators, students and volunteers.

Zoonoses (zoonotic diseases): infectious (or invasive) animal diseases or diseases transmitted between animals or from animals to humans or vice versa. The infection occurs through direct contact or contaminated materials of animal origin, rarely through the aerogenic route.



Hazards' classification

Class 1 – Infectious agents of no hazard. Standard procedures to be applied.

Pathogens which normally do not transmit between animals and generate no hazard for human health.

Class 2 – Infectious agents of slight hazards. Standard procedures to be applied.

Pathogens which may transmit between animals but do not generate serious diseases, i.e. only infections induced by bacteria susceptible to antibiotics are expected.

Class 3 – Infectious agents generating hazards. Protective measures must be applied.

Pathogens which may transmit between animals and generate serious diseases, including infections induced by bacteria resistant to antibiotics. The pathogens generate slight hazards for human health.

Class 4 – Infectious agents generating hazards and requiring isolation.

Pathogens of high infectivity and able to generate serious hazards for human health.



Instructions

Instruction 1 – Surface washing and disinfection

1. Frequency: Whenever the work is finished.

2. Activities:

- mechanical removal of solid contaminants
- collection of residues with broom and dustpan
- clean up the siphon traps in drains
- flush with warm water of approx. 30-40°C
- manual and foam wash of the surfaces
- rinse the surfaces with water
- application of a disinfectant
- flush the surfaces with water

3. Responsibility:

The employee responsible for systematic and effective washing and disinfection performs the activities. Afterwards, the employee performs visual control and writes down the result in the control card.

4. Applied agents:

Washing agents:

- concentration of in-use dilution:%
- temperature of application: °C
- duration of agents' acting: minutes

Disinfectant agent:

- concentration of in-use dilution: %
- temperature of application: °C
- duration of agents' acting: minutes

Instruction 2 – Hand washing and disinfection

Washing of the hands is the most important procedure which reduces the risk of pathogens' spread. The hands should be washed in following situations:

- Prior and after work.
- Prior and after contact with each patient.
- After contact with biological materials, including blood and other body fluids, secretions, excretions, and contaminated objects.
- When the protective gloves are taken off.
- Between different procedures performed on the same patient to avoid the transmission of an infection over the body.
- After handling laboratory samples.
- After cleaning of cages or boxes.
- Prior to breaks at work and meals.
- Prior and after using the toilet.

The recommended way of washing the hands:

- Rinse the hands with running water
- Apply some soap from the dispenser and wash the hands according to the provided technique for approx. 30 seconds
- Rinse well with water
- Dry the hands carefully with a paper towel.
- Remove the used towel to the container for used towels. **Warning: do not touch the container with clean hands.**

The technique of washing the hands

- Rub hands palm to palm.
- Rub back of each hand with the palm of the other hand, next rub the hands the opposite way around.
- Rub hands palm to palm with finger interlaced.
- Rub with back of the fingers to opposing palms with fingers interlocked.
- Rub each thumb clasped in the opposite hand using a rotational movement.
- Rub tips of fingers in opposite palm in a circular motion.

Hand disinfection

The recommended way of hand disinfection:

- Apply hand disinfectant on dry hands
- Spread the disinfectant on palms, backs and wrists.
- Keep the disinfectant on hands to dry, do not rinse.

In order to minimize the risk of infection and to keep the hands clean, the staff of FVM as well as the students who had contact with the patients or biological samples should keep short nails and should avoid hands' jewelry.

Washing and disinfectant agents

Washing procedures should be performed only with products dedicated to municipal hygiene or health services.

Disinfection procedures should be conducted only with products of proven antimicrobial activity mentioned in the List of Biocidal Products published by the Office for Registration of Medicinal Products, Medical Devices and Biocidal Products, available at: www.urpl.gov.pl.

Information leaflets and Material Safety Data Sheet (MSDS) should be included in the documentation of washing and disinfection.

Employees who use chemical products are supposed to get familiarized with data provided in information leaflets and MSDS.

Shoe disinfection station

An important issue in the spread of infectious diseases is movement of people, transportation means and equipment around the patient. The pathogens found on the floor can be translocated to big distances through the sole and wheels.

In order to stop this route of infection, mats dipped in disinfectant should be used wherever possible. If protective shoes are used, basins or containers filled with disinfectant solution should be provided.

The solution of disinfectant should be replaced on a regular basis in accordance to the recommendation of the producer, as well as in the situation of significant contamination to remain effective through the entire time of usage.

The instruction of shoe disinfection should be placed next to the station of disinfection. The activity of disinfection solution should be monitored constantly. The instruction should contain the information on disinfectant exchange and re-fill procedures or the information about the person responsible for those procedures.

Every person who uses the station is obliged to follow the instruction, verify the degree of solution consumption and if necessary exchange it or inform the responsible person.

Instruction 3 – The use of personal protective equipment

As far as possible, employees and students should take care of their safety and health, as well as of the health of people who they are working with. Employees and students should use individual protective equipment, be familiarized with the manuals and conservation methods of personal protective equipment. They should keep them in satisfactory condition, including their maintenance.

The personal protective equipment should be used only in accordance to their purpose, effectively and economically.

The garment of the staff and students should be well-kept and suitable to the situation because it affects the image of the Faculty of Veterinary Medicine.

Protective clothing – usually white coat or trousers and blouse. The same protective cloth must not be used in zones of different biological hazard.

Single-use protective clothing – usually a standard white interfacing coat or gown with long sleeves, fasten or tied on the back; diagnostics latex gloves or sterile surgery gloves; shoe cover. Besides, whenever necessary a face mask or respiratory semi-mask and protective glasses or face shield should be applied.

Medical care of patients with infectious diseases (epizootic barrier)

Preventive measures undertaken when taking care of patients should correspond to the type of performed procedures and the type of exposure to biological agents. Present recommendations are to be applied when working with biological material, including tissues or body fluids, when handling with living animals, cleaning of cages and boxes occupied by animals with infectious diseases, performing post-mortem examination or examining the carcass of an animal which died and was suspected to have an infectious disease.

- Wear protective clothing (laboratory coat or coverall) and protective gloves while handling with patients diagnosed or suspected of infectious disease (hazard class 3 or 4).
- Use protective gloves, face masks and protective glasses while performing activities which may result in splash of biological material, generation of dust or aerosol.
- If a protective glove gets ruptured, punctured or perforated, the gloves should be removed and further work is possible only if new gloves are worn.
- Enable cleaning of shoes or using shoe covers in zones categorized as class 3 and 4 to prevent the spread of infectious materials within the Faculty.
- It may be necessary to introduce additional preventive measures, including face shields or respiratory system protectors in case of some circumstances and types of hazards.

Informing on hazards through warning pictograms

At the Faculty, there is a system of informing about hazards which consists in labelling certain zones with red, yellow and green lines.

- **Red line** indicates zones where the hazards related to biological material of class 3 or 4 or unknown material, including test samples, can be found.
- **Yellow line** indicates zones where the hazards related to biological material of class 1 or 2 can be found.
- **Green line** indicates zones within zone red or yellow which are free of biological hazards.

Besides, the most important rules of procedures in detached zones are labelled with signs indicating prohibition, order or warning.

Z1	Osobom nieupoważnionym wstęp wzbroniony. Authorized personnel only	
Z2	Zakaz wstępu za zwierzętami No pets allowed	
N1	Stosuj odzież ochronną Use protective clothing	
N2	Stosuj odzież ochronną Use protective clothing	
N3	Stosuj rękawice Use protective gloves	
N4	Stosuj buty ochronne lub ochraniacze na buty Use protective shoes or shoe cover	
N5	Umyj ręce Wash hands	
N6	Stosuj maseczkę ochronną i nakrycie głowy Use face mask and head covering	

N7	<p>Stosuj maseczkę ochronną, nakrycie głowy i rękawice Use face mask, head covering and protective gloves</p>	
N8	<p>Stosuj nakrycie głowy i spinaj włosy Use head covering and tie your hair</p>	
O1	<p>Ostrzeżenie przed skażeniem biologicznym Warning – biological material (Biohazard) infectious material</p>	
O2	<p>Ostrzeżenie - butle z gazem Warning – gas cylinders</p>	
O3	<p>Uwaga ! Promieniowanie nadfioletowe Warning – UV radiation</p>	
O4	<p>Ostrzeżenie przed silnym polem magnetycznym Warning – magnetic field</p>	
O5	<p>Ostrzeżenie przed substancjami radioaktywnymi i promieniowaniem jonizującym Warning – radiation hazard</p>	

O6	Ostrzeżenie przed materiałami toksycznymi Warning - toxic substances	
O7	Ostrzeżenie przed substancjami łatwopalnymi Warning - flammable substances	
O9	Ostrzeżenie przed substancjami żrącymi Warning - corrosive substances	
O10	Ostrzeżenie - Pole elektromagnetyczne Warning – electromagnetic field	 POLE ELEKTRO- MAGNETYCZNE
O11	Ostrzeżenie przed nagłym hałasem Warning – loud noise	
O12	Uwaga substancje i preparaty szkodliwe lub drażniące Warning – harmful or irritant substances	 UWAGA ! Substancje i preparaty szkodliwe lub drażniące