

Lithuanian University of Health Sciences

Veterinary Academy

Faculty of Veterinary Medicine

Faculty of Animals Science

**Biosecurity and Biosafety Standard Operating Procedures
applied in Veterinary Academy**

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- 9) Requirements for the Production, Registration and Supply of Veterinary Medicinal Products to the Market of the Republic of Lithuania (Žin., 2005, Nr. 131-4754) implementing the requirements of EU Directive 2001/82 / EC.

ABBREVIATIONS

Biosecurity Committee - Biosecurity and Biosafety Committee of Faculty of Veterinary Medicine, Veterinary Academy, Lithuanian University of Health Sciences

Biosecurity SOP - Biosecurity and Biosafety Standard Operating Procedures at the Faculty of Veterinary Medicine and Faculty of Animal Science of Veterinary Academy, Lithuanian University of Health Sciences

DAB - Department of Animal Breeding

DAF - Department of Anatomy and Physiology

DFSQ – Department of Food Safety and Quality

FAS – Faculty of Animal Science

FVM - Faculty of Veterinary Medicine

IART - Institute of Animal Rearing Technologies

IBSGR - Institute of biology systems and genetic research

ICU - Intensive Care Unit

LSMU - Lithuanian University of Health Sciences

SFVS – State Food and Veterinary Service of Lithuania

SOP - Standard Operating Procedures

VA - Veterinary Academy

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CHAPTER 1. GENERAL BIOSECURITY AND BIOSAFETY PRINCIPLES APPLIED IN THE VETERINARY ACADEMY

People and animals live together in close proximity and therefore mutual contacts are inevitable. This is of exceptional importance for veterinary medicine related education, research or veterinary services activities, because a wide variety of agents can be transferred from animals to humans, and interactions between animals and humans may occasionally result in infection.

Therefore, the requirements of this biosecurity and biosafety SOP (further Biosecurity SOP) are dedicated to minimize the risk of infection with zoonotic diseases for personnel, students and clients at the Faculty of Veterinary Medicine and the Faculty of Animal Science of Veterinary Academy of Lithuanian University of Health Sciences (further FVM, FAS, VA, LSMU). Further, implementation of the Biosecurity SOP will minimize risk of spread of infectious agents (viral, bacterial, parasitic or other microorganism) among and to animals from personnel, clients and patients at the VA.

The term “biosecurity” in the Biosecurity SOP is understood as “combination of management and physical measures that are taken to reduce the risk of introducing and spreading of disease agents. Measures includes human attitudes and behaviour minimizing such risk while working with domestic and wild animals and their products”. This understanding is in line with definition of World Organization for Animal Health "Biosecurity means a set of management and physical measures designed to reduce the risk of introduction, establishment and spread of animal diseases, infections or infestations to, from and within an animal population” (OIE, 2018).

In this document biosafety is understood as containment principles, technologies and practices that are implemented for the protection, control and accountability for valuable biological materials within laboratories, in order to prevent their unauthorized access, loss, theft, misuse, diversion or intentional release.

Biosecurity and biosafety are essential functions at all health care and research facilities, including veterinary clinics. Good infection prevention and control practices are not the only feature defining excellence in veterinary care, but it is impossible to achieve excellent patient care without employing logical infection control procedures. Procedures used at the VA are intended to reduce the risk of all nosocomial and zoonotic illness. Biosecurity procedures used at the VA are specifically tailored to address contagious disease threats as they can be encountered in this unique environment.

It is of major importance to remember, that biosecurity is not only a matter of disinfecting and using physical barriers – above all it is a matter of mentality! Being aware of how pathogens can enter a clinic, farm or enterprise (external biosecurity) and being aware of how pathogens can spread within a clinic, farm or enterprise (internal biosecurity) makes us more prudent about what to pay attention to. External and internal biosecurity are equally important.

When designing and implementing biosecurity procedures, it is recommended to follow the 5 general principles that are of great value in all different environments.

- Separation of high and low risk animals and environments
- Reduction of the general infection pressure
- Transmission routes of pathogens are not equally important
- Is is a combination of probability of transmission and frequency of occurrence of transmission routes
- The larger is group of animals in a place/clinic/herd, the higher risk of disease introduction and transmission it causes.

Goals for the Biosecurity SOP

Protect personnel and students and clients from exposure to zoonotic disease agents at the VA.

Create an environment where patient care can be optimized by minimizing the risk of nosocomial infection.

Optimize educational experiences for students regarding biosecurity and infection control by demonstrating appropriate infection prevention and control, and disease surveillance practices.

Educate clients and other members of the public regarding the control and prevention of infectious and parasitic diseases in animals and humans.

Protect the VA from outbreaks of infectious diseases and operational capabilities of the VA.

Infection Prevention and Control Principles

Below described principles are the background for the development of all procedures described in this document and these precautions help prevent disease transmission from staff to patient, patient to patient, patient to staff and staff to staff.

Optimize hygiene through the use of standard precautions including hand washing, proper attire and barrier protection, minimizing unnecessary contact with patients and other animals, appropriate disposal of infectious materials and proper cleaning and disinfection.

Break transmission cycles by effective use of hygiene protocols and understanding routes of disease transmission, creating barriers for direct and indirect transmission of infectious agents for patients with differing risks for contagious disease transmission. This includes consideration of traffic patterns and housing of patients, as well as traffic patterns of personnel and students and guests within the VA.

Target and refine infection prevention and control procedures through surveillance and other investigative procedures.

Enhance education and awareness regarding nosocomial and zoonotic disease risks through optimizing communication about the purpose of these guidelines and procedures.

1.1. Definitions

Antiseptic: non-selective chemical that causes the destruction or inhibition of microorganisms, preventing their growth or multiplication, without injuring the animal.

Barrier Nursing Precautions: materials and practices employed as a barrier between patients and personnel in order to prevent cross contamination of the body, clothing, and footwear, which, in turn, decreases the risk of nosocomial transmission to other patients. Barrier nursing precautions are used in all isolation areas (class 4) and for patients with special needs (animals considered to have an increased risk of shedding contagious agents (class 3), young or naive animals, immuno-compromised patients, etc). Care must be used with barrier clothing in order to prevent contamination of materials and hand contact surfaces.

Contagious disease: a disease that is capable of being transmitted directly or indirectly from one animal to another.

Disinfectant: a chemical agent that kills or prevents growth of microorganisms on inanimate objects (surgical equipment, floors, tables, patient care equipment, etc.).

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

Faculty Dedicated Attire: clothing and footwear that are worn only when working at the FVM or while on field training or service.

Multiple Drug Resistance: bacteria that have developed the ability to survive in the presence of several antibiotics. Antimicrobial drug resistance occurs when bacteria reduce or eliminate the effectiveness of drugs, chemicals, or other agents designed to cure or prevent infections. Often the antibiotics that can still kill these bacteria may be toxic to the animal and their number is limited. Examples of multiple drug resistant bacteria include some strains of *Salmonella enterica*, Methicillin Resistant *Staphylococcus aureus* and Vancomycin Resistant *Enterococci*.

Nosocomial Infection: a localized or systemic condition that results from infection or toxin acquired at the clinical units of VA.

Personal Protective Equipment: barriers that a person can put on himself or herself to protect them against acquiring or transmitting a microorganism or disease, or to prevent exposure to potentially noxious chemicals (such as some disinfectants). Examples: gloves, gowns, masks, protective eyewear, caps, etc.

Sanitizer: a chemical that reduces the number of microorganisms to a "safe" level, without completely eliminating all microorganisms.

Sterilization: the removal of all microorganisms including bacterial spores from an inanimate object.

Subclinical infection: an infection (or disease) that is caused by the invasion of the body by a microorganism(s) but does not present signs and symptoms. A subclinical infection may be an early stage or very mild form of an infection in which signs and symptoms are not apparent or detectable by clinical examination.

Personnel: refers to all people working in the VA environment in any capacity, regardless of whether they are employees, students, visiting veterinarians or scientists, visiting students, or volunteers.

Zoonosis: disease that can be transferred between animals (usually vertebrate) and humans, or vice versa.

Table 1. Parameters Used in Defining Clinical Status

Species	Fever (rectal temperature)	Leukopenia (cells x 10 ³ /mL)	Neutropenia (cells x 10 ³ /mL)
Bovine	> 39.0 °C (adult) > 39.5 °C (calf)	< 5.0	< 0.6
Canine	> 39.5°C	< 6.0	< 3.0
Caprine	> 40.5°C	< 4.0	<1.2
Equine	> 38,5°C	< 4.0	< 2.5
Feline	> 39.5°C	< 5.0	< 2.0
Camelid	> 39.5°C	< 7.5	< 4.6
Ovine	> 40.0°C	< 4.0	< 0.7

1.1.1. Classification of risk categories

The list of diseases according to risk categories are also listed under the corresponding clinical departments. Infectious diseases encountered in hospitalized animals are assigned to the following classification levels, based on transmissibility of the agent to other animals and/or zoonotic potential.

Table 2. Classification of risk categories

CLASS 1: NORMAL HOUSING	Infectious diseases caused by agents that have no likelihood of transmission to other
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	animals and no potential for human infection.
CLASS 2: NORMAL HOUSING	Infectious diseases caused by agents that have a low level of transmission and may include non-resistant bacterial infections.
CLASS 3: BARRIER NURSING PRECAUTIONS	Infectious diseases caused by agents with a moderate or high level of transmission or are potential human pathogens. Infections caused by bacteria with highly resistant antimicrobial susceptibility pattern, as determined by laboratory testing.
CLASS 4: ISOLATION	Infectious diseases caused by agents that are considered to have a high level of transmission and/or are extremely serious human pathogens.

1.2. General rules

1.2.1. Hand washing

Hand washing is the single most important measure for reducing the risks of transmitting infectious organisms. It is of high importance for quality of internal biosecurity. The VA personnel and students with patient contact or those that handle biological samples are encouraged to maintain short fingernails and to wear minimal jewellery on their hands in order to minimize contamination and improve the cleanliness of hands.

- **Hands should be washed:**
 - Before and after handling each patient.
 - After touching blood, body fluids, secretions, excretions and contaminated items, whether or not gloves are worn.
 - Immediately after gloves are removed.
 - Before each different procedure on the same patient when necessary to prevent cross-contamination of different body sites.
 - After handling laboratory specimens or cultures.
 - After cleaning cages or stalls.
 - Before meals, breaks, smoking, coming or leaving work for the day.
 - Before and after using the restroom.

- **Recommended procedure for hand washing:**
 - Wet hands and forearms with warm water.
 - Add at least 3-5 ml of soap to palm of hand.
 - Lather up and vigorously scrub each side of the hands beyond the wrist for 20-30 seconds, clean between fingers, under rings and fingernails.
 - Rinse under warm water until all soap residue is removed. Dry hands with paper towel or warm air dryer.
 - If it is not possible to wash your hands immediately wet wipes with alcohol or hand sanitizers can be used until you have access to warm water and soap.

- **Recommended method/or using a hand sanitizer:**
 - Apply a thumbnail-sized amount to the palm.
 - Work sanitizer into fingertips of opposite hand, then onto the rest of hand. Repeat with opposite hand.
 - Rub briskly until dry and do not rinse.

1.2.2. Protective measures

- Barrier nursing precaution should be appropriate for the type of procedures being performed and the type of exposure anticipated. These guidelines apply to working with infected tissues or body fluids, treating living animals in cages or stalls, cleaning cages or stalls that were occupied by animals with infectious diseases or handling the carcasses of an animal that has died of a potential infectious or zoonotic disease.

- Wear gloves and protective clothing (lab coat, smock, apron or coveralls) when you are handling patients known or suspected to be infected with infectious or zoonotic diseases (class 3 or 4).

- Gloves, surgical masks and protective eyewear should be worn for procedures that commonly result in the generation of droplets, splashing of blood or other body fluids, or the generation of bone chips.

- If a glove is torn or a needle stick or other injury occurs, the glove should be removed and replaced with a new glove as soon as patient safety permits.

- Washable boots, shoes or shoe covers enhance the ability to prevent spreading of infectious material throughout the facilities.

- Additional protection in the form of face shields or respirators may be necessary depending on the circumstances and disease.

1.2.3. Standard dress code

- The LSMU FVM clinics maintains a dress code to promote professionalism and to assist with biosecurity efforts. This Biosecurity SOP discusses attire only from the perspective of biosecurity and prevention and infection control. Standard dress code for students: white lab coats in laboratories and hands on teaching classes, but special code is used in the Small and Large Animal Clinics.

Standard dress code in Small Animal Clinic:

- Veterinarians –dark red colour.
- Technicians –dark blue colour.
- Receptionists –blue colour.
- Students –dark green colour uniform (blouse and trousers) or white lab coat and dark green or white trousers.
- Residents –turquoise or grey colour uniform.
- Isolation wards – disposable clothes.
- Lecturers and administration personnel –white lab coats.

Standard dress code in Large Animal Clinic:

- Veterinarians –blue colour.
- Residents –red colour.
- Technicians –grey colour.
- Students – green uniform.
- Isolation facilities – disposable clothes.
- Lecturers and administration personnel –white lab coats.

- Dedicating attire specifically for use in the VA is the first line of defence against taking animal and human pathogens to your home environment. All personnel and students working with patients or their environments are encouraged to wear clinic dedicated attire (clothing, footwear, and outer garments that are worn only when working at the VA or while on field service duty) and not worn elsewhere.

- All personnel and students are required to wear footwear and protective outer garments when working with patients or their environments that is appropriate to the job at hand. For

example, coveralls and heavy boots or shoes are the most appropriate footwear and protective outer garments when working with large animal patients.

- All personnel and students working with patients or their environment are encouraged to wear closed toe footwear that is safe, protective, clean, and cleanable. Footwear that becomes soiled or contaminated must be cleaned and disinfected and should not be constructed of a porous or absorbent material. From a safety perspective, footwear that may be appropriate for use in the Small Animal Clinic may not be appropriate for use in the Large Animal Clinic.

- All personnel and students working with patients or their environment and with long hair are encouraged to have their hair bonded.

- For personnel at the clinical units at least one extra set of clean protective outer garments should be available at all times.

- Students should always wear clean and freshly laundered protective outer garments during each rotation.

- Personnel and students that work in both the Small and Large Animal Clinics must have attire available that is appropriate for the different clinic.

- Faculty personnel and students are prohibited from wearing professional attire outside territory of clinical departments.

- Specific requirements regarding attire to be worn in various clinic sections are listed under the corresponding clinic biosecurity SOP.

- Student and personel attire used for clinical work is washed at the dedicated VA laundry.

1.2.4. Patient care

1.2.4.1. Patient hygiene

- It is of major importance for basic hygiene and for reducing the infection pressure that the patients of the VA are housed in a proper stall or cage and that the animals are kept as clean as possible.

- Water and feeding buckets or bowls need to be clean and regularly changed or disinfected between patients.

- If patients defecate outside their stall or cage (whether inside or outside a building), their faeces needs to be removed, and the floor surface cleaned (and in small animals dried), immediately after defecation. If patients urinate inside (but not outside a building), the urine needs to be removed and the floor cleaned and dried.

- The environment around the cage or stall should be clean, tidy and neat. This also means no medications or materials lying around, no bedding outside the stable or cage, no personal belongings from students or staff. All members of staff and students are expected to arrange material once used and to leave the location in its original tidy condition.

- Specific requirements regarding patient hygiene in Small and Large Animal Clinics are listed under the corresponding clinical section.

1.2.4.2. Prevention of unnecessary contact with patients and animals

- Implementing the patient/animal care and teaching mission of the VA obviously requires intensive contact with multiple patients and animals through routine activities. However, it is important to remember that these contacts are accompanied by the potential for transmission of infectious and or zoonotic agents.

- All personnel and students should minimize contact with patients whenever reasonable in order to minimize the risk of nosocomial exposure for these patients, especially if not directly responsible for their care.

- Primary clinicians may at their discretion allow and encourage students to contact animals for teaching purposes. If, for the purpose of teaching, students are asked to perform examinations or assist with procedures on multiple patients, their hands must be washed

between patients, and stethoscopes and other equipment must be regularly wiped with alcohol or hand sanitizer.

- Personnel and students that contact patients known or suspected of being infected with contagious pathogens must be limited to only those essential for appropriate patient management.

- When appropriate, patients should be monitored by observation without physical contact e.g. with the use of cameras.

- In order to decrease the potential for inadvertent trafficking of infectious agents, personnel and students should minimize, when possible, movements into areas used for different purposes.

- Personnel and students should avoid entering stalls/cages except when necessary and should avoid touching or caressing animals when passing, if not necessary or called for.

- When possible, personnel and students should work in areas with higher likelihood of being contaminated last (after working on patients in other areas).

1.2.5. Food and beverage

- Food or beverage should not be consumed or stored where animals are examined, treated, or housed.

- Personnel and students are also prohibited from eating, drinking, or storing food in areas where biological specimens are handled, or medications are compounded or stored. This includes record rooms, hallways, surgery laboratories, exam rooms, or reception areas.

- In clinical units it is permissible for food and beverages to be consumed and stored in:

- The kitchen and dedicated areas of each unit

- Personnel offices

- Areas where eating and drinking is allowed, animals, biological specimens and medications are never allowed in these areas.

- Food and beverage storage is not allowed in any refrigerator or freezer used to store medications, or biological specimens.

- Microwaves used in animal care areas are not to be used to heat food intended for people.

1.2.6. Medications

1.2.6.1. Storage and access

- Medication should be stored in a clean environment in a way appropriate to the medication (see label: e.g. temperature, in the dark), and should not be subjected to important temperature changes and/or humidity. The requirements are provided in details in Pharmacy law of Republic of Lithuania (Registry of legal acts, 2006, Nr. 78-3056.) and Requirements for veterinary drug production, registration and supply in Republic of Lithuania (Registry of legal acts, 2005, Nr. 131-4754)

- Medication should be arranged in an orderly fashion (e.g. alphabetically/by class).

- Opened medication packages should be stored in a separate room or place from closed stocked packages.

- The storage room of medication should not be accessible to people not affiliated to the department, nor to children or to animals (hospitalized or other animals, including vermin).

- Opioid narcotics, ketamine and euthanasates should be stored in a secured room or safe and only competent clinicians should have access by code or key.

1.2.6.2. Expiry date

- Medication, including fluids, should be clearly marked with a water-resistant marker with the date of opening or breaking of the sterility seal.

- When more than 24h has passed (or sooner according to the label), or the medication has expired, the medication should be discarded.

1.2.6.3. Preparation of medication

- Preparation of medication should be performed by or under direct supervision of technicians or clinicians. During preparation, contamination by other medication or dirt should be prevented. The rubber on bottles with parenteral medication should be wiped with alcohol each time before piercing it with a needle. Every medication should be prepared with a new and sterile syringe and needle. Needles and syringes for administration of medication should never be reused, not for other patients, not for the same patient (exception: oral medication syringes can be reused after thorough rinsing and cleaning).
 - After preparation a new and sterile needle will be applied for injections.
 - Preparation of toxic or dangerous drugs should be performed under secured circumstances and not in the presence of unsecured persons. Depending on the drug this means while wearing gloves, protecting glasses, mask, under a vacuum, etc.
 - Immediately after preparation and use, the drug should be encoded according to requirements of LSMU and national legislation.
 - Some medications (e.g. Sodium penicillin, ampicillin) should not be prepared in advance because they only remain stable very short time once diluted.
 - The name of the drug should be stated clearly with a water-resistant marker on each syringe that is not administered immediately after preparation.

1.2.7. Cleaning: general considerations

- Dispose of sharps in special yellow containers.
- Before returning laundry, equipment, or instruments remove everything from the pockets.
- Laundry will not wash any personal items.

1.2.8. Disposal of waste

- The specific requirements on waste management is provided by each department of the VA.
 - Precautions should be taken to prevent injuries caused by needles, scalpels, and other sharp objects. To prevent needle injuries, personnel and students should avoid recapping needles, purposely bending or breaking needles, or removing needles from disposable syringes. Sharps should be placed in a puncture-resistant container for disposal.
 - Waste should be discarded in the area where it was generated, according to the regulations defined in this section and in each of the departments. For specific waste products, please see under various departments sections.
 - Veterinary waste is managed in accordance with the procedure established by the SFVS (Regarding the Approval of the Requirements for the Handling of Veterinary Medical Waste, Order of the Director of the SFVS, No. B1-562 of 20 July 2012). For the management of such waste, LSMU concludes a contract with a specialized waste management company. On the VA campus there is a special collection and storage point for such waste.
 - Waste generated at VA is of three major groups: waste for which no restrictions is applied and is put into black colour waste bags; non-infectious veterinary medicine waste for which restrictions are applied and is put into green colour waste bags; infected or possible infected dangerous waste for which restrictions are applied is put into yellow bags/container. Waste from animals with a suspicion of involvement of a zoonotic or infectious agent must to be always discarded in yellow waste bags/containers.
 - All waste generated in the isolation units needs to be discarded in yellow waste bags/containers.

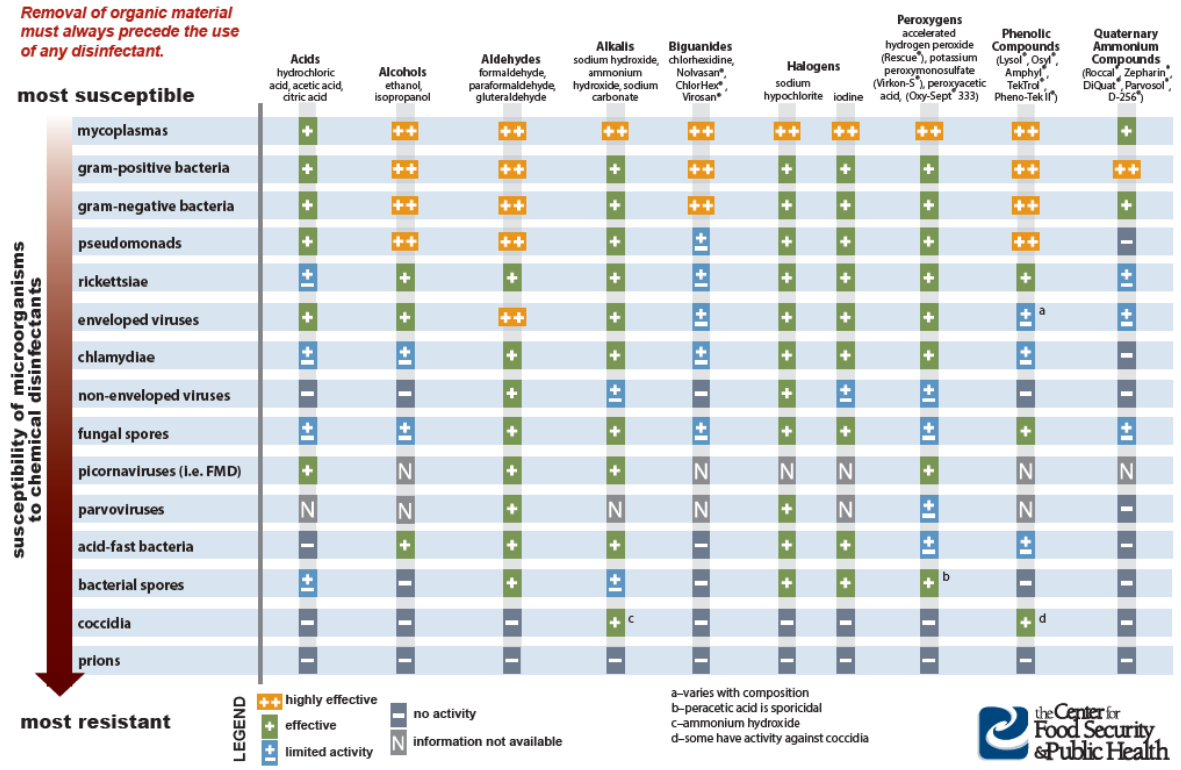
- Biological samples collected from patients with contagious disease risk should be sealed in impermeable plastic bags and labelled with the appropriate information prior to submission to diagnostic laboratories. Care should be taken to avoid contaminating the outside of plastic bags.
- Bandaging of wounds known to be infected with infectious agents of concern (e.g., MRSA or other highly resistant bacteria) should be conducted in low traffic areas that can be easily cleaned and disinfected. Barrier precautions should be used to prevent contamination of hands and attire, and care should be taken to avoid environmental dissemination through drainage of flush solutions or careless handling of bandage materials.
- Biological samples or parts of dead animals (feathers, foot, skeleton, etc) are not allowed to leave the clinical units other than for medical or educational purposes or destruction. Biological risks should be always considered.

1.3. Cleaning and disinfection

- Personnel and students using disinfectants in the VA are expected to be familiar with this basic cleaning and disinfection section in order to understand the activity of and potential interactions among the various disinfectants used in the VA.
- Organic material rapidly deactivates most disinfectants. The likelihood that organic material will be present on surfaces should be considered when choosing a disinfectant.
- Ensuring maximal decontamination requires that disinfectant solutions be applied at appropriate dilutions with an adequate contact time (often at least 10-15 min, but check the labels).
- Disinfectants vary greatly in their spectrum of activity. In general, protozoa such as *Cryptosporidium*, bacterial spores, mycobacterium, and non-enveloped viruses are very resistant to disinfection (Table 3).
- Although most disinfectants are used for their short term decontamination activity, some disinfectants maintain residual disinfectant activity when left on surfaces for longer periods.
- It is critical to rinse and remove all residues from previous disinfectant.

Table 3. The antimicrobial spectrum of disinfectants. This table provides general information for selected disinfectant classes. Antimicrobial activity may vary with formulation and concentration. The use of name does not in any way signify endorsement of a particular product. They are provided as examples. (source <http://www.cfsph.iastate.edu>)

Removal of organic material must always precede the use of any disinfectant.



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1.3.1. General cleaning and disinfection protocol

- Appropriate attire should be worn whenever using disinfectants. Additional personal protective equipment (mask, face shields, goggles, impervious clothing, and boots) should be worn only when there is a probability of splash resulting in more than merely incidental contact.
- Remove all visible debris prior to disinfection. The presence of gross contamination will inactivate most disinfectants. If a hose is used to de-bulk material, care must be taken to minimize aerosolization and further spread of potentially infectious agents.
- Wash the affected areas with water and detergent or soap; scrubbing or mechanical disruption is always needed to break down films and residual debris that prevents or inhibits the disinfection process.
- Thoroughly rinse the cleaned area to remove any detergent residue as some disinfectants may be inactivated by detergents; therefore, it is very important to rinse well after washing the area.
- Allow area to drain or dry as much as possible to prevent dilution of disinfectant solutions.
- Wet area thoroughly with disinfectant. Disinfectant should remain in contact with surfaces for 15 minutes or longer/shorter according to product label. The proper time period is of particular importance if infectious agent is suspected.
- Remove excess disinfectant with water, clean paper towels, mop, or squeegee.
- Disinfectant should be rinsed off all surfaces or allowed to dry for a sufficient amount of time (per disinfectant label) prior to housing a patient in a cage or stall.
- All multiple use areas (stocks, examination rooms, examination tables etc.) where animals are examined or treated, should be cleaned and disinfected immediately following use by personnel and students responsible for the patient - irrespective of infectious disease status of the individual animal.
- Prevent contact of blood or body fluid with any non-intact skin or mucous membrane when conducting these procedures.
- After disinfecting, remove the protective attire and wash your hands.
- For non-routine disinfection measures, only personnel trained and approved to wear and use the required personal protective equipment will be allowed access to areas being disinfected. Non-routine disinfection is implemented only by properly trained personnel.

1.3.2. Disinfectants

- A variety of disinfectants are used at the VA in order to decrease the likelihood of transmission of infectious agents. Several factors have been considered when choosing disinfectants for a particular use in the VA. Only products approved by Lithuanian National Public Health Centre can be used in the VA. For details see 1.3.5. of this chapter.
- Disinfectants vary in their toxic and irritation potential for people and animals. In general alcohols, povidone iodine, and chlorhexidine solutions are used when contact with skin or other tissues is likely or required. Other cleaning and disinfecting agents such as bleach (hypochlorite), oxidizing agents, phenols and quaternary ammonium compounds are only applied to equipment or facility surfaces.
- Disinfectants can only reliably be expected to be effective when applied to clean, non-porous surfaces. Some materials such as unsealed wood and dirt essentially cannot be disinfected or decontaminated through routine procedures. In addition, non-porous surfaces will not be reliably decontaminated if disinfectants are applied in the presence of dirt, oil, bio-films and biological materials

1.3.3. Footmats and footbaths

- Infectious agents are frequently recovered from floor surfaces in the environment around infected animals. To stop transmission of infectious agents from floor surfaces footmats or footbaths are of very high importance.

- Footmats or footbaths solutions are changed every morning by responsible personnel or students.

- Footmats or footbaths should be changed whenever they are judged to contain excessive amounts of bedding or dirt.

- Anyone that notices that footmats or footbaths are dry or low on volume must report to responsible personnel of the unit. This is the responsibility of ALL people working in the area (students and personnel).

- Personnel and students are required to use footbaths or footmats appropriately whenever they are encountered.

- Footmats do not require full immersion of feet, as the mat is designed to place solution on the soles and sides of the soles of shoes. However, splash contact with the tops and sides of shoes occurs commonly, and impervious footwear is strongly recommended for personnel and students working in areas where footmats are used.

1.3.4. Disinfection protocol for instruments and equipment

- All VA equipment must be appropriately cleaned and decontaminated prior to its return to its storage space in order to minimize the risk of transmission of contagious disease agents. Equipment used specifically in Small or Large Animal Clinics will be discussed under their respective chapters. See also 1.3.5 and tables 3 to 5 for a summary of detergents and disinfectants.

- Thermometers: glass thermometers are not to be used in the VA in order to decrease risks associated with broken thermometers and mercury exposures. Electronic thermometers are used instead. Electronic thermometers should be thoroughly disinfected daily using alcohol based disinfectant or chlorhexidine. Plastic thermometer cases should be regularly soaked in disinfectant solution.

Probes from thermometers used in continuous temperature monitoring (e.g. anaesthesia) should be thoroughly disinfected between patients by wiping and washing to remove gross faecal material and soaking in alcohol and/or chlorhexidine solutions.

Individual thermometers are assigned for use with each high-risk contagious patient (class 3 and 4), and cleaned and disinfected after discharge.

Immediate cleaning and disinfection are required when thermometers are visibly soiled or after examination of a patient.

- Endoscopes should only be cleaned and disinfected by approved faculty or staff members.

- Stethoscopes: it is recommended that stethoscopes be cleaned regularly with soap and water, and disinfected with alcohol or hand sanitizer. Individual stethoscopes are assigned for use with each high-risk contagious patient (class 4), and cleaned and disinfected after discharge.

Immediate cleaning and disinfection is required when stethoscopes are visibly soiled or after examination of a patient with a suspect infectious disease (class 3 and 4).

1.3.5. Summary of main detergents and disinfectants approved for use in the VA

- Detergents and disinfectants approved for use at the VA are selected from approved list (according to the field activity) by National Public Health center. The database of Biocidal products is found at <https://biocidai.nvsc.lt/> Several lists are of interest for the VA: List number 3 - used in veterinary hygiene; List number 4 - used in contact with foods; List number – 2 used in Public Health.

Table 4. Main detergents and disinfectants used in veterinary medicine
(Adapted from: Linton et al., 1987)

Disinfectants and their Dilutions	Activity in Organic Material	Spectrum of Activity	Comments
<p>Chlorhexidine 0.05%-0.5% Used for disinfection of items that contact skin or mucosal surfaces (e.g., muzzles, endotracheal tubes, etc)</p> <p>Contact time: at least 15 minutes.</p>	Rapidly Reduced	<ul style="list-style-type: none"> o Mycoplasmas: V. Effective o Mycobacteria: Variable o Gm+ Bacteria: V. Effective o Gm- Bacteria: V. Effective o Pseudomonas: Ltd. Activity o Rickettsiae: Ltd. Activity o Env. Viruses: Ltd. Activity o Chlamydiaceae: Ltd. Activity o Non-Env. Viruses: No Activity o Fungal Spores: Ltd. Activity o Bacterial Spores: No Activity o Cryptosporidia: No Activity o Prions: No Activity 	<ul style="list-style-type: none"> o Broad antibacterial spectrum but in effectiveness against viruses. o Used to disinfect materials that patients closely contact (muzzles, endotracheal tubes, etc.) o Easily inactivated by soaps and detergents. o Low toxicity potential; Typical are non-irritating even when contacting mucosa. Inactivated by anionic o Bactericidal activity on skin is more than many other compounds, including iodophors. o Residual effect on skin diminishes re-growth. o Only function at limited pH (5-7). o Toxic to fish, should not be discharged into the environment.
<p>Povidone Iodine Used for skin decontamination and disinfection (e.g. surgical preparation).</p>	Rapidly Reduced	<ul style="list-style-type: none"> o Mycoplasmas: V. Effective o Mycobacteria: Ltd. Activity o Gm+ Bacteria: Effective o Gm- Bacteria: Effective o Pseudomonas: Effective o Rickettsiae: Effective o Env. Viruses: Effective o Chlamydiaceae: Effective: o Non-Env. Viruses: Ltd. o Fungal Spores: Effective o Bacterial Spores: Effective o Cryptosporidia: No Activity o Prions: No Activity 	<ul style="list-style-type: none"> o Broad spectrum. o Very low toxicity potential; diluted solutions are suitable for use on tissues or on materials that contact skin mucous membranes. People can become sensitized to skin contact. Dilution of iodophors increases free iodine concentration and antimicrobial activity. Staining of tissues and plastics can occur. Stable in storage. Inactivated by organic debris and qac's. Requires frequent application. Corrosive.
<p>Alcohol (90% isopropanol or 70% denatured ethanol) Used to disinfect materials that persone,students and patients closely contact (e.g. muzzles, instruments, hand sanitizing solutions, etc)</p>	Reduced	<ul style="list-style-type: none"> o Mycoplasmas: V. Effective o Mycobacteria: Effective o Gm+ Bacteria: V. Effective o Gm- Bacteria: V. Effective o Pseudomonas: Effective o Rickettsiae: Ltd. Activity o Env. Viruses: Effective o Chlamydiaceae: Ltd. Activity o Non-Env. Viruses: No Activity o Fungal Spores: Ltd. Activity o Bacterial Spores: No Activity o Cryptosporidia: No Activity o Prions: No Activity 	<ul style="list-style-type: none"> o Broad spectrum. o Very low toxicity potential o Appropriately diluted solutions are suitable for use on tissues or on materials that contact skin or mucous membranes. o No residual activity on surfaces. o Fast acting o Leaves no residue. o Rapid evaporation. o Extremely flammable.
<p>Sodium Hypochlorite Used for disinfection of clean surfaces, especially to the spectrum of activity of disinfectant.</p>	Rapidly Reduced	<ul style="list-style-type: none"> o Mycoplasmas: V. Effective o Mycobacteria: Effective o Gm+ Bacteria: Effective o Gm- Bacteria: Effective o Pseudomonas: Effective o Rickettsiae: Effective o Env. Viruses: Effective o Chlamydiaceae: Effective o Non-Env. Viruses: Effective at higher concentrations o Fungal Spores: Effective o Bacterial Spores: Effective o Cryptosporidia: No Activity o Prions: No Activity 	<ul style="list-style-type: none"> o Broad spectrum. o Relatively low toxicity potential with standard dilutions, although higher concentrations or prolonged contact can result in irritation to mucous membranes skin. o Can be used in the presence of anionic detergents; not affected by water o Inexpensive o Bacteriocidal activity is reduced with increasing pH, lower temperatures, and the presence of ammonia and nitrogen, which is important to consider when is present. Also inactivated by cationic

			<p>soaps/detergents, sunlight and some</p> <ul style="list-style-type: none"> • Chlorine gas can be produced when mixed with other chemicals. Strong oxidizing (bleaching) activity that can damage fabric and is corrosive on metals such as silver, and aluminum (not steel). • Limited stability for stored solutions.
<p>Quaternary Ammonium Compounds <i>Primary surface disinfectant</i></p>	Moderate	<ul style="list-style-type: none"> • Mycoplasmas: Effective • Mycobacteria: Variable • Gm+ Bacteria: V. Effective • Gm- Bacteria: Effective • Pseudomonas: No Activity • Rickettsiae: Ltd. Activity • Env. Viruses: Effective • Chlamydiaeae: No Activity • Non-Env. Viruses: Ltd. Activity • Fungal Spores: Ltd. Activity • Bacterial Spores: No Activity • Cryptosporidia: No Activity • Prions: No Activity 	<ul style="list-style-type: none"> • Broad spectrum. • Irritation and toxicity is variable among products, but these compounds are generally non-irritating and have low toxicity at typical dilutions. • Inactivated by anionic detergents. • Some residual activity after drying. • More effective at alkaline pH. • Less effective in cold temperatures. • Stable in storage. • Inactivated by hard water. • Inactivated by soap/detergents (e.g. with Bleach)
<p>Oxidizing Agents: Hydrogen Peroxide. <i>Hydrogen peroxide is used in disinfectant footbaths and for disinfectant misting (fogging) the large animal hospital.</i></p>	Variable in class, Very good for peroxy mono-sulfate and accelerated hydrogen peroxide.	<ul style="list-style-type: none"> • Mycoplasmas: V. Effective • Mycobacteria: Effective • Gm+ Bacteria: Effective • Gm- Bacteria: Effective • Pseudomonas: Effective • Rickettsiae: Effective • Env. Viruses: Effective • Chlamydiaeae: Effective • Non-Env. Viruses: Ltd. Activity • Fungal Spores: Ltd. Activity • Bacterial Spores: Effective • Cryptosporidia: Ltd. Activity • Prions: No Activity 	<ul style="list-style-type: none"> • Broad spectrum. • Products listed have very low toxic potential but can cause skin irritation through drying, especially as powder or concentrated solutions. • Other compounds not used in FVM can be very toxic (e.g. chlorine dioxide) • No harmful decomposition products. • Residual activity on surfaces. • Virkon solutions lose activity within a few days after mixing. • Poor lipid solubility. • Less active at low temperatures. • Corrosive to plain steel, iron, copper, brass, bronze, and vinyl, and rubber. • Add powder to water to aid in mixing. • Wear a mask and rubber gloves when preparing solution to avoid irritation.
<p>Phenols <i>Used only for disinfection of instruments and necropsy that may be contaminated with prions (e.g., Chronic Wasting Disease, scrapie).</i></p>	Very Good	<ul style="list-style-type: none"> • Mycoplasmas: V. Effective • Mycobacteria: Variable • Gm+ Bacteria: V. Effective • Gm- Bacteria: V. Effective • Pseudomonas: V. Effective • Rickettsiae: Effective • Env. Viruses: Effective • Chlamydiaeae: Ltd Activity • Non-Env. Viruses: Ltd. Activity • Fungal Spores: Effective • Bacterial Spores: No Activity • Cryptosporidia: No Activity • Prions: Ltd Activity, variable among compounds 	<ul style="list-style-type: none"> • Broad spectrum. • Irritation potential is variable among compounds in this class, but phenolic disinfectant products are generally considered highly irritating and should be used on surfaces that contact skin or mucosa. • Concentrations over 2% are highly toxic to animals, especially cats. • Activity not affected by water hardness. • Some residual activity after drying. • Effective over broad pH range. • Non-corrosive. • Stable in storage

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

	Chemical Disinfectants									
	<i>Note: Removal of organic material must always precede the use of any disinfectant</i>									
	Acids (hydrochloric acid, acetic acid, citric acid)	Alcohols (ethyl alcohol, isopropyl alcohol)	Aldehydes (formaldehyde, paraformaldehyde, gluteraldehyde)	Alkalies (sodium or ammonium hydroxide, sodium carbonate)	Biguanides (chlorhexidin)	Halogens		Oxidizing Agents (hydrogen peroxide, peroxyacetic acid)	Phenolic compounds	Quaternary Ammonium compounds
hypochlorite						iodine				
Most susceptible										
Mycoplasmas	+	++	++	++	++	++	++	++	++	+
Gram-positive bacteria	+	++	++	+	++	+	+	+	++	++
Gram-negative bacteria	+	++	++	+	++	+	+	+	++	+
Pseudomonads	+	++	++	+	±	+	+	+	++	-
Rickettsiae	±	+	+	+	±	+	+	+	+	±
Enveloped viruses	+	+	++	+	±	+	+	+	±a	±
Chlamydiae	±	±	+	+	±	+	+	+	±	-
Non-enveloped viruses	-	-	+	±	-	+	±	±	-	-
Fungal spores	±	±	+	+	±	+	+	±	+	±
Picornaviruses (i.e. RMD)	+	N	+	+	N	N	N	+	N	N
Parvoviruses	N	N	+	N	N	+	N	N	N	-
Acid-fast bacteria	-	+	+	+	-	+	+	±	±	-
Bacterial spores	±	-	+	±	-	+	+	+b	-	-
Coccidia	-	-	-	+c	-	-	-	-	+d	-
Prions	-	-	-	-	-	-	-	-	-	-

Legend: ++ highly effective, + effective, ± limited activity, - no activity, N information non available; a-varies with composition, b-peracetic acid is sporicidal, c-ammonium hydroxide, d-some have activity against coccidian

Table 6. Characteristics of selected disinfectants (Adapted from Linton et al., 1987)

Disinfectant category	Alcohols	Aldehydes	Biguanides	Halogens: Hypochlorites	Halogens-Iodine compounds	Oxidizing agents	Phenols	Quaternary Ammonium compounds (QAC)
Mechanism of Action	- Precipitates proteins - Denatures lipids	- Denatures proteins - Alkylates nucleic acids	- Alters membrane permeability	- Denatures proteins	- Denatures proteins	- Denatures proteins and lipids	- Denatures proteins - Alters cell wall permeability	- Denatures proteins - Binds phospholipids of cell membrane
Advantages	- Fast acting - Leaves no residues	- Broad spectrum	- Broad spectrum	- Broad spectrum - Short contact time - Inexpensive	- Stable in storage - Relatively safe	- Broad spectrum	- Good efficacy with organic material - Non-corrosive - Stable in storage	- Stable in storage - Non-irritating to skin - Effective at high temperatures and high pH (9-10)
Disadvantages	- Rapid evaporation - Flammable	- Carcinogenic - Mucous membranes and tissue irritation - Only use in well ventilated areas	- Only functions in limited pH range (5-7) - Toxic to fish (environmental concern)	- Inactivated by sunlight - Requires frequent application - Corrodes metals - Mucous membrane and tissue irritation	- Inactivated by QACs - Requires frequent application - Corrosive - Stains clothes and treated surfaces	- Damaging to some metals	- Can cause skin and eye irritation	
Precautions	Flammable	Carcinogenic		Never mix with adds; toxic chlorine gas will be released			May be toxic to animals, especially cats and pigs	
Vegetative bacteria	Effective	Effective	Effective	Effective	Effective	Effective	Effective	
Mycobacteria	Effective	Effective	Variable	Effective		Effective	Variable	Variable
Enveloped viruses	Effective	Effective	Limited	Effective	Effective	Effective	Effective	Variable
Non-enveloped viruses	Variable	Effective	Limited	Effective	Limited	Effective	Variable	Not effective
Spores	Not effective	Effective	Not effective	Variable	Limited	Variable	Not effective	Not effective
Fungi	Effective	Effective	Limited	Effective	Effective	Variable	Variable	Variable
Efficacy with organic matter	Reduced	Reduced	?			Variable	Effective	Inactivated
Efficacy with hard water	?	Reduced	?	Effective	?	?	Effective	Inactivated
Efficacy with soap/detergents	?	Reduced	Inactivated	Inactivated	Effective	?	Effective	Inactivated

1.3.6. Breaking transmission cycles

General behaviour

- Prohibitions on smoking in the workplace must be followed.
- Hospitalized dogs should walk on leash at the site of the FVM.
- Members of University personnel are encouraged not to take their pets to the VA unless for medical reasons.

1.3.7. Visitors in the VA

• Educating the public about the role veterinarians have in society is an important function of the VA, and allowing visitors to have some access to the VA supports this mission. However, there are unique safety and health issues associated with exposure to the VA environment, and visitors are a potential mechanism for spreading infectious agents in the clinical environment.

• Visitors must be directly supervised while visiting clinical facilities or laboratories the VA. Physical contact with patients that are not owned by those specific visitors is not allowed.

• All planned visits by national or international partners of the VA, tours for the public are coordinated through the VA Deans' offices and are led by trained personnel.

• Visitors are never allowed to enter any isolation unit.

• VA personnel supervising visitors should inform them about zoonotic and nosocomial disease hazards that are associated with hospitalized animals.

• The VA visiting people should not be allowed to enter anaesthesia preparation areas, emergency rooms and surgery areas, and isolation units. However, special arrangements can be made by contacting biosecurity personnel and administration of the Clinic of interest in order to allow visiting scientists or veterinarians to enter before mentioned areas.

• Visitors are not allowed to gather in the care areas. No food or beverages are allowed to be consumed by the visitors, nor are they allowed to smoke. Visitors will not bring along any other animals (e.g., cat and dog).

1.3.8. Clients in the VA

• In the Small and Large Animal Clinics clients of VA are allowed unescorted access to waiting rooms and adjacent restrooms. Clients must be escorted to other areas of the clinics by the corresponding unit personnel and students.

• Clients of the VA are restricted from entering unescorted to laboratories, classes or other facilities where animals or biological material could be encountered.

• Biosecurity personnel may restrict access to patient care areas whenever it is deemed appropriate to minimize risks of zoonotic or nosocomial infections. In addition, clinicians may, at their discretion, exclude clients from patient care areas whenever there are concerns about safety or disruption of the work environment.

• At the primary clinicians' discretion, clients may be left unattended with their animals in examination rooms, however this is prohibited in treatment areas, and patient housing areas. In addition, clients must always be asked to refrain from touching any other animals.

• Clients are not allowed to visit patients that are housed in isolation. Permission will only be considered exceptionally in case of euthanasia or agony (same high level of biosecurity measures is applied).

• Clients must always adhere to policies regarding use of barrier nursing precautions relevant to their animal health and housing conditions.

• Visiting hours are restricted to specific periods determined by clinical administration, unless expressly permitted by the primary clinician.

- VA Personnel and students responsible for patient care are required to educate clients about zoonotic and nosocomial disease hazards that are inherently and necessarily associated with hospitalization of animals.

1.3.9. Children in the VA

- There are unique safety and health risks associated with the VA environment. The consequences of a child becoming ill or injured through exposure to the VA environment are clearly unacceptable from all perspectives.
- Biosecurity personnel may restrict access to patient care areas whenever it is deemed appropriate to minimize risks of zoonotic infections. In addition, clinicians may, at their discretion, exclude children from patient care areas whenever there are concerns about safety or disruption of the work environment.
- Children (up to < 18 years old) are not permitted to remain in the VA when the parent is working as a member of the VA personnel (including students), unless supervised by an adult.
- Children visiting the VA must be directly supervised by an adult at all times while in the VA.
- All visitors must be restricted from touching any animals except their own. This is especially important for children because of the risk of zoonotic disease and the risk of physical injury.

1.3.10. Pets in the VA

- There are notable health and safety risks related to the presence of non-patient animals in the clinics of VA. In accordance with VA policy, animals are not permitted to be in clinic facilities except for medical purpose.
- Animals are only permitted in the clinical facilities of the VA if they are patients admitted to the clinic, if they are scheduled for blood donation, if they are subjects enrolled in an approved research project, or if they are being used in approved teaching exercises, but contact between sick and healthy animals should be avoided and they should be placed in different units.
- Animals are not permitted in any of the VA facilities where biological material is being received, stored, tested or otherwise handled which can pose risk of infectious or non-infectious disease.
- For animals restricted facilities are marked with the special sign: red color dog is crossed with red line in white background
- Personnel and students must adhere to all VA policies when handling and managing animals in the VA.
- VA staff and students are encouraged not to take their pets to the VA unless for medical or approved study reasons.

1.3.11. Routes of disease transmission

- Many disease agents can survive for extended periods of time in the air, on surfaces and in organic material.
- Infectious disease agents can be spread from animal-to-animal, animal-to-human or even human-to-animal, through inhalation, oral consumption, contact with nasal or ocular mucosal surfaces, and through a contact with fomites or vectors.
- Awareness of these routes of disease transmission can help mitigate their potential effects.

1.3.11.1. Aerosol transmission

- Aerosol transmission occurs when infectious agents contained in aerosol droplets are passed between susceptible species. Most pathogenic agents do not survive for extended

periods of time within the aerosol droplets and as a result, close proximity of infected and susceptible animals is required for disease transmission. The greater the distance between animals, the less likely transmission will occur.

- Aerosol transmission may occur in a veterinary facilities through close contact of animals and/or humans. Infectious agents may be freshly aerosolized (as in a sneezing cat with feline respiratory virus), may be re-aerosolized by high-pressure washing of cages, stalls or pens or on dust particles by air currents (e.g., *Coxiella burnetti*). Temperature, relative humidity and ventilation play important roles in aerosol transmission of pathogens.

1.3.11.2. Oral transmission

- Oral transmission involves exposure to infectious agents by the gastrointestinal route. This also can occur inadvertently through inhalation of aerosolized material and subsequent swallowing of materials through the nasopharynx.

- Contaminated environmental objects include equipment such as food and water dishes, and any other items an animal could lick or chew. Feed and water contaminated with faeces or urine are frequently the cause of oral transmission of disease agents.

- In people, oral contact with contaminated hands is commonly part of the transmission cycle for oral-faecal agents, which exemplifies the need for excellent hand hygiene among personnel and students working around animals. Appropriate handling and segregation of patients with diarrhea will help control the spread of potentially infective organisms in faeces as will proper cleaning and disinfecting of food and water dishes.

1.3.11.3. Contact transmission

- Direct contact transmission requires an animal or person to directly contact another infected animal or person.

- Indirect contact transmission occurs through contact with surfaces or materials that have been contaminated with a variety of substances (e.g., blood, discharge from wounds, saliva, nasal secretions or aerosolized respiratory droplets, genitourinary secretions, faecal material, etc).

- It is important to remember that patients in the clinic have a high likelihood of being infected with contagious pathogens, and therefore surfaces throughout the facility have a high likelihood of being contaminated with infectious agents. As such, the most important method of reducing the potential for direct and indirect contact transmission is the segregation of infected animals and minimizing contact with them.

- Since not all infected animals show signs of illness, generalized efforts to decrease the likelihood of animals coming into direct contact and segregating patients in different populations (e.g., inpatients and outpatients) are warranted.

1.3.11.4. Fomite transmission

- Fomites are objects that serve as intermediates in contact transmission cycles. Virtually any object can serve as a fomite, even a person acting as a caregiver. For example: a door knob, keyboard, telephone, clothing, thermometer, stethoscope, hose, leash, brush, shovel, etc., are all items that can be contaminated with infectious agents and serve as an exposure source involved in contagious disease transmission.

- An important aspect of fomite transmission is that portable items can be contaminated near one patient and then be a source of transmission for patients or personnel and students in other areas of the clinic. The most important means of controlling transmission by fomites is through proper cleaning and disinfection, use of barrier nursing precautions, separation of equipment, as well as the appropriate recognition and segregation of diseased animals.

- Whenever possible, clinically ill animals should be handled and treated only after all healthy animals have been handled or cared for.

1.3.11.5. Vector transmission

- Vector transmission occurs when an insect or arthropod acquires a pathogen from one animal and transmits it to another. Heartworm, babesiosis and West Nile virus are examples of diseases transmitted by vectors.
 - Fleas, ticks, flies and mosquitoes are common biological vectors of disease.
 - The most effective means to prevent transmission of vector-borne is the elimination or reduction of the insect vector, or at a minimum, separation of the vector from the host.

1.3.11.6. Zoonotic infections

- While the risk of contracting a zoonotic disease among the general population is, on average, low, veterinarians and other people that routinely contact animals have an increased risk of exposure to zoonotic disease agents.
 - In case of exposure to suspect or confirmed cases of zoonotic diseases, all known client, veterinarian, student, and staff contacts should be recorded and reported to the responsible biosecurity person and the Head of the unit, who immediately informs the Biosecurity Committee of VA.
 - The Head and biosecurity responsible persons, and the clinician in charge of the case should work together to ensure that all potentially exposed individuals are contacted, as well as the necessary local and state health officials (when applicable).
 - Any individual with known or suspected infections associated with work at the VA is strongly encouraged to seek medical attention immediately after reporting the event to biosecurity responsible person or Head of a unit.
 - All personnel and students with concerns or questions regarding exposure to zoonotic agents are strongly encouraged to contact their health care provider. Friends or family members of VA personnel or students, who might have increased risk of serious consequences of zoonotic infection are encouraged to discuss potential risks with their own health care provider or Biosecurity Committee at VA.

1.3.12. Special infectious disease risks

- Personnel, clients and students whose immune system is compromised are at greater risk from exposure to zoonotic diseases. Immune status is affected by many conditions and those at increased risk may include: children under the age of 5, pregnant women and the elderly.
 - While the most profound immune suppression is caused by HIV / AIDS, other diseases and conditions that can compromise or alter immune function include pregnancy, organ failure, diabetes, alcoholism and liver cirrhosis, malnutrition or autoimmune disease.
 - Certain treatments can also be associated with immune suppression, including radiation therapy, chemotherapy, chronic corticosteroid therapy, or immunosuppressive therapy associated with bone marrow or organ transplants, implanted medical devices, splenectomy, or long-term haemodialysis.
 - It is important to note that some of these conditions or diseases may have a social stigma, making it difficult for a person to share their personal health information.
 - All personnel, including students, are required to inform supervisor and/or Head of corresponding unit about any special health concerns (e.g., pregnancy, immunosuppression, etc.) that might impact the risk or consequences of infection with zoonotic agents prior to handling any patients or biological material.

- All discussions will be kept confidential, however, communication among personnel about the situation may be necessary for implementation of appropriate precautions and/or alteration of normal clinical or teaching procedures at the VA.

1.4. Risk communication

In every unit of the VA there are appointed biosecurity and biosafety responsible personnel. Biosafety looks at appropriate laboratory procedures and practices necessary to prevent exposures. The ultimate goal of biosafety risk communication is to aid all stakeholders, including laboratory personnel, involved in the biosafety risk assessment process to understand the biosecurity and biosafety methodologies, results, and risk management decisions. Biosafety and biosecurity risk communication is vital to allow laboratory personnel to make informed choices about risks related to their roles in laboratories, and to establish successful biorisk management strategies. Furthermore, strong communication practices will help to establish good reporting mechanisms for any incidents, accidents, or mitigation inefficiencies.

Risk Communication regarding contagious disease status of patients

- Efficient communication regarding the risk of spreading contagious disease is essential, given the complexity of patient care at VA and the number of individuals working in this environment. Effective, proactive communication regarding the real and potential infectious status of patients decreases the likelihood of potential nosocomial or zoonotic disease spread. For biosecurity concerns at the VA, risk communication involves appropriate notification and education about risks related to infectious disease for all individuals who may come in contact with patients with infectious diseases, including zoonotic disease concerns, appropriate precautions necessary to limit spread to personnel, students or other patients, and appropriate precautions to disinfect areas or materials that may become contaminated.
- All VA patients and biological samples should be evaluated by veterinary staff to identify contagious disease risks. It is the responsibility of the clinician in charge to appropriately assess patient's induced the risk of contagious disease transmission and to institute appropriate infectious disease control efforts consistent with the VA Biosecurity SOP.

1.4.1. Biosecurity notifications

- The Biosecurity Committee must be notified about all important infectious disease hazards (known or suspected). This includes, but is not limited to, diseases with the potential to cause zoonotic disease, highly contagious diseases, highly pathogenic diseases, bacteria with resistance to multiple drug resistance or important resistance patterns (e.g. methicillin-resistant *Staphylococcus aureus* or vancomycin-resistant enterococci), disease agents that are highly persistent or difficult to disinfect using routine hygiene practices, or diseases of regulatory concern. This notification should be performed by the veterinarian with primary responsibility for the case and should occur at the first reasonable opportunity. This notification can be made in person or by phone.
- All significant contagious disease risks must be appropriately communicated to VA personnel, students and clients in order to effectively manage the threat of infection in people and animals that might have contact with a particular patient.
- Be aware that the infectious disease status of a patient may change during hospitalization, and the risk communication materials must be updated.
- The VA uses electronic mail to facilitate communication regarding infectious disease hazards using the following email : va.biosauga@lsmuni.lt
- Purpose: to provide communication and improve awareness regarding patients with increased risks for contagious and/or zoonotic disease at the VA.

- People sending emails: open to anyone, compulsory to biosecurity responsible persons in each VA unit, required when class 4 patients are admitted to isolation.
- People receiving emails: Biosecurity Committee, biosecurity responsible personnel of different units.

1.4.2. Floor lines applied to the floor

- To make access more visible to clients, visitors and students, floor lines have been applied to specific parts of the clinics and Pathology Centre. The colour of the line explains if passage is allowed, restricted, or not allowed:

Green: no restriction, passage is allowed.

Yellow: passage is restricted (for example: entry of the hospitalisation).

Red: passage is not allowed unless authorization of a clinician (example: surgery bloc, the isolation unit).

- A poster should always be present explaining the necessary precautions prior to passing one of these lines.

1.4.3. Small and Large Animal Clinics, Practical Training and Testing Centre

- Cages or stalls (as well as the relevant surrounding environment) of patients with contagious diseases and patients must be clearly labelled with the infectious disease hazards associated with patients. At a minimum, this signage should contain the following information: classification of the disease following risk classification system (Table 2). Disinfection procedures appropriate for controlling the agent in question. Barrier nursing and hygiene requirements applicable. Whether there is any zoonotic health risk. Name of the known or suspected condition

- Barrier precautions should be visible as adequate notice of special status.
- Personnel and students responsible for patients with contagious diseases must ensure that special considerations and nursing needs have been appropriately communicated to others likely to be working with patients or their environment.
- Personnel responsible for patients with contagious diseases must ensure that information has been appropriately communicated to the mailing list of the Biosecurity Committee.

1.4.4. Recommendations for front desk personnel

- If a client call indicates an acute case of vomiting, diarrhea, ataxia, abortion, coughing or sneezing or another case where a contagious disease can be suspected:

The receptionist will schedule the appointment with the appropriate service ONLY AFTER approval by a clinician and if there is an isolation stall or cage available (also see 1.4.5. for exclusion criteria for entry and/or hospitalization).

The presenting complaint will be indicated on the registry as "acute diarrhea" "acute vomiting", "acute coughing" or "acute sneezing", etc.

"Suspect infectious disease" must be written next to the complaint.

The client will be asked to keep their animal outside until they have been checked in. Following the check in a quick clinical impression will be obtained before entering the clinic or in the emergency room by a resident or clinician to allocate the animal in a certain risk category (see chapter 1.4.. for exclusion criteria for entry and/or hospitalisation).

According the risk category and circumstances, the animal can be taken directly to an exam room, or isolation. In case of small animals, transport should preferably be on a gurney to decrease clinic contamination.

- If a patient that has signs or history of acute, possibly contagious disease is presented directly to the reception desk, the receptionist should contact the receiving service immediately and coordinate placement of the animal in an examination/emergency room or isolation to minimize contamination of the clinics.

1.4.5. Protocol for students

- The arrival of possible infectious disease cases will be handled as follows:

The presenting complaint will be written on the registry as "acute diarrhea" "acute vomiting", "acute coughing" or "acute sneezing", etc. "Suspect infectious disease" will be written next to the complaint. The client will be asked to keep their animal outside until they have been checked in. Following the check in a quick clinical impression will be obtained before entering the clinical or in the emergency room by a clinician to allocate the animal in a certain risk class. According the risk class and circumstances, the animal can be taken directly to an exam room, or isolation. In case of small animals, transport should preferably be on a gurney to decrease contamination of clinic.

- Every attempt should be made to reduce any direct contact with the patient and any other VA patients.
- In order to reduce risks for students and other animals, only a minimum of students determined by the clinician are allowed to follow the consultation/examinations of cases with possibly contagious disease.
- After the exam room has been left by patient, areas or equipment contaminated directly or indirectly by faeces, secretions, or blood should be cleaned and disinfected immediately by the student and/or personnel in charge of the patient.
- Appropriate signs should be placed on the door to prevent use of the room until it has been cleaned and disinfected.
- Students are obliged to know (ad hoc instructions, training) and to follow procedures as determined by this biosecurity protocol when contacting cases with contagious disease.

1.4.6. Exclusion criteria for entry and/or hospitalisation

- In case of official reportable diseases in Lithuania (see section 1.5.6.) or if the risks for other hospitalised patients or staff to become infected with the disease are too important compared to the health risk for the animal itself, the animal can be refused to enter the clinic or to be hospitalised. The specific refusal criteria for each species are listed under the corresponding clinical chapter of this SOP.
- Only clinicians (not residents) are allowed to take the decision to refuse an animal.

1.5. Biosecurity surveillance

- This program was established to monitor and identify the spread of infectious disease at the VA.
- Clinicians should report the occurrence of known or suspected nosocomial events to the Biosecurity Committee as soon as possible. The Biosecurity Committee should also be alerted to any suspected trends in nosocomial events, even if the clinical consequences are not considered severe. The Biosecurity Committee should be alerted to all known or suspected zoonotic infections that are thought to have arisen through exposure in the VA. Clinicians, technical staff and students are expected to handle information about cases and possible infectious or contagious diseases with confidentiality.
- Clinicians are encouraged to use appropriate diagnostic testing in order to determine the etiology of nosocomial events, even if these results may not affect the clinical outcome for that patient. Apparent trends cannot be investigated without appropriate surveillance data.
- Traceability of infected animals and animals in contact is of major importance for surveillance. In the Small and Large Animal Clinics of the VA computer programs are being used to keep a complete databank of all incoming cases, the contact information of their owners and referring veterinarians and used medications.

- Environmental surveillance of *Salmonella* and antimicrobial resistance patterns in the clinics of VA should be performed and the results reported to the Biosecurity Committee. The Committee is in charge of analysis of data and announcement of the report at VA.

1.5.1. Required diagnostic testing in suspected infections

- Diagnostic testing to detect certain infectious and or zoonotic agents provides essential information for appropriate clinical management of infected patients. This testing provides direct benefit to the patient in addition to benefiting clients by allowing them to appropriately manage their other animals and protect their families. It also benefits the FVM as this information is essential for appropriate management of disease risk for all FVM patients, personnel and students.

- It is therefore highly suggested for all hospitalized patients to undergo diagnostic testing if infection with specific contagious or zoonotic agents is a reasonable consideration. This diagnostic testing is considered essential to case management in the FVM and therefore if clinical suspicion exists, yet the owner is reluctant to pay for testing, the animal will be designated class 4 and the ensuing financial repercussion will be billed to the client.

- It is the responsibility of the clinician responsible for a patient's care to ensure that appropriate client communication occurs regarding infectious and or zoonotic agents.

- It is the responsibility of the clinician responsible for a patient's care to ensure that appropriate samples are submitted for this testing, and that appropriate biosecurity precautions are taken with these patients.

- Biosecurity personnel of a clinic should be notified by the veterinarian with primary case responsibility, as soon as possible that there is a reasonable suspicion that a hospitalized patient may be infected with agents of class 3 and 4.

In the VA, a special attention should be devoted to:

Acute Diarrhea in Dogs and Cats (*Salmonella*, *Campylobacter*, Parvovirus, *Cryptosporidium*, *Giardia*)
 Canine Distemper Virus
 Rabies
 Leptospirosis
Chlamydophila psittaci
 Avian influenza
 The neurologic form of Equine Herpesvirus type 1
Streptococcus equi subsp. *equi* (strangles)
 Salmonella

1.5.2. Reportable diseases

- If a reportable disease (see the list below) is suspected or diagnosed it must be reported directly as soon as possible to the Biosecurity Committee. The Committee will start immediate collaboration with the Lithuanian State Food and Veterinary Service in order to resolve the case (sampling, testing, control measures, epidemiological analysis etc.).

More information on reportable disease testing and managing is available at the website of the Lithuanian State Food and Veterinary Service webpage www.vmv.lt

More details on diagnosis and management of reportable diseases is also available on the website of the OIE.

<http://www.oie.int/eng/maladies/entechcards.htm> Terrestrial Animal Health Code:
<http://www.oie.int/eng/normes/mcode/ensommaire.htm> Manual of Diagnostic Tests and Vaccines for Terrestrial Animals: <http://www.oie.int/eng/normes/enmanual.htm?eldIO>
 Manual of Diagnostic Tests for Aquatic Animals:
<http://www.oie.int/eng/normes/enamanual.htm>

Aquatic Animal Health Code: <http://www.oie.int/eng/normes/fcode/ensommaire.htm>

List of notifiable diseases

Multiple species diseases

- Anthrax
- Rabies

Diseases of ruminants

- Infection with Rift Valley fever virus
- Bluetongue disease
- Foot and mouth disease
- Bovine spongiform encephalopathy
- Infection with peste des petits ruminants virus
- Rinderpest
- Lumpy skin disease
- Bovine brucellosis
- Bovine tuberculosis
- Enzootic bovine leucosis
- Infection with *Mycoplasma mycoides* subsp. *mycoides* SC (contagious bovine pleuropneumonia)
- Sheep pox and goat pox
- Small ruminant infection with *Brucella abortus*, *Brucella melitensis* and *Brucella suis*

Equine diseases

- Equine encephalomyelitis (West Nile, Venezuelan, Japanese)
- Equine infectious anemia
- Glanders
- African horse sickness
- Contagious equine metritis

Pig diseases

- Vesicular disease
- Classical swine fever
- African swine fever

Avian diseases

- Newcastle disease
- Avian influenza (highly pathogenic and low pathogenic for domestic and captive birds)

Bee diseases

- Infestation with *Aethina tumida* (Small hive beetle).

Crustacean and amphibians diseases

- Epizootic haematopoietic necrosis disease
- Infectious haematopoietic necrosis
- Infection with HPR-deleted or HPRO infectious salmon anaemia virus
- *Perkinsus marinus* infection;
- *Microcytos mackini* infection;
- *Marteilia refringens* infection
- *Bonamia ostreae* and *Bonamia exitiosa* infection
- Koi herpesvirus infection
- Taura sindrom;
- Viral haemorrhagic septicaemia
- Infection with yellow head virus

- When there is a suspicion of a reportable disease it is the responsibility of the clinician responsible for a patient's care to ensure that appropriate samples are taken for the testing, and that appropriate biosecurity precautions are taken with such patients.
- Biosecurity Committee should be notified by as soon as possible that there is a reasonable suspicion that a hospitalized patient at VA may be infected with agents of class 4. This notification can be made in person or by phone.

1.5.3. Research and teaching animals

- Personnel and students using animals for research in the VA must adhere to all applicable biosecurity procedures. Approval should be obtained from the SFVS prior to initiating these activities.
- Teaching and research animals may not be housed in patient housing areas of the VA with the exception of extraordinary circumstances or medical reasons.

CHAPTER 2. FOOD SAFETY AND QUALITY DEPARTMENT BIOSECURITY SOP

2.1. Introduction

• The staff and students of the Department of Food Safety and Quality (further DFSQ) must follow the general biosecurity and biosafety requirements set in Chapter 1. During extramural visits general principles of biosecurity must be remembered and onsite biosecurity requirements must be followed.

- Staff and students during extramural visits to slaughterhouses or food enterprises for study or research purposes must follow DFSQ biosecurity requirements.

- During the first practical work and before the first trip to slaughterhouse or food enterprise, students are instructed about safety at work and biosecurity requirements. After instruction students sign that were instructed and the requirements are understood in the Work safety and biosecurity Register. DFSQ staff has to sign that they have been instructed on work safety and biosecurity at work.

- Staff and students working in the laboratories of the Department of Food Safety and Quality, must follow safety and biosecurity requirements.

- All students traveling for practical training to slaughterhouses must have a Personal Health Card. These cards must be submitted to the State Food and Veterinary Service (VMVT), before students are directed to destination slaughterhouses.

- Before the trips to slaughterhouses for practical training, students sign in the Biological Safety Register informing about their health status.

- Students suspected or infected with a contagious disease, presenting a potential risk for contamination of foodstuffs, must inform their supervisor and such students are not accepted to slaughterhouse or relevant enterprise.

- If a zoonotic disease is detected or there is a serious suspicion in a slaughterhouse/food enterprise, students are immediately informed and appropriate precautions are taken. Students informed about the risk of touching the contaminated objects: animal carcasses, tissues, secretions, etc. Students always are advised to contact medical practitioners if there is any suspicion of infection.

2.2. Work safety principles during visits to slaughterhouses

- Before leaving to slaughterhouse students are instructed about safe requirements, possible risks, food safety risk factors and sign in the Biosafety Register. Principles of HACCP system, BRC, IFS and ISO standards, are followed in slaughterhouse/food enterprises, however students are requested to follow Good Hygiene Practice requirements as well.

- After arrival to an extramural site students must sign at the Visitors Registration Journal confirming that they are informed about safety and biosecurity requirements. The Journal is filled by the responsible worker of a slaughterhouse/food enterprises.

- Accompanying academic staff is responsible that students follow hygiene requirements during extramural visits. Students are asked not to touch food products and raw materials without necessity, except postmortem examination.

- Before visits to slaughterhouses/food enterprises students must inform corresponding teacher about other of animal (poultry) enterprises/farms or slaughtering enterprises and waste storage/disposal areas visited within 48 h.

- It is strictly forbidden to eat, drink, smoke and consume alcohol at slaughterhouses/food enterprises and Microbiology laboratory of DFSQ.

- At slaughterhouses/food enterprises it is forbidden to wear jewellery, wedding rings, watches, and to have other small personal things, except those necessary to perform given tasks.

2.3. Principles of students' safety during laboratory works

- Before practical work at DFSQ laboratories students are instructed on work safety, biosecurity and possible risks of infection and food safety risk factors and sign in the Work safety and biosecurity Register.
- During laboratory work in food microbiology, teachers ensure that students stick to hygiene and safety requirements. Students are forbidden to open Petri dishes with cultures, touch the bacteria cultures, finger inoculation loops, etc.
- During the Food hygiene, Meat and egg hygiene and other subjects related with material of animal origin, teachers pay special attention that students follow the rules of safety at work and biosecurity requirements.

2.4. Personal hygiene

- Students must strictly follow the rules of personal hygiene.
- Hand washing. Before entering and leaving the laboratory of microbiology or slaughterhouse/food enterprise, after using lavatory or in case of soiling hands, hands must be thoroughly washed with water and antibacterial soap or cleaned with antibacterial wipes.
- Disposable paper towels are used for wiping hands. When necessary, students are provided with disposable gloves, yet this is not an alternative for washing hands. In case of scratches or wounds on hands disposable gloves are a must.
- In slaughterhouses/food enterprises, hands are washed using knee operated hand washbasins.
- In the laboratories of the Department of Food Safety and Quality, students must wear cotton labcoat. If necessary, students are provided with disposable gloves.
- In slaughterhouses/food enterprises, students must wear clean gowns. Entering the production facilities, students must wear disposable gowns, caps, protective sleeves, disposable shoes covers or clean rubber shoes, disposable gloves and, if necessary, aprons and headpieces.
- During practical training in slaughterhouses, the Faculty of Veterinary Medicine provides students with disposable clothing.
- Students' movement in slaughterhouses or meat processing enterprises
- In order to avoid cross-contamination risks, students start their work visits from the clean zone and finish it in the dirty zone.
- After arrival to slaughterhouses, students are directed to clothes exchange rooms where they change into the mentioned clothing and leave their clothes and personal possessions in special wardrobes.
- The inspection of slaughter lines is started in the clean zone and finished in the dirty zone.
- The visit ends in the spaces where animals (poultry) are kept before slaughter.
- During the visits, students perform inspection of carcasses. Students must not impede the slaughterhouse operation cycle. For this reason, the internal organs of animals for inspection are hooked on a free (unemployed) line.
- If a student is injured, he/she immediately ends the assigned work, washes his/her hands in a knee operated hand washbasin and in the changing room applies disinfectant from the dispensary on the wound. If needed additional medical service is requested.
- During the after-slaughter examination, teacher is constantly supervising students which are performing examination. The teachers must be sure that the examined organs pose no risk for which it should be utilized.
- Visiting a meat cutting facilities, students enter it through the clean zone of an enterprise.
- After leaving the slaughterhouse/food enterprise, the disposable clothing is thrown into special containers.

2.5. Washing and disinfection

- In the laboratory of microbiology, all material used for practical training (dishes with cultures, pipettes, inoculation loops, etc.) are collected into special marked containers and sterilized in autoclaves. The workplaces are cleaned with disinfectants.
- After investigation, meat contaminated with *Trichinella* and other meat and eggs are collected into special marked containers and sterilized in autoclaves. The workplaces are cleaned with disinfectants.
- Tools and instruments necessary for work in slaughterhouses (knives, hooks, metal gloves, plastic/leather aprons, etc.) are slaughterhouse's property and are used only at this place. They are washed and disinfected following the rules of the enterprise. These tools and instruments cannot be used in other enterprises.
- In slaughterhouses/food enterprises, students wear personal rubber shoes, which are put on in the changing room and washed using mechanic shoe brushes before entering and after leaving the slaughterhouse.

2.6. Use and storage of reference samples.

- Reference materials (bacterial cultures, or their mixtures with a known number of bacteria) and reference strains are stored in cryogenic tubes with protective medium in identified boxes and holders. Holders and boxes are stored in deep freezers (-80 / -75 ° C) with locking function. Tubes of reference strains and reference materials are marked with a permanent marker, recording the name of the strain on the tube and the freezing date.
- All frozen reference substances or reference strains are registered in registration sheets of storage box and holders.
- Access to the collection of bacterial cultures is limited. The entrance to the deep freezer is controlled by the laboratory supervisor or other authorized person. Students (residents, PhD students) can use reference strains only with supervision of responsible laboratory staff.
- Work with reference materials and reference strains is carried out in biosafety cabinets. The reference materials and reference strains are kept frozen until they are used out or until they lose their characteristic properties. Then it is autoclaved at 121°C for 30 min and disposed according to requirements.

CHAPTER 3. ANATOMY AND PHYSIOLOGY DEPARTMENT BIOSECURITY SOP

3.1. General procedures

- The biological material is used and the specific biosafety procedures are implemented in the following sectors of the Department: Anatomy section, research laboratories of Immunology, Research Center of Digestive Physiology and Pathology (RCDPP), as well as educational laboratories of Physiology and Immunology.
- Students (during the first laboratory class) and other staff members (during the first visit to Anatomy section) are instructed on work safety and biosecurity SOP of the department, and sign that the requirements are understood in the Occupational Safety and Biosecurity book.
- Students and staff must comply with the rules of Safety and Biosecurity and the Safety regulations of the Department.
- The staff, students and visitors must comply with the general procedures described in Chapter 1.

3.2 Anatomy section

3.2.1 General procedures

- The anatomical material of animal origin (carcasses and internal organs) is used for the practical training in study process in Anatomy section (building No.2) of the Department.
- For this purpose, only carcasses of healthy poultry and animals, parts of carcasses and internal organs, carcasses (after euthanasia) are purchased in accordance with the procedures approved by the FVM. Only dead animals are purchased for veterinary medicine study purposes.
- The Anatomy section according to biosecurity risks is divided into safe zone and risk zone.
- The risk zone - dissection rooms (102 and 103) and the skeletons preparation room (003). The entrance is limited and marked with a yellow floor tape.
- The other part of the Anatomy section is safe zone where study rooms (105; 107; 106), histological preparation room (014), bone storage room (015), the osteology room (museum) (202), 3 toilets (010; 011; 203), two shower rooms (006; 008) and sanitary unit for the disabled persons (005) are located.
- Students (during the first laboratory session) are acquired to the requirements of the APD Safe Work and Biosafety and sign in the Safety and Biological Safety book to understand the requirements.

3.2.2 Origin of the animal material

- The carcasses, parts of carcasses and internal organs only of healthy animals and poultry are brought from slaughterhouses for study purposes. Before slaughter, a clinical examination of the animals shall be carried out by a veterinarian responsible for slaughter.
 - Carcasses of only healthy euthanized laboratory animals arrive from Biological Research Centre of LSMU. The veterinarian in charge of euthanasia provides only healthy animals for the anatomy studies.
 - Carcasses of only sound euthanized dogs and cat are delivered from Small Animal Clinic of FVM to the APD.
 - The veterinary personnel in charge of the euthanasia keeps only sound animals for the APD.
 - At APD carcasses of only healthy euthanized rabbits, rats, mice, Guinea pigs are used from Vivarium. Before euthanasia, a clinical examination of the animals shall be carried out by a veterinarian responsible for euthanasia.

3.2.3. Storage and disposal of animal origin material

- Carcasses, parts of carcasses and organs of animals and poultry are stored in freezers before the use.
- Material of animal origin is stored in refrigerators during dissection week.
- There are three freezers and one refrigerator in the dissection rooms.
- The animal origin material is disposed through the Pathology Centre of FVM at the end of the dissection week.
- The biological material of healthy animals is delivered in a closed container to the skeleton preparation room (003) and immediately prepared.
- All residual solid biological material is disposed in yellow biohazard bags for utilization.
- All residual liquid biological material is transferred to biohazard container and neutralized by chemical disinfectants with a minimum contact period of 15 min., and discharged into the sewer systems.

3.2.4 General procedures in the dissection and skeleton preparation rooms

- The members of the staff must wear lab coats, disposable clothes, disposable shoes covers and disposable gloves.
- Dissections are organised by weeks according to calendar thematic plan of the study subject.
- Students should bring personal items: white lab coat and latex gloves.
- Students must wear a white lab coat, disposable gloves, a disposable apron and disposable shoes covers during dissection.
- It is forbidden to leave the dissection / skeleton preparation rooms wearing the same disposable protective measures.
- It is forbidden to bring or consume food (including chewing gum) or drinks into the dissection / skeleton preparation rooms.
- It is forbidden to smoke, spit or chew in the dissection / skeleton preparation rooms.
- It is forbidden to use a cell phone in the dissection / skeleton preparation rooms.
- Before leaving the dissection room, the students must: discard used scalpel blades in to yellow biohazard boxes; put dissection instruments into the special tray; all used disposable cloths (latex gloves, shoes covers and other) discard into the yellow biohazard bags for utilization; to wash and disinfect hands.

3.2.5 General protocol for hygiene and cleanliness

- Students are highly recommended to be immunized against tetanus before training in the Anatomy section.
- If a student has cut himself during dissection, he must immediately stop the dissection, remove gloves, wash hands, call a member of the staff. The wound is inspected and first-aid kit items are used. If the wound is superficial, it is protected from further contamination by applying a sterile plaster on. If the wound is deep, the student is brought to the hospital.
- If a student appears not to be immunized against tetanus, he must go to the hospital for the proper wound treatment and receive an anti-tetanus serum /or a tetanus vaccine.
- The use of latex gloves during the dissection is mandatory, as well as to wash and disinfect the hands after dissection is also obligatory. The hand washing-disinfection instructions placed above the sinks.
- If there is a suspicion of a potential contagious disease, students will be asked to leave the dissection room, after having placed their latex gloves and aprons and disposal shoes covers in a separate yellow biohazard bags/box, washed and disinfected their hands and instruments. All the contaminated carcasses will be placed by the staff into a special collecting dustbin to be eliminated. Dissection tools, the tables and dissection rooms will be washed thoroughly and disinfected.
- Disinfection of dissection tools, tables and rooms is carried out in accordance with the general cleaning and disinfection protocol.
- Dissection tools have to be washed thoroughly and disinfected at the end of each dissection.

- Used scalpel blades must be placed in yellow biohazard boxes, used latex gloves discard in to the yellow biohazard bags.
- Dissection tables are washed everyday with industrial detergents and disinfected at the end of each dissection week.
- It is forbidden to store food or drinks in the refrigerators and freezers with anatomical material.
- The refrigerators and freezers are regularly cleaned and disinfected.
- The dissection rooms are swept and rinsed with water daily.
- Dissection rooms are washed with a water and industrial detergents at the end of each dissection week. Disinfection is regularly performed.
- The skeleton preparation room is swept and rinsed with water daily. After preparation procedures, the room, surfaces, used utensils and tools are washed with water and industrial detergents and disinfected.
- Disinfection is regularly performed.
- Approved detergents and disinfectants are used in the Anatomy section.

3.2.6 Preventing transmission routes in the Anatomy section

- Visitors are not allowed in the risk zone of the section.
- Children visiting the Anatomy section are only allowed to walk along the safety zone under supervision of an adult.
- It is strictly forbidden to drink and/or eat within the Anatomy section apart from staff offices and lunch room.
- It is forbidden to wear the same protective clothes in others (in the classrooms, in the auditorium, etc.) than the dissection/preparation rooms. Disinfection measures must be applied when indicated.
- Neither the staff, nor students are allowed to come to the Anatomy section (building No.2) with their pets.

3.3 Immunology training laboratory

3.3.1. General requirements

- The biological material is tested in the Immunology training laboratory (building No.5, room No.410/2) of the Department.
- Only samples from clinically healthy animals are allowed to enter the laboratory. Aforementioned characteristics of animal samples are ensured by veterinarian that supplies them.

3.3.2. Origin of biological material

- Biological material includes animal blood (whole blood, serum, plasma and extracted immune cells), milk and lymphoid tissue.
- Samples of the biological material arrives to the laboratory in sealed and properly marked package (whole blood, serum and plasma samples in vacuum vials; milk samples in specialized plastic tubes).
- Blood sample for immune cell isolation arrives in sterile vials with anticoagulant.
- Lymphoid tissue for molecular analysis arrives in plastic vials containing lysis buffer for DNA/RNA extraction.

3.3.3. Storage and and disposal of biological material

- Samples of biological material are stored in refrigerators (+4°C or < -18°C) or freezers (-21°C or -80°C) before testing, if necessary.
- Biological material liquid is transferred to biohazard container after testing and neutralized by chemical disinfectants with a minimum contact period of 15 min., and discharged into the sewer systems.
- The samples of body tissues are disposed in yellow biohazard bags for utilization.

- All biological material in disposable, tightly sealed containers is disposed in yellow biohazard bags for utilization.

3.3.4. General procedures in the Laboratory

- The Laboratory (No. 410/2) is biosecurity risks zone, the entrance is limited.
- The laboratory can be accessed by wearing white textile lab /disposable coat.
- The staff must wear white textile /disposable coat and latex gloves.
- It is forbidden eating (including chewing gum), drinking and smoking in the laboratory.
- It is forbidden to leave the laboratory wearing allocated lab/ disposal coat and gloves.

3.3.5. General procedures after laboratory procedures

- All disposable utensils (micropipette tips, filters, tubes, serological pipettes etc.) that had contact with biological material used during laboratory procedures are dispose in yellow biohazard bags for utilization.
- Disposable micropipette tips used in molecular and immunological analyses are collected in specialized plastic bags and when dispose in yellow biohazard bags for utilization.
- Work stations are washed with water, industrial detergents and disinfectants after each use and prepared for next use.
- All disposable material (coats, gloves) are dispose in yellow biohazard bag for utilization.
- The staff must wash and disinfect hands after finishing laboratory procedures. The washing and disinfection procedure instructions are allocated above sinks.

3.3.6. General protocol for hygiene and cleanliness

- In case of injury, all activities should be stopped and first-aid kit items used. Responsible staff member is alerted about the accident, after assessing the degree of damage necessary procedures are carried out as soon as possible.
- Storage of food and drink items in laboratory refrigerators and freezers is forbidden.
- Refrigerators and freezers are regularly cleaned and disinfected.
- Laboratory facilities are cleaned with water and detergents daily.
- Laboratory facilities are regularly cleaned are disinfected using industrial detergents. Disinfection is regularly performed.
- Only certified detergents and disinfectants are used in laboratory facilities.

3.3.7. Preventing transmission cycle in the Immunology

- Visitors and pets are not allowed in the laboratory.
- It is forbidden to wear lab coats and other protective clothes in other rooms (e.g. halls, auditoriums) than the laboratory.
- Disinfection measures must be applied when indicated.

3.4 Research Center for Digestive Physiology and Pathology (RCDPP)

3.4.1 General procedures

- The biological material is tested in the Center for Digestive Physiology and Pathology (building No.5, rooms No. 320 and 322) of the Department.
- Only samples from clinically healthy and / or metabolic (non-infectious) animals are allowed to enter the laboratory. Aforementioned characteristics of animal samples are ensured by veterinarian in charge of the farm (herd).

3.4.2. Origin of biological material

- The biological material tested in RCDPP laboratories is: rumen fluid, blood, urine and faeces.
- Samples of biological material are delivered to the laboratories in sealed, labeled containers (rumen fluid - in thermos flask, blood - in disposable vacuum tubes; urine, faecal in special sterile disposable containers). The label corresponds to the biological material, origin, date / time of sampling indicated in the cover letter.

3.4.3. Storage and and disposal of biological material

- Samples of biological material are stored in refrigerators (+4°C or below -10°C) before testing, if it is necessary.
- Biological material liquid is transferred to biohazard container after testing and neutralized by chemical disinfectants with a minimum contact period of 15 min., and discharged into the sewer systems.
- All biological material in disposable, tightly sealed containers is disposed in yellow biohazard bags for utilization.
- Agar is disposed in yellow biohazard bag for utilization.

3.4.4. General procedures in the laboratories

- Laboratoris (No. 320 and 322) are biosecurity risks zone, the entrance is limited and marked with a yellow floor tape.
- Laboratories can be accessed by wearing white textile lab /disposable coat.
- The stuff must wear white textile /disposable coat and latex gloves.
- It is forbidden eating (including chewing gum), drinking and smoking in the laboratory.
- It is forbidden to leave the laboratory wearing allocated lab/ disposal coat and gloves

3.4.5. General procedures after laboratory procedures

- All reusable utensils should be washed with warm water with industrial detergents, disinfected by heat or sterilization, and prepared for next use.
- All sharp disposable tools are dispose in yellow biohazard boxes for utilization.
- All disposable material (coats, gloves) are dispose in yellow biohazard bag for utilization.
- Work surfaces are washed with water, industrial detergents and disinfectants after each use and prepared for next use.
- The stuff must wash and disinfect hands after finishing laboratory procedures. The washing and disinfection procedure instructions are allocated above sinks.

3.4.6 General protocol for hygiene and cleanliness

- In case of injury, all activities should be stopped, the gloves remove and hands washed, responsible stuff member is alerted about the accident, and first-aid kit items used, after assessing the degree of injury, necessary procedures are carried out as soon as possible.
- It is forbidden to store food and drinks in laboratories refrigerators.
- Refrigerators and freezers are regularly cleaned and disinfected.
- Work tables should be washed with water, industrial detergents and disinfected after each use, and prepared for next use.
- Facilities of the laboratories are cleaned and washed with water daily and are washed with water and industrial detergents after each use. The disinfection is applied regularly.
- Only certified detergents and disinfectants are used in laboratory in the laboratories of RCDPP.

3.4.7 Preventing transmission cycle in the RCDPP laboratories (Nr. 320 ir Nr.322).

- Visitors and pets are not allowed in the laboratories.
- It is forbidden to wear lab coats and other protective clothes in other rooms (e.g. halls, auditoriums) than the laboratories.
- Disinfection measures must be applied when indicated.

3.5. Educational Laboratories of APD**3.5.1. General procedures**

- The biological material is used at practical classes in the educational laboratories of Physiology (building No.5, room No.301; 306) and Immunology (building No.5, room No.410) of the Department.

- Only samples from clinically healthy (non-infected) animals are allowed to enter the laboratories. Aforementioned characteristics of animal samples are ensured by veterinarian that responsible of them.

3.5.2. Origin of biological material

- Biological material includes animal blood, urine and faeces and lymphoid tissue.
- Sample material arrives to the laboratory in sealed and properly marked package (blood - in disposable vacuum tubes; urine, faeces, lymphoid tissue in special sterile disposable containers). The label corresponds to the biological material, origin, date / time of sampling indicated in the cover letter.

3.5.3. Storage and disposal of biological material

- Samples of biological material are stored in refrigerators (+4°C or below -10°C) before testing, if it is necessary.
- Biological material liquid is transferred to biohazard container after testing and neutralized by chemical disinfectants with a minimum contact period of 15 min., and discharged into the sewer systems.
- All biological material in disposable, tightly sealed containers is disposed in yellow biohazard bags for utilization.
- The samples of body tissues are disposed in yellow biohazard bags for utilization.
- Disposable plastic utensils, micropipette tips, filters, tubes, serological pipettes that had contact with sample material are disposed in yellow biohazard bags for utilization.

3.5.4. General procedures in the Educational Laboratories

- Practical classes using biological material organised by weeks according to calendar thematic plan of the study subject in the educational laboratories of Physiology (No.301; 306) and Immunology (No.410) of the Department.
- The staff preparing biological material for practical classes, must wear a white cloth / disposable coat and latex gloves.
- Students should bring personal items: white cloth / disposable coat and latex gloves for practical classes with biological material.
- Students must wear a white white cloth / disposable coat and latex gloves during practical classes with biological material.
- It is forbidden to bring or consume food (including chewing gum) or drinks in the educational laboratories

3.5.5. General procedures after laboratory procedures

- Before leaving the laboratory, every student must place reusable utensils into specially marked containers; all used disposal sharp tools dispose in yellow biohazard boxes for utilization; all used disposable utensils (pipette tips, filters, tubes, latex gloves and other) discard into the yellow biohazard bags for utilization; to wash and disinfect hands.
- After every practice class with biological material, surfaces that had contact with biological material are washed with industrial detergents, disinfected and prepared for further use.
- All reusable utensils are washed with warm water with industrial detergents, disinfected by heat after practice classes with biological material, and prepared for next use.
- The stuff must wash and disinfect hands after finishing laboratory procedures.

3.5.6. General hygiene and cleaning requirements

- If a student was injured during practical classes, he must immediately stop all activities, remove gloves, wash hands, call a member of the staff. A wound is inspected and first-aid kit items are used. If the wound is superficial, a sterile plaster is applying on to protected from further contamination. If the wound is deep, the student is brought to the hospital.

- The use of latex gloves during the work with biological material is mandatory for staff and students, as well as to wash and disinfect the hands after the work is also obligatory. The hand washing-disinfection instructions placed above the sinks.
- It is forbidden to store food and drinks in laboratories refrigerators.
- Refrigerators and freezers are regularly cleaned and disinfected.
- Working surfaces should be washed with water, industrial detergents and disinfected after each use, and prepared for next use.
- Facilities of the laboratories are swept and washed with water daily; the facilities are washed with water and industrial detergents after each week of practical classes with biological material. The disinfection is applied regularly.
- Only certified detergents and disinfectants are used in laboratory in those educational laboratories (No.301; 306; 410).

3.5.7. Preventing transmission cycle in the educational laboratories (No.301; 306; 410).

- It is forbidden to eat (including chewing gum), drink and smoke in the educational laboratories of Physiology (No.301; 306) and Immunology (No.410) of the Department.
- Neither the staff, nor students are allowed to come to educational laboratories (No.301; 306; 410) with their pets.
- Disinfection measures must be applied when indicated.

CHAPTER 4. SMALL ANIMAL CLINIC BIOSECURITY SOP

4.1 General recommendations

- It is essential that all students, clinicians and staff be familiar with the basics of hygiene and personal protection. All personnel working in the small animal clinic are responsible for maintaining cleanliness of the facility.
- It is mandatory to use the clinic dedicated attire for all personnel and students of LSU VA in order to decrease the risk of carrying infectious agents home where people or animals may be exposed.
- Personnel and students are required to wear clean professional attire, clean protective outer garments, and clean, appropriate footwear at all times when working in the Small Animal Clinic. The worn attire should be appropriate for the job at hand.
- Dress code:
 - **Veterinarians** – wear dark red color uniform.
 - **Technicians** – wear dark blue color uniform.
 - **Receptionists** – wear blue color uniform, jacket.
 - **Students** – wear dark green color uniform (blouse and trousers) or white labcoat.
 - **Residents** – wear turquoise or grey color uniform.
- Working staff (veterinarians, residents, technicians) in the section of infectious diseases wear red uniform. **Isolation rooms** – disposable clothes.
- **Lecturers and administration personnel** – wear white labcoats.
- It is recommended that all personnel wear closed shoes at all times while working in the Small Animal Clinic. The type of footwear should be easy to clean and disinfect.
- Personnel must be willing to disinfect footwear while working, which provides a good check regarding suitability. Water-impervious footwear is strongly recommended.
- General attire should be changed or cleaned and disinfected whenever they become soiled or contaminated with faeces, urine, blood, nasal exudates or other bodily fluid. It is recommended to have an extra outer garment available for use at all times.

4.2. Patient hygiene

- The patients of the Small Animal Clinic are housed only in clean cages. Before a new animal enters the cage, faeces, blood, urine, all other organic material and soiled objects should be removed. Personnel clean the cages and the hallways every day. In the case a cage is dirty within working hours, a sign "Išvalyti" ("To clean" in English) is suspended to the cage and cleaning personnel is alerted. If a cage needs to be utilised before cleaning personnel will have the time to clean it, or outside of working hours of cleaning personnel, students and residents should perform these tasks accordingly. In the case of neonates, patient hygiene is of extreme importance and thus as soon as faeces or wet bedding is present this should be cleaned and disinfected by students, technicians and residents.
- If an animal is discharged, the cage should be cleaned and disinfected as soon as possible.
- If there is an animal with suspected or confirmed infectious disease the cage should be marked by the veterinarian, student, resident or technician: "Do not use, special cleaning is required ". Cleaning personnel will empty, clean and disinfect this cage as soon as possible. The cage is considered a contagious area until disinfected and thus no animal should enter before it has been cleaned and disinfected.
- Cages used by animals with non-contagious disease are regularly emptied, cleaned and disinfected in between use by different animals. The cage should be cleaned and disinfected in between use by different animals, and at least once daily.

- Water bowls are regularly cleaned (as needed, or at least twice daily) during hospitalisation of an animal, and are cleaned and disinfected in between use by different animals.
- The presence of water in the bucket should regularly be checked and refilled with fresh water at least twice daily after cleaning. The water bowls of the animals are checked at least twice a day and filled with fresh water after cleaning. If necessary, the water is change more often.
- Feeding bowls are cleaned at least twice daily or as needed during hospitalization of an animal, and should be cleaned and disinfected in between use by different animals.
- Appetite is noted on the daily-care-file and food is keeping in the appropriate marked box and the opened soft feed is kept in the refrigerator for a maximum of 24 hours.
- Animals are keeping clean as possible and any excrement is being removed as soon as they are seen. Dirty animals are bathed. All animals are cleaned regularly.
- The environment around the cage should be tidy and clean. There should be no medications or materials lying around, no bedding outside the cage, nor unnecessary equipment from personnel and students. An effort is expected from all staff to arrange used material and not to leave it messing around. Disposable items are discarded and materials required for the animal are placed in baskets or other containers.
- If animals defecate outside their cage (whether inside the building, or in the walking area), their faeces are removed immediately and the surfaces are disinfected. If patients urinate inside the building or on any hard surface outside the building, the urine needs to be removed and the floor cleaned, disinfected and dried.

4.3. Beverages and food

- Food and beverages may only be stored and consumed in designated premises – resting rooms for personnel and student’s and personnel offices.
- In the resting room there is a refrigerator and a microwave to store and heat food or beverage intended for human use only.
- Food and beverages are forbidden to be stored or consumed in patient care areas.
- Patients are not allowed in any areas where food and beverages are stored or consumed.
- Food and beverages should not be left out for long periods as this promotes bacterial growth and the occurrence of foodborne illness.
- Refrigerators used to store food or medications for patients must not be used to store food or beverage intended for human use.
- All encountered food and beverages that are left unattended must be disposed immediately.

4.4. General cleanliness and hygiene

4.4.1. Proper cleaning

- Maintaining clinic cleanliness and appropriate personal hygiene are responsibilities of all personnel and students working in the Small Animal Clinic.
- Hands must be washed and cleaned with antiseptic prior to, and after handling each patient. Hands should also be washed and disinfected when exiting the Small Animal Clinic prior to working in other areas of the LSMU VA (see “Procedure for hand washing”).
- Clean exam gloves should be worn when handling every patient, especially high-risk patients (i.e. infectious disease class 3 and 4).
- When patient is released from the clinic all surfaces or equipment contaminated by faeces, secretions, or blood are cleaned and disinfected by personnel in charge of the

patient. This is especially important regarding patients known or suspected of shedding important infectious disease agents.

- Personnel walking dogs and cats are responsible for cleaning any faecal material from the ground. Paper and trashbins are available in many locations throughout the clinic and special trashbins and plastic bags are provided in the walking areas around the clinic.
- All rooms must be kept clean and neat at all times, including table tops, counter tops, and floors.
- Backpacks and etc. should be stored in changing rooms or personal offices, the hangers in the closets. Do not store extra clothing, backpacks, and etc elsewhere around.

4.4.2. General disinfection protocol

- All equipment is cleaned and disinfected between patients (stethoscope, thermometer, muzzles, etc). If it is necessary, clean equipment are returned for sterilization when appropriate.
- Students are expected to carry their own equipment (scissors, thermometer, stethoscope, penlight), and it is critical that these supplies are routinely cleaned and disinfected.
- If fleas or ticks are found on an animal, it must be treated. Client is informed, that it is possible to purchase the recommended medications in pharmacy of Small Animal Clinic and the treatment should start immediately.
- All multiple use areas (e.g. examination rooms) where animals are examined or treated are cleaned and disinfected following by personnel responsible each day - irrespective of infectious disease status of the individual animal.
- Appropriate attire should be worn whenever using disinfectants. Additional personal protective equipment (gloves, mask, face shields, goggles, impervious clothing, boots) should be worn when there is a probability of splash from the disinfection process.
- Remove all inorganic and organic material prior to disinfection. If a hose is used to de-bulk material, care must be taken to minimize aerosolization and further spread of potentially infectious agents.
- Wash the affected cage, including walls, doors, water and feeding bowl, with water and detergent or soap. Scrubbing or mechanical disruption is always needed to break down films and residual debris that inhibits the disinfection process.
- Thoroughly rinse the cleaned area to remove any detergent residue.
- After disinfection allow area to drain or dry as much as possible to prevent dilution of disinfectant solutions.
- Wet the affected cage, including walls, doors, water drinker and feeding bowl, thoroughly with disinfectant. The disinfectant should remain in contact with the surfaces for particular time (follow the instructions of an agent in use).
- The disinfectant should be rinsed off all surfaces prior to housing a patient in the cage.
- For non-routine disinfection measures (e.g. disinfection with aerosols), only personnel trained and approved to wear and use the required personal protective equipment will be allowed access to areas being disinfected.
- After disinfecting, remove the protective attire and wash your hands.

In the clinic there is a list of disinfectants with additional information on use (hands, walls, floors, equipment, etc.), which is constantly updated

4.4.3. Disinfecting foot mats

- Foot mats should be changed whenever they are judged to contain excessive amounts of dirt.
- Foot mats should be refilled by anyone that notices they are dry or low on volume; this is the responsibility of all people working in this area (residents, veterinarians, technical staff, etc.).

- For personnel and students are required to use foot mats appropriately whenever encountered.
- That is why an impervious footwear is strongly recommended for personnel and students working in areas where foot mats are used.

4.4.4. Disinfection protocol for instruments and equipment

- All instruments, equipment or other objects, including stomach tubes, mouth speculums, endoscopes, grooming tools, clipper blades, etc. are cleaned and sterilized or disinfected between uses on different patients.
- A cleaning manuals and protocols for different material in services are prepared and are available for use.
- Materials that are sterilized between usage (instruments and equipment such as surgical instruments) must be cleaned with detergent and water and disinfected after use on patients. The equipment should then be returned cleaning service for sterilization.
- After discharge of animal, surfaces or/and equipment contaminated by faeces, secretions, or blood must be cleaned and disinfected immediately by students, technicians or cleaning personnel.

4.4.5. Stethoscopes

- Stethoscopes owned by personnel are regularly disinfected with alcohol solution (recommended at the beginning and the end of the day).
- Immediate cleaning and disinfection are required when stethoscopes are visibly soiled or whenever an examined animal is attributed to class 3 or 4.

4.4.6. Thermometers

- G class thermometers are not to be used in LSMU VA in order to decrease risks associated with broken thermometers and mercury exposures.
- Electronic thermometers are used instead. Electronic thermometers should be thoroughly disinfected daily. Plastic thermometer cases should be regularly soaked in disinfectant solution.
- Probes from thermometers used in continuous temperature monitoring (for example during anaesthesia) should be thoroughly disinfected between patients by wiping or washing to remove gross faecal material and disinfected with an ethanol alcohol 70% solution.
- Thermometers of contagious patient (class 3 and 4) are cleaned and disinfected after each examination and at discharge.
- Other instruments and equipment owned by personnel (e.g., haemostats, scissors, etc) may be used on multiple patients, but must be cleaned and disinfected between patients using particular solutions (follow the instructions of disinfectant in use).

4.4.7 Animal cages

- The cages in which the patients were kept are regularly cleaned and disinfected. Clean cages will be used for other animals.
- Before the cage is used to another animal, it is cleaned and disinfected.

4.4.8. Animal walking area

- Animal walking area is taking care daily of the personnel or student walking the dog, excrements are cleaning directly after each defaecation and discard into special bags.

- Animals which may be infected with an infectious disease (“PID” or “GUL” – in Lithuanian) or which are infected with a class 2 contagious disease are walking in a separated walking area.

4.5. Recommendations for receiving and managing small animal patients

4.5.1. Outpatients

- Small animal patients without signs of contagious disease may be accompanied by their owner in the waiting room.
- Outpatients can be hospitalized for a short time period pending further examinations or procedures in a cage of stationary as long as they are not class 3.
- Patients in need of further examination belonging to class 3 or 4 either stay with the owner in the consultation room, or will be hospitalized in agreement with regulations pointed out in further specific chapters. If animals stay with the owner in the consultation room awaiting additional procedures, the room will be marked in order to inform cleaning personnel about the need of cleaning and disinfection and to avoid other patients into this room.
- Attending personnel are responsible for cleaning outpatient cages. Specifically, students, residents and technicians are responsible for ensuring that faecal material is promptly removed from outpatient cages and appropriately disposed. If necessary, because of urination or defecation, attending personnel should temporarily remove patients from their cages and clean the area, rather than placing the animal in a different cage.
- Personnel and students are responsible for bowls used for drinking or feeding, these have to be cleaned and disinfected after each use.

4.5.2. Inpatients

4.5.2.1. Cage assignments

- Cages for housing inpatients are assigned by the technicians, residents or the responsible of the hospitalization area or otherwise the primary clinician.
- In the second floor of the Small Animal Clinic there are intensive care unit (ICU) and stationary.
- Client beds, blankets, collar tags and leashes have to be returned to the owner before hospitalisation.
- Prepare a cage card with the client/patient information and the student/clinician names.
- Suspected or confirmed infection status is to be written on the cage card immediately upon occupancy in case of class 3 or 4 animals. These animals are hospitalized to isolation ward in section of infectious diseases.
- Place pertinent signs on cage with important information for animal care attendants, (i.e. "Do not feed animal", "Aggressive," "To clean", etc.)
- Do not move animals from cage to a new clean cage, instead clean and disinfect the cage while patient is being walked and return to the same cage.

4.5.2.2. Patient records and medications

- Records of hospitalized cases should be stored in the clinic.
- Medications, and other materials used in the care of hospitalized cases should be stored next to the animal box or in particular shelves.

4.5.2.3. Cage cards, treatment orders

- A cage card must be posted at the time that patients are hospitalized.
- The upper part of the cage card must list pertinent client and patient identification, names of students, residents and clinicians assigned to the case.

- The cage card must list the admitting complaint or tentative diagnosis especially as they pertain to the infectious disease status (to allow cleaning personnel, technicians and students to better understand the infectious disease hazards and take associated precautions).
- The cage card must list all call orders that require immediate notification of the primary clinician.
- The cage card must list all scheduled treatments for the hospitalized patient.
- The cage card must be updated as patients' status can change during hospitalization.
- Cage cards, treatment orders and other information in the Clinic are confidential and outsiders are not supposed to have access to this information for animals that they do not own.

4.5.2.4. Feed and water

- All food (including that provided by clients) must be stored in appropriate bags, cans or plastic containers with tight fitting covers.
- Only minimal amounts of food are to be stored in the refrigerators of the LSMU VA in order to avoid contamination.
- If a new can is to be opened, the opening date is clearly stated on the outside of the can and it is covered before being placed in the refrigerator.
- All cans opened for more than two days should no longer be used.
- Diets containing raw meat or bones are not allowed to be fed or stored in any form at the LSMU VA regardless of diets that are routinely fed in the home environment.
- Provide fresh water, unless otherwise indicated by clinician.
- Water and feed are changed twice a day, or more often according to the animal's needs and the specifics of the treatment diet.

4.5.2.5. Bedding

- Students, technicians, residents and clinicians are responsible for bedding cages for patients as they arrive and during hospitalization.
- Occupied cages are cleaned at least twice daily by cleaning personnel and re-bedded if necessary.
- If at other times the cages are noted to be soiled or wet, students, technicians, residents and veterinarians are responsible for noticing, cleaning and re-bedding.

4.5.2.6. Patient discharge from stationary

- Prior to discharge, clients or their agents must be instructed about possible infectious disease hazards associated with patients and recommendations about control of these hazards on the home premises.
- The anticipated time and date of discharge should be noted in the treatment card and communicated to the responsible student in hospitalization, technician, resident or veterinarian, in order to optimize patient hygiene at time of discharge.
- Students, technicians, residents and clinicians are responsible for tidy up items around cages and ensuring that they are discarded, filed, or cleaned and disinfected (fluids, brushes, barrier gowns, paperwork, etc).
- Cleaning personnel should be notified in advance if patients will be discharged shortly after the end of their working day so that unnecessary effort is not expended cleaning these cages.
- When the patient is discharged, the patient card should be placed in the office of the technicians, and a "To clean" sign should be posted on the cage. Only in exceptional

circumstances of an extreme workload can it be tolerated that this cage is not cleaned before cleaning personnel arrives the next day.

- Cages that housed patients with known or suspected contagious agents should be marked with a sign ("Do not use, special cleaning required"). The known or suspected infectious agent must be marked on the cage. Responsible cleaning personnel should be notified of the cage number and patient ID.

4.5.2.7. Items from owners

- Items owned by clients are not to be left with patients at the Small animal clinic of LSU VA.
- The patients are supplied with all necessary material for patients.
- Small animal clinic owned material and equipment are cleaned and disinfected by soaking in disinfection solution. For each patient are using clean equipments.

4.5.2.8. Small animal hospitalization

- During the working students, technicians, residents or veterinarians are responsible for clean and disinfect all used cages at least twice daily, and more often if needed.
- Occupied cages are thoroughly cleaned and disinfected twice daily, preferably while the patients are walked or undergoing additional diagnostic or therapeutic procedures, or during visits by the owner.
- Whenever cages are noted to be excessively soiled or wet, students, clinicians, and technical staff are responsible for cleaning, disinfecting and re-bedding the cage.

4.5.2.9. Routine cage cleaning

- Remove dirt from the surface with a wet cloth or stream of water.
- After drying the surface, disinfectants are used for the surfaces.
- Using the proper dilutions of disinfectants provides optimum disinfecting action. Overuse and missuse of disinfectants may encourage resistance in microorganisms and may contribute to the formation of biofilms.

4.5.2.10. Cleaning procedures cage that hosted class 1 and 2 animals

- Use appropriate clothing (barrier clothing if required). In this case a sign “**possible infectious disease (PID)**” will be posted on the cage.
- Remove all disposable mats into the marked yellow dustbins.
- Sweep floor to remove all debris.
- Put bottom surface straight up and clean with detergent in order to remove all macroscopic organic material.
- Rinse floor and walls with washing hose to remove gross debris, scrub soiled areas using detergent and a brush.
- Rinse cage with water.
- Apply disinfectant when the cage is dry enough to not dissolve the disinfectant. Disinfectant solution is preparing and using according instruction.
- Allow to dry.
- Disinfect adjacent aisle-way as above.
- Cleaning tools must be disinfected at the end of each day.
- Patients must not be allowed contact with the trashbins at any time.

4.5.2.11. Cleaning procedures cage that hosted class 3 and 4 animals

- Patients with suspected or confirmed contagious diseases 3 and 4, are placed in to isolation wards of the infectious disease section.

- Personnel and students put on appropriate clothing (barrier clothing, gloves, boots and others) and use foot mats in transition room.
- Remove all disposable mats into dustbins with biohazard sign.
- Sweep floor to remove all debris.
- Put bottom surface straight up and clean with detergent in order to remove all macroscopic organic material.
- Rinse floor and walls with hose to remove gross debris, scrub soiled areas using detergent and a brush.
- Rinse cage with water.
- Apply disinfectant when the cage is dry enough to not dissolve the disinfectant. Disinfectant solution is preparing and using according instruction.
- Allow to dry.
- Disinfect adjacent aisle-way as above.
- Cleaning tools must be disinfected at the end of each day.

4.5.2.12. Daily routines

- All procedures performed by residents and clinicians need to be carried out by students and technicians if called for. In essence, dirty cages are cleaned, and animals are not switched to another clean cage, while pending arrival of cleaning personnel.
- Brushes, brooms and other cleaning tools are cleaned regularly.

4.5.2.13. Weekly routines

- Sinks and drains in the consultation rooms and hospitalisation area should be cleaned and disinfected by cleaning personnel or technicians.

4.5.2.14. Monthly routines

- Empty cages should be cleaned if not used within one month in order to remove accumulating dust.
- Areas that are not used on a daily basis (i.e. tops of walls, areas not used often-scales, wash rack, etc.) should be cleaned monthly in order to prevent accumulation of dust.
- The Isolation area thoroughly cleaned, scrubbed, and disinfected top to bottom.
- Drains in section of infectious diseases are scrubbed with detergent, rinsed, and then filled with disinfection solution according instruction.
- Do not fill a drain with any disinfectant without cleaning it first.

4.5.2.15. Semi-annual routines

- The entire Clinic are thoroughly cleaned, scrubbed and disinfected from top to bottom, including all equipment by cleaning personnel and technicians.
- A schedule on how to perform this should be made up and confirmed by the head of department. Work should be evaluated by the responsible person.
- The final disinfection in Isolation area make up by specialists from company by the contract with LSMU.

4.5.3. Managing small animal patients with suspected contagious disease

- Special precautions are required when managing patients known or suspected to be infected with contagious disease agents.
- Animals with suspected contagious infectious disease should be treated as outpatients whenever their clinical condition allows it.
- Appointments for possible infectious disease cases will be handled by the receptionists and Personnel and students receiving cases as follows:

- If a client call indicates an acute case of vomiting, coughing, sneezing or diarrhea, the client will be asked to keep their pet in the car until they have been checked in and a student or resident has been paged so they can be taken directly to an exam room, section of infectious diseases, or ICU depending on the circumstances. Transport should preferably be on a gurney or in a cage to decrease clinic contamination.
- The presenting complaint will be written on the registration and examination forms as "acute diarrhea" "acute vomiting", "acute coughing" or "possible infectious disease".
- If it is suspected an infectious disease for the patient, the registration form is marked in yellow.
- If the animal is presented directly to the reception desk without prior notification, the receptionist should contact the receiving service immediately and coordinate placement of the animal in an examination room or isolation to minimize clinic contamination.
- Every attempt should be made to reduce any direct contact with infected patient and any other Small Animal Clinic patients.
- Animals should be transported to the appropriate exam / treatment / housing area by the shortest route possible to limit the potential for clinic contamination. Consider using a stretcher or table with wheels when possible to limit the potential contamination.
- Treatment and diagnostic areas and clinic equipment are being cleaned and disinfected immediately after contact with animals with suspected infectious disease regardless of contamination.
- If a contagious infectious disease is suspected based on history, physical examination, or evaluation of previously performed laboratory work:
 - The exam room is being closed.
 - The side of the card hanging on the door is being changed to red.
 - Responsible cleaning personnel are being informed about suspected pathogen. Do not use the room until cleaning personnel has removed the sign, or until other adequate cleaning/disinfection occurs.
- The responsible person of the Clinic should be notified as soon as possible when patients with elevated contagious disease risk are admitted or develop these problems while hospitalized.
- When class 3 patients are housed in the intensive care unit, at least class 3 precautions should be taken (appropriate barrier nursing and biosafety). Barrier nursing precautions must be used:
 - Disinfectant footmats must be placed.
 - Cages housing these patients should be marked.
 - Cages around the cage with class 3 patient should be empty.
 - Cages at the front of aisles is preferred.
- The suspected or confirmed disease status must be relayed to the responsible personnel ASAP so that they can assist in communication and evaluating if appropriate precautions are being taken to house the animal
- Any animal with a history of acute vomiting and diarrhea, and/or any animal with a history of acute coughing or respiratory signs with a suspicion of an infectious cause should be handled as a suspected contagious disease case (class 2).
- Hospitalized small animal patients with suspected infectious gastrointestinal disease are being considered as possible sources of nosocomial or zoonotic infection and should be walked in separated marked area. These animals can be left in the cage to defecate inside and all contaminated surfaces are being appropriately cleaned, disinfected and dried as soon as possible.
- At discharge, personnel must ensure that instructions given to clients adequately address the infectious disease hazards associated with the patient (to other animals and to

humans), and appropriately provide suggestions for mitigating risks to people and animals.

4.5.4. Classification of suspected/confirmed contagious animals

4.5.4.1. General rules (class 1, 2, 3 and 4)

- Classifications of diseases see in the class description list in 1st chapter of the document.
- This classification implements differences to the owner and its ability to visit the animal. Therefore, these changes need to be explained at the time of the initial consult or as soon as possible after assigning an animal to class 3 or 4.
- Class 3 and 4 animals can only be visited in the exceptional circumstance of pending euthanasia. Even in this circumstance the owner should be discouraged to see the animal, yet if the owner insists a short visit to the isolation room, all barrier nursing requirements are ensured by the responsible veterinarian.

4.5.4.2. Movement of high risk patients

- Class 3 Patients requiring isolation should ideally be transported directly to the isolation area of Small Animal Clinic section of infectious diseases.
- If patients are moved from the main sections of Small Animal Clinic to the isolation ward, they should be moved by a shortest route.
- LSMU VA personnel handling patients while being moved should use barrier nursing precautions.
- Any areas or equipment contaminated with infectious material during transit should be immediately cleaned using soap or detergents and disinfected.
- All movements should be kept to the strict minimum, and if possible on a gurney or in a cage. During transportation a specific gown, gloves etc. must be worn.
- All waste and excrements produced should be eliminated as soon as possible and all contaminated surfaces should be cleaned, disinfected and dried as soon as possible. Low traffic areas should be preferred and if possible, movements should occur late in the day, after movement of all other animals.

4.5.5. Diagnostic testing for inpatients with suspected infections

- Diagnostic testing to detect certain infectious and/or zoonotic agents provides essential information for appropriate clinical management of infected patients. This testing provides direct benefit to the patient in addition to benefiting clients' by allowing them to appropriately manage their other animals and protect their families. It also benefits the LSMU VA as this information is essential for appropriate management of disease risk for all LSMU VA patients, personnel and students.
- It is therefore recommended for all hospitalized patients to undergo diagnostic testing if infection with specific contagious or zoonotic agents (see 4.6 paragraph) is seriously considered.
- It is the responsibility of the senior clinician responsible for a patient's care to ensure that appropriate samples are submitted for this testing, and that appropriate biosecurity precautions are taken with these patients.
- Whenever possible, diagnostic, surgical, or other procedures should be performed wherever high risk patients are housed, rather than moving the patient to common exam and treatment areas.
- Appropriate barrier nursing precautions must be followed by all personnel at all times during diagnostic or other procedures.
- If the patient requires diagnostics or other procedures (e.g., radiology, endoscopy, ultrasound examination, surgery) which can only be performed in the main clinic facility, these procedures should be performed at the end of the day whenever possible.

- The senior attending clinician is responsible for notifying appropriate FVM biosecurity personnel of the suspected infectious agent and methods that are prudent for containment (this includes cleaning and disinfection after procedures).
- In general, all barrier nursing precautions that are required in the patient housing area is required whenever handling that patient.
- Instruments, equipment, and the environment should be thoroughly cleaned and disinfected after the procedure, regardless of where the procedure is conducted.

4.5.6. Biological specimens from suspected or confirmed contagious patients

- Biological samples should be handled with the same barrier nursing care as the patient itself.
- All biological specimens from class 3 or 4 animals should be stored in a sealed plastic bag or box.
- Care should be taken when placing specimens in bags to prevent contamination of the outside of containers of biological samples. Suspected conditions or disease agents should be clearly identified on all submission forms.

4.5.7. Animal isolation (class 4)

- The suspected class 4 animals are isolated only in the Small Animal section of infectious diseases.
- Patients with suspected or with clinical signs of Rabies virus infection and suspected or confirmed other high risk infectious, which may occur according to epidemiological situation are confirmed as patients class 4.
- For Rabies (or other diseases, which may occur according to epidemiological situation), only the primary clinician and one technician if necessary should have contact with the patient.
- The responsible biosecurity personnel of the Clinic must inform the Biosecurity Committee personnel ASAP whenever patients (class 4) are placed in isolation and when they are discharged.
- Patients suspected class 4 can't be moved to other diagnostic rooms (radiography, ultrasonography and others) and ICU. Only the Biosecurity Committee can permit moving class 4 patients for before mentioned procedures.
- Clients are **never** allowed to visit animals housed in isolation ward, and should be discouraged from entering the critical care unit. Only with permission from the responsible biosecurity personnel, exceptions to this visitation rule may be granted under extraordinary circumstances, such as when patient will be euthanized.

4.5.8. Dissemination of information on animal in isolation wards

- The Biosecurity Committee personnel must be notified ASAP whenever patients (class 4) are placed in isolation and when they are discharged. This notification can be made in person, by phone, or by using email va.biosauga@lsmuni.lt. The notification is done by the biosecurity personnel or other personnel with primary responsibility for the patient at the clinic.
- The primary veterinarian or other person responsible for the patient informs the person responsible for biosafety and the head of the Clinic, who will then inform the Lithuanian State Food and Veterinary Service (SFVS) as soon as possible when the patient is isolated with suspected **rabies**. Responsible technicians are being notified when patients with contagious diseases are placed in isolation and when they are discharged or moved.
- Cages are visibly labeled to identify infectious agents of concern, along with the required biosecurity precautions.

- All personnel are being informed of the cause of the infection in such patients in order to ensure that all personnel are taken appropriate precautions and to ensure that appropriate cleaning and disinfection procedures are used.

4.5.9. Guidelines for managing class 3 patients in section of infectious diseases

- Strict attention to hygiene and use of barrier nursing precautions in isolation units is absolutely critical for appropriate containment of contagious disease agents (class 3).
- Use all footbaths or footmats encountered. The solutions are changed completely twice per week by personnel. In addition, foot baths should be changed whenever they are dirty or empty, by whoever notices this.
- Before and after examining each patient, hands must be washed with soap and water and disinfected.
- Clean exam gloves must be worn at all times when working in the isolation ward.
- Special care must be taken to prevent contamination of the isolation environment by dirty hands, gloves, or shoes.
- Environmental hygiene is the responsibility of all personnel and students working in the isolation unit. Do not wait for technician or other personnel or students to clean. Assist with general cleanup and maintenance whenever possible. Surfaces or equipment contaminated by faeces, other secretions or blood must be cleaned and disinfected immediately after discharge of the patient.
- When possible, students assigned to infectious disease cases should not have contact with patients elsewhere in LSMU VA Small Animal Clinic. Examples would include leukopenic patients, young animals, animals receiving immunosuppressive drugs and patients with diabetes mellitus.
- Isolated small animal patients should not be walked in common eliminating areas - they should be allowed to defecate and urinate in the Isolation ward. All waste material must be properly disposed and contaminated surfaces in the clinic must be appropriately cleaned and disinfected as soon as possible.
- Food and beverages are forbidden in Isolation wards because of the risk of exposure to zoonotic agents.

4.5.10. Minimizing personnel, students entry to the isolation ward

- Entry into the isolation ward should only occur when absolutely necessary.
- Minimize the number of personnel and students handling cases in isolation. Only personnel and assigned student, resident directly responsible for the patient should enter isolation ward. Clients are not permitted to visit patients in isolation.
- Whenever possible and appropriate, personnel and students should utilize web cameras for general monitoring of patients conditions in order to minimize foot traffic into the isolation facility.
- Only the clinicians, students, technicians, residents responsible for patient care should enter isolation.
- Only students appointed by the responsible persons perform clinical rotation in the section of infectious diseases.
- When possible, students assigned to class 3 patients should not have contact with other patients, most importantly immune suppressed patients (leukopenic patients, young animals, animals receiving immunosuppressive drugs, patients with diabetes mellitus) elsewhere in the LSMU VA. The appropriate barrier precautions (gloves, gown, mask, respirator, and/or plastic boots) must be worn.
- The primary clinician is responsible at all times, for ensuring that patients are receiving appropriate care. Students (and technicians too) may be asked to assist with this effort.

- Clients are not permitted to enter isolation wards unless in the exceptional circumstance of euthanasia. In this case the level of biosecurity is applied.

4.5.11. Equipment and materials

- Any reusable materials taken and used into the isolation wards should not be returned to the main clinic without first being disinfected.
- Surfaces or equipment contaminated by faeces, other secretions or blood must be cleaned and disinfected immediately after the animal left the room.
- Individual equipments, medicaments are available keep in the individual boxes, which needs to be clearly labelled.
- Any disposable materials used into the isolation unit should be discard to the specially marked trash bin in the isolator ward.
- All equipment and material that has been used on the patient can only be used on that patient. Do not use on multiple patients and don't return them into the stock without cleaning and disinfection procedures.
- Medications used on isolation patients should be given to client and sent home at discharge or else discarded. Do not return medications or intravenous fluids from isolation to the Pharmacy.
- Samples obtained from isolated patients for laboratory testing should be immediately placed in a sealed plastic bag or box and labelled. On the label should be written suspected disease.

4.5.12. Procedures for personnel entering to section of infectious diseases

1) Work in the section of infectious diseases

- Before going work in the section of infectious diseases personnel and students change into footwear and change uniform, which are used in section of infectious diseases.
- Leave personal shoes and outwear in the lockers in the changing room.
- Wash your hands and perform hand antiseptics before entering the section of infectious diseases.
- Disposable gloves should be worn before inspecting each patient.
- After examination of the patient, gloves are removed, hands are washed and antiseptics are performed.
- Leaving the section of infectious diseases wash hands and do antiseptic before changing into personal clothing and shoes.
- Used uniforms are left for disinfections and further washing.

2) Work in the isolation wards

Entering to isolation room:

- Upon entering to the isolation ward, all necessary for the work beforehand in order to reduce movement.
- Everybody is required to use the disinfectant footmat as they enter the isolation area
- Wash hands for at least 30 seconds and use hand antiseptic before entering the isolation ward and before touching any other surfaces or objects.
- Enter transition room and remain behind redline until required barrier clothing is on (disposable gown, gloves, overshoes, cap, mask) before entering isolation ward. These rules also apply to service personnel.
- A different barrier gown must be used for each isolated animal.
- Procedures involving highly contaminated sites should be performed last (e.g. rectal temperature, rectal palpation, manipulation of abscesses, etc.).

3) Finalising care for a patient in isolation:

- Avoid dispersing organic (faecal) material throughout the room.

- Appropriately dispose sharps in special sharps container.
- Clean and disinfect thermometer, stethoscope, and other material by wiping with special 70% alcoholic solution, and place all material in the patient dedicated box.
- Remove outer-gloves and re-glove. Use the clean gloves for care other patient, to complete treatment forms and process samples.
- Dirty disposable clothes are changed in the transition room.

4) Exiting the isolation room:

- Clean and disinfect examination table and all other contaminated surfaces.
- Remove gown and discard in transition room.
- Discard cap, gloves and overshoes in the transition room.
- Wash hands thoroughly with soap and water or decontaminate with alcohol-based hand antiseptic.
- Turn off water faucets with the paper towel used to dry hands.
- Once daily, clean and disinfect door knobs.

4.5.13. Procedures for moving animal into isolation ward

- Set up footmat. Information on solutions for footmat is provided in other sections.
- When possible, patients to be housed in isolation at the time of admission should be transported directly to isolation facility in the owner's means of transport, could be used table with wheels or a stretcher or in a cage, rather than being carried or walked.
- All personnel handling the patient must use appropriate attire and barrier nursing precautions.
- Record the animals name and the suspected infectious agent on the cage card and registration journal.
- Complete the history in the program of clinic. Complete the procedures that have not been completed, that are required to be done and clinical test answers in the program of clinic.
- Responsible veterinarian for the patient is responsible for ensuring that personnel are appropriately notified about admission of patients to isolation rooms:
- Responsible personnel and technicians must be notified immediately when an animal is placed in isolation ward.
- It is critical that personnel know an information about the name of the suspected disease agent(s) and information about zoonotic potential.
- In order to minimize the number of personnel and students handling cases in isolation, the primary clinician, technician and student should be prepared to perform all physical examinations and treatments themselves. If necessary, the primary clinician may assign additional students and staff to help.
- It is critical to clean and disinfect surfaces if faecal material or body fluids that contaminates surfaces during the process of moving animals.
- If the patient came from the main stationary of clinic, it should be place a "Do not use, special cleaning required" sign on the cage in the main part of clinic and note suspect or known disease agent on the cage.
- Personnel responsible for the case will ensure that the cage has been cleaned respectively, empty fluid bags have been discarded and all equipment has been placed in a labeled bag so that this equipment can be properly disinfected.

4.5.14. Cleaning and animal feeding in isolation wards

- All personnel and students are responsible for cleaning and maintenance of the isolation and facility! Everyone should help clean when it is noticed that something needs to be done.
- Disposable materials are placed in a specially marked dustbin.

- Food do not leave the isolation room, all unconsumed water must be decontaminated with special disinfectant and discarded in the sink. All unconsumed food should be thrown away in the specially marked dustbins.
- Technicians will clean cages once daily, in the evening.
- Footmats are maintained daily based on demand and contamination.
- Additional cleaning should be done throughout the day by other personnel.
- Students assigned to cases are responsible for routine cleaning of the transition room, cleaning of cage walls and floors if contaminated and changing footmats as needed, under supervision of the personnel.
- According to the doctor's designated diet animals in the isolation are feeded by responsible personnel or students.
- Nursing staff are responsible for overseeing cleaning and disinfection, and stocking of the isolation area.

4.5.15. Procedures for patient leaving isolation ward (for discharge, diagnostic procedures)

- The discharge status of the patient should be clearly marked on the cage to alert responsible personnel to disinfect the room.
- Whenever possible try to discharge isolation patients prior to 7 pm on workdays so that technicians can help with the breakdown of the room.
- Ensure that cleaning and disinfection are carried out appropriate and that additional assistance can be obtained - you can ask for help technicians from other section of clinic.
- Personnel moving the patient are required to wear a new set of appropriate attire and barrier precautions.
- Personnel handling the patient should avoid contaminating doors, gates with contaminated gloves or hands in the process of moving patients.
- Patients moving from isolation should have NO contact with other patients, clients and other personnel. If it is not possible, it is required to ensure a minimal contact.
- Diagnostic and therapeutic procedures that must be performed in the main section of clinic on patients with infectious diseases should be scheduled for the end of the day, and all surfaces and floors that are potentially contaminated must be promptly cleaned and disinfected in order to minimize the likelihood of nosocomial transmission.
- Personnel must ensure that the owner or their authorized person are introduced about the appropriate control of infectious disease at home.

4.5.16. Use of ultrasonography, radiography and other diagnostic methods in class 3 patients

- Clinic personnel must wear appropriate clothing and barrier precautions when handling class 3 patients exiting from isolation.
- Clean any gross contamination from all material prior to disinfection.
- After performing an EKG, personnel must clean and disinfect the leads with a gauze sponge soaked in disinfectant, paying particular attention to cleaning and disinfecting the clips and wires that have touched the patient.
- After performing endoscopy, the veterinarian will clean and disinfect the endoscope according to the recommended procedure attached to the endoscope.
- All radiography equipment and supplies must be cleaned and disinfected after the examination is performed.

4.5.17. Surgery and anesthesia for isolation patients

- Clinic personnel must wear appropriate clothing and barrier precautions when handling class 3 patients exiting from isolation.
- Clean any gross contamination from all material prior to disinfection.
- After surgery clean and disinfect all material and place them in a sealed plastic bag identifying the suspected or confirmed infectious agent prior to depositing the material at the sterilization service.
- All surfaces should be cleaned and disinfected carefully and no other patient can enter the room until this has been completed.
- Surgeries on class 3 patients should be postponed until the end of the day if possible.
- A sign should be left for technicians indicating suspected or confirmed infectious agent and the advised disinfection protocol.

4.5.18. Required diagnostic testing in patients with suspected infections

- Diagnostic testing to detect certain infectious and or zoonotic agents provides essential information for appropriate clinical management of infected patients. This testing provides direct benefit to the patient in addition to benefiting clients' by allowing them to appropriately manage their other animals and protect their families. It also benefits the LSMU VA as this information is essential for appropriate management of disease risk for all LSMU VA patients, personnel and students.
- It is mandatory for all hospitalized patients to undergo diagnostic testing if infection with specific contagious or zoonotic agents is a reasonable consideration.
- It is the responsibility of the senior clinician responsible for a patient's care to ensure that appropriate samples are submitted and delivered to the laboratory for this testing, and that appropriate biosecurity precautions are taken with these patients.
- Responsible biosecurity personnel should be notified as soon as reasonably possible that there is a reasonable index of suspicion that a hospitalized patient may be infected with one of the agents listed below (see 4.6. paragraph).

4.5.19. Biological specimens from suspected or confirmed contagious patients

- Biological samples should be handled with the same barrier nursing care as the patient itself.
- All biological specimens from class 3 and 4 animals should be stored in a sealed plastic bag or box.
- Care should be taken when placing specimens in bags to prevent contamination of the outside of containers of biological samples. Suspected conditions or disease agents should be clearly identified on all submission forms.

4.5.20. Breakdown of the isolation unit prior final disinfection

- Contact technicians immediately upon discharge and breakdown so that they can clean and disinfect the ward before another patient is admitted.
- The primary clinician, technicians and students on the case are responsible for the following breakdown procedures of the room for fully clean and disinfect the room.
- Throwaway all disposables. For the disposable sharps use sharps containers and other specially marked trash bins.
- For Rabies cases (known or suspected) seal the sharps container and place it in the trash bags.
- Seal all specially marked dustbins, garbage bags and leave in isolation to be removed by technicians.
- Clean all surfaces with disinfectant.
- Disinfect all bowls.

- Disinfectant all medical equipment, and put them on the appropriate shelves.
- Fluid Pump: throw plastic away and spray and wipe down the fluid pump.
- All used material are being washed with soap, disinfected and then rinsed, dried and sterilized, if possible according to manufacturer's instructions. be disinfected by the responsible student or technician.

4.5.21. Reducing biosecurity precautions for a class 3 patients

- Only the Head of the Clinic and biosecurity personnel can give permission to amend precautionary requirements or reduce rigor of biosecurity precautions for patients that have an increased risk of contagious disease (e.g., leptospirosis).
- Only the Head of the Clinic and biosecurity personnel at the veterinarian's request can give permission to move patients from isolation to other areas in the clinic.
- In general, these decisions will be based upon the suspected disease agent, method of transmission, likelihood of persistent shedding or infection, likelihood of exposure to other contagious agents while housed in isolation, etc.

4.5.22. Movement of high risk patients

- Class 3 patients requiring isolation should ideally be transported directly to the small animal section of infectious diseases.
- If patients are moved from the main section of clinic to the isolation ward, they should be moved by a route that minimizes exposure of other patients and contamination to the facility.
- Personnel handling patients while being moved should use barrier nursing precautions.
- Any areas or equipment contaminated with infectious material during transit should be immediately cleaned with detergent or soapy water and disinfected.
- All movements should be kept to the strict minimum, and if possible on a gurney or in a cage, rather than being carried while wearing a specific gown, gloves etc.
- All waste and excrements produced should be eliminated as soon as possible and all contaminated surfaces should be cleaned, disinfected and dried as soon as possible. Low traffic areas should be preferred and if possible movements should occur late in the day, after movement of all other animals.

4.6. Disease differentials for which testing is mandatory in small animal patients

- Testing of appropriate samples is recommended if the following disease or condition is in an approved list. A full description of testing, management, diagnosis, and potential treatment information is available at the website of the OIE:
- Animal diseases data: <http://www.oie.int/en/animal-health-in-the-world/information-on-aquatic-and-terrestrial-animal-diseases/>
- Animal Health Code: <http://www.oie.int/en/standard-setting/terrestrial-code/>
- Manual of Diagnostic Tests and Vaccines for Terrestrial Animals: <http://www.oie.int/en/standard-setting/terrestrial-manual/access-online/>
- Special attention must be devoted to the following animal diseases:
- Rabies
- Acute Diarrhea in Dogs and Cats (*Salmonella*, *Campylobacter*, *Parvovirus*, *Cryptosporidium*, *Giardia*)
- Canine Distemper Virus
- Leptospirosis
- Toxoplasmosis
- FIV, FLV.

- If the owner refuses to perform diagnostic tests, therefore, patients will have to be designated to category 3 or 4 (depend on clinical signs and suspected infectious disease).

4.6.1. Management of patients with known or suspected contagious disease

- Gastrointestinal Infection: gastrointestinal agents of greatest concern as nosocomial hazard Parvovirus for unvaccinated and susceptible animals; and *Salmonella* spp.
- Respiratory Infection: respiratory agents of greatest concern as contagious nosocomial hazards include Influenza, Canine Distemper, Aspergillosis, Feline infectious rhinotracheitis.
- Neurologic Disease: infectious agents associated with neurologic disease that are of greatest concern as contagious nosocomial hazards include Rabies virus and Canine Distemper virus.

4.6.2. Management of patients with bacterial diseases

- Patients infected with bacteria resistant to important antimicrobial drugs or to multiple drug classes represent a potential health hazard to personnel, students, clients, and to other patients. As such, they are managed with increased biosecurity precautions intended to discourage dissemination (class 3).

4.6.3. Additional disease specific information

4.6.3.1. Feline Leukemia Virus (class 2)

- Feline patients with suspected or confirmed FeLV infection will be housed in cage of section of infectious diseases away from other cats. Information about disease is being placed on the cage and treatment card. Students and technicians assigned to the case should not handle other sick felines within ICU. Ideally other feline cases should be handled before handling the identified or suspected FeLV case.

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4.6.3.2. Feline Panleukopenia (class 3)

- Feline patients with suspected or confirmed feline panleukopenia will be housed in the isolation ward. If cat needs intensive care, these patients can be treated in ICU and be placed as far from other feline patients as caseload will allow. There will always be at least 1 cage between panleukopenia suspects and other cats. Signs should be placed on the cage identifying the suspected pathogen.
- Students and responsible personnel assigned to the case should not handle other sick felines within ICU. Ideally that other feline cases should be handled before handling panleukopenia case.

4.6.3.3. Canine parvovirus (class 3)

- Dogs less than 1.5 years of age with vomiting, diarrhea, and/or leukopenia will be considered parvovirus suspects, until test results are obtained. They will be placed in the isolation ward and walked as described in the general housing rules above. A diarrhea screening test is strongly recommended to evaluate the cases for possible viral pathogens, parasites, and faecal culture.
- When possible, students and technicians assigned to care for parvovirus patients will not have contact with other at-risk dogs (under 1.5 years).

4.6.3.4. Leptospirosis (class 3)

- Patients identified as suspected or confirmed Leptospirosis (class 3) cases should be segregated in to isolation ward as described in the general housing rules above.

4.6.3.5. Patients Carrying Bacteria Resistant to Important Antimicrobial Drugs (class 3)

- Biosecurity personnel and Head of Clinic should be notified of any patients infected with bacteria with resistance patterns of concern to antimicrobial drugs. This includes incisional or catheter related infections as well as gastrointestinal related infections.
- Patients with multiple-drug resistant bacteria will be separated as much as possible from other patients, and will be discharged when sufficient recovery warrants.
- All patients infected with bacteria with important resistance patterns must be managed with strict barrier nursing precautions.

4.7. Small animal surgery and anesthesia

4.7.1. Attire for the "clean" areas of surgical facility

- Clean surgical scrubs, head covers, overshoes, and masks are required for entry into designated "clean" areas of the surgical facility, including scrub rooms, preparation room and surgical theatres, marked by the red lines.
- Surgical scrubs are to be worn only in the LSMU VA Clinic. Scrubs are not to be worn out of the clinic.
- Personnel must also remove shoe covers and other disposable attire when exiting "clean" surgical areas.
- All personnel, including cleaning and maintenance personnel, students, lecturers and other are required to adhere to all relevant policies regarding attire in surgery facilities.
- Class 3 dogs and cats:
- The set of outerwear dedicated to the patient in the hospitalisation wing (at the cage for class 3 animals) should be worn during the animals transport to the clean area.
- A dedicated set of footwear, different from the set dedicated to the patient in the hospitalisation wing, should be worn in the "clean" areas of surgical facility.
- After the procedure, this final set can join the animal to its cage when still in good condition.

4.7.2. Hygiene for perioperative management of personnel

- High standards of cleanness and hygiene must be maintained throughout the surgery facility.
- The surgical team and patient's surgery site must be aseptically prepared. Aseptic technique must be maintained in surgery.
- Only people directly involved with the surgery must be in the operating room.
- In operating room movement during the surgery should be kept to a minimum.
- Class 3 dogs and cats:
- As far as possible, clipping and surgical preparation should be performed in the cage of the animal (class 3). This way a brief surgical preparation can finally be performed in the clean area of the surgical department.
- All waste products should be immediately disposed in the specially marked dustbins, and all surfaces should be immediately cleaned, disinfected and dried.

4.7.3. Behavior with patients before the surgery

- Perioperative management of patients can greatly influence the likelihood of incisional or other nosocomial infections. As such, basic management procedures should always emphasize use of barrier nursing precautions and maximizing separation between patients. Standards for personal, patient, and environmental hygiene in the surgical and peri operative areas should be among the highest.
- Hands must be washed or hand sanitizer used between all patient contacts. Hands should also be washed after patient contact to prevent contamination of hand-contact surfaces

(e.g., doors, counter tops, equipment, etc). An alternative is to use exam gloves as a barrier nursing precaution and to discard gloves after each patient contact.

- Faecal material should be removed immediately from the anesthesia preparation area or other areas of the surgical facility. If needed the floor should be cleaned by a water stream and disinfected between patients.
- After each use, the equipment is cleaned and disinfected.
- Routine environmental cleaning and disinfection should be carried out in a rigorous manner following prescribed protocols.
- Class 3 dogs and cats:
- The animal should be pre-medicated in its cage (class 3) .
- Transport to anesthesia preparation area should occur just prior to procedure. A gurney or transport cage should be used to minimize clinic contamination.
- All contaminated instruments and equipment must be cleaned and disinfected, and placed in a plastic bag marked with suspected agent prior to returning to the cleaning service for sterilization.

4.7.4. Anesthesia induction area

- All known or suspected contagious diseases should be clearly noted on the anesthetic protocol.
- Do not clip the surgery site of patients prior to the day that procedures are scheduled. This predisposes to colonization of incisional sites with potentially pathogenic bacteria.
- Unless decided otherwise, surgical patients will be delivered to the anesthesia preparation area one hour prior to scheduled procedures, and placed in the anesthesia recovery and preparation area until the time of procedure.
- Prepare the intravenous catheter site aseptically and place the catheter using aseptic technique.
- After surgery, contaminated outerwear should be placed in plastic bags, marked with the suspected infectious disease agent.
- Patients shall recover from anesthesia in “PID“ cage whenever possible (for class 3), class 1 and 2 class dogs can also recover in the anesthesia preparation and recovery area.
- Patient transport tables must be cleaned and disinfected (allowing 15 min contact time according to the instruction), then thoroughly rinsed with water.
- After surgery or other interventional procedure recovery cages must be swept and mopped by students, technicians or residents.
- The oxygen insufflation hose must cleaned and sprayed with 70 % alcohol solution at least allowing 15 min contact time. Anesthesia machines must be cleaned and disinfected between infectious disease cases.
- Elements and reservoir bags will be rinsed thoroughly and sprayed with 70 % alcohol solution at least allowing 15 min contact time.

4.7.5. Other routine cleaning and disinfection procedures

- The surgery theatre is being immediately cleaned and disinfected.
- All contaminated areas are being cleaned and disinfected immediately following the procedure.
- All contaminated instruments and equipment are being cleaned and disinfected, and placed in a plastic bag marked with identified or suspected agent prior to returning to the cleaning service for sterilization.
- All individuals contacting the animal must wash hands carefully and remove contaminated clothing prior to handling other animals.
- Endotracheal tubes (ET):

- Clean inside and outside of ET tubes with mild soap and water, using a scrub brush.
- ET tubes and sprayed with 70 % alcohol solution at least allowing 15 min contact time). Hang ET to dry in designated place. Any ET tube laid on the ground will require disinfection before use.
- All anesthetic machines and ventilators will be broken down, thoroughly cleaned and disinfected on a regular basis.

4.7.6. Management of surgical patients with contagious diseases

- It is the primary clinician's responsibility to notify anesthesiologist and surgeon about impending surgery on animals with potential infectious diseases (particularly respiratory, gastrointestinal, and multiple-antibiotic resistant bacterial infections).
- For surgery should be selected an operating room with minimal cross traffic.
- Surgery on animals with suspected infectious diseases should be avoided when possible. When absolutely necessary, surgery will be performed on animals suspected of having contagious diseases at the end of the day to minimize exposure to other patients.
- Clinicians, students and residents assigned to surgical cases are responsible for identifying and communicating with other when surgical patients are known or suspected to have contagious diseases.
- After surgery, contaminated outerwear should be placed in plastic bags, marked with the suspected infectious disease agent.
- Clinicians, residents and students assigned to these cases are responsible for ensuring that procedure and recovery areas have been appropriately identified as being potentially contaminated with contagious pathogens, as well as ensuring that they have been appropriately disinfected prior to use with other patients.

4.8. Intensive care unit (ICU) biosecurity

4.8.1. General management considerations for small animal

- It is critical to strictly adhere to barrier nursing and hand hygiene protocols in intensive care unit.
- Stethoscopes and thermometers should be cleaned and disinfected frequently to minimize the risk of nosocomial transmission of infectious agents.
- Minimize the number of personnels handling that type cases whenever possible.
- When possible, students assigned to infectious disease cases should not have contact with immune suppressed patients elsewhere in the LSMU VA clinic. Examples would include leukopenic patients, young animals, animals receiving immunosuppressive drugs and patients with diabetes mellitus. When caseload demands contact with infectious disease suspects, treat other patients before handling infectious cases.
- Animals requiring hospitalization in ICU and suspected of having a class 3 infectious disease will be placed in cages as far from other patients as possible.
- A foot mat will be placed within the perimeter for use by entering the class 3 isolation area.
- Disposable barrier attire, a dedicated box containing gloves, dedicated thermometers and a stethoscope will be available within the perimeter for persons coming in contact with the patient.
- Hospitalized patients (1 and 2 class) with confirmed or suspected infectious diseases should be allowed to urinate and defecate in their cages whenever possible. If patients need to be taken outside, every effort should be made to prevent urination or defecation within the hospital. Disinfectant should be carried and used to clean urine or faecal accidents. Whenever possible, patients should be transported on a gurney to minimize the potential for contamination of common traffic areas.

4.8.2. General consideration for housing patients in ICU

- Small animal patients without signs of contagious diseases may be brought into general areas of ICU for stabilization and treatment as deemed necessary by the primary clinician.
- Outpatient emergency cases may be housed in ICU, from the exam rooms, or be transferred direct from the lobby.
- Potentially infectious diseases cases should be identified prior to ICU arrival. Patients with PID or confirmed infectious diseases may be housed to ICU unless immediate stabilization or life-saving therapies are immediately warranted.
- These decisions will be based upon the clinical condition, necessary treatment, suspected disease agent, method of transmission, likelihood of persistent shedding of infection, likelihood of exposure to other contagious agents, etc.

4.8.3. Waste, cleaning and disinfection in ICU

- The cleaning and disinfection should be performed by technicians, residents and students at least two times per day and immediately, when cages, surfaces are contaminated with faeces, urine, blood and others.
- Immediately clean and disinfect any clinic equipment, stretcher, and examination tables after contact with infectious disease suspects.
- Clean and disinfect scales and examination tables used during the treatment of infectious disease suspects immediately after treatment. Every effort should be made to weigh and treat other animals before using communal equipment for infectious disease suspects.
- Personnel and students should change any contaminated outerwear after examination (performed treatment procedures) of patient with infectious disease (class 3 or 4).
- A separate mop and mop bucket will be provided for cleaning of infectious patients areas.
- After handling the patient with infectious disease remove the special attire and hang it within the taped area for class 3 animals or discard if soiled. Remove and discard gloves, use footmat and wash hands.
- Yellow or yellow marked dustbins should be used to collect all disposables and laundry coming in contact with infectious disease suspects.

4.9. Reducing risk factors of infectious disease agents transmission. Important information for FVM Small Clinic visitors.

- All visitors must check in at the Reception desk and wait in the waiting room for accompanying person.
- All visitors must strictly adhere to biosecurity precautions.
- All visitors should be instructed to thoroughly wash their hands after leaving examination room.
- The general public is not allowed to tour inpatient areas of the Clinic. Special arrangements can be made to provide tours for visiting scientists by contacting responsible personnel of biosecurity and the Head of Clinic.

4.9.1. Clients of FVM Small Animal Clinic

- If client required it should be a possibility to purchase a special attire.
- A student, clinician or technician should escort clients to a consultation room or exceptionally, after permission by the primary clinician to the animal's cage.
- Clients must adhere to all barrier nursing requirements that apply to their animals in order to touch the animals.

- With clinician permission clients may visit their animals, but are not allowed to wander in the facility and read other animals' treatment cards. Information about other patients is confidential (including diagnoses).
- Owners or their designated agents may visit hospitalized patients. Friends or other interested parties are not allowed to visit patients without special permission.
- Clients are never allowed to visit animals treated in isolation wards. With express permission from Biosecurity Committee or the Head of Clinic, exceptions to this visitation rule may be granted under extraordinary circumstances, such as when patients are to be euthanized.

4.9.2. Children in Small animal clinic

- Children are under no circumstances allowed to be left unattended in the clinic. In order to avoid accidents and to maximally avoid infectious risks, children should always be supervised by parents or accompanying person.

4.9.3. Pets in Small animal clinic

- Pets are under no circumstances allowed to visit other pets which are hospitalised in LSMU VA Clinic.

4.9.4. Deceased patients

• Breakdown of patient environment:

- When the patient is deceased, the cage should be cleaned and all records should be collected.
- Cages used to house patients of class 1 and 2 should be cleaned and disinfected before a new patient enters.
- Cages from class 3 and 4 patients should be marked with a sign: "Do not use, special cleaning required". No other animal is allowed to enter these cages before cleaning and disinfection, and verification by the cleaning personnel, technician or responsible veterinarian.
- Students, technicians, residents and clinicians are responsible for breaking down items around cages and ensuring that they are discarded, filed, or cleaned and disinfected (fluids, brushes, barrier gowns, etc).

4.9.5. Storage of patient body

- If the animal is deceased or euthanized in its cage, the cadaver should be removed from the cage as soon as possible.
- Deceased class 3 or 4 animals should be stored in a sealed and identified impermeable bag in order to transport this to the autopsy, utilization or cremation services.

4.9.6. Sending to the Pathology Center

- The cadaver should be taken to the LSMU VA Pathology Center as soon as possible.
- During evenings or weekends the cadaver will be stored in the appropriate refrigerator at the clinic.
- The animal will be placed in the refrigerator if an autopsy needs to be performed. The request form for autopsy needs to be clearly present on and send with the cadaver. On the outside of this request form it should be clearly mentioned to which class the animal belongs (class 1-2, 3 or 4).

CHAPTER 5. LARGE ANIMAL CLINICS BIOSECURITY SOP

5.1. General requirements for the Large Animal Clinic personnel, students and visitors

- Large Animal Clinic uses dedicated attire in order to decrease the risk of carrying infectious agents home where people or animals may be exposed.
- All personnel are required to wear clean professional attire, clean protective outer garments, and clean, appropriate footwear at all times when working in outpatient areas of the Large Animal Clinic.
- This attire should be appropriate to the job at hand (e.g. coveralls or blouses and heavy boots or shoes are probably the most appropriate footwear and protective outer garments when working with large animal patients performing tasks which are accompanied by a high risk of being soiled with infectious materials).
- Students: green coverall with boots. If they do not wear correct attire they will be expelled from the clinic.
- Residents: red costume with name card. Separate special costume when working in the surgical theater.
- Veterinarians: special blue costume. Separate special costume when working in the surgical theater.
- Technical personnel: special grey costume. Separate special costume when working in the surgical theater.
- Footwear: It is recommended that all personnel wear safety-shoes or rubber boots at all times while working in the Large Animal Clinic. This type of footwear is easier to clean and disinfect compared to footwear constructed of porous materials (e.g. running shoes), and helps to protect against injury when working around large animals.
- Personnel must be willing to disinfect footwear while working. Waterproof footwear is strongly recommended to limit damage to footwear that will eventually occur after exposure to footbath solutions.
- Food and beverages may only be consumed in offices and changing rooms located in a green zone.
- Maintaining cleanliness and appropriate personal hygiene are responsibilities of all personnel working in the Large Animal Clinic.
- It is recommended that hands are washed with soap or cleaned with an alcohol-based hand sanitizer prior to, and after examining each patient.
- Hand washing is mandatory before and after the clinical examination of the patient.
- Clean exam gloves should be worn when handling patients.

5.2. Surface cleaning and disinfection

- Surfaces or equipment contaminated by faeces, secretions, or blood must be cleaned and disinfected by personnel in charge of the patient. This is especially important regarding patients known or suspected of shedding important infectious disease agents.
- All members of personnel and students are expected to arrange material once used and to leave the location in its original condition.
- There is a list of soaps, detergents and disinfectants approved to use in Large Animal Clinic. The up to date list is provided at the clinic with indication of disinfectants for hands, walls, floor, fomites, equipment and etc.

Table 6. Infectious diseases

Disease	Agent and incubation period	Mode of transmission	Clinical signs in horses	Clinical signs in humans	Diagnostic testing	Disinfection	Biosecurity and precautions for personnel
Anthrax*	<i>Bacillus anthracis</i> 1-7 days	Direct contact (cutaneous), aerosol (pulmonary), possibly vector, e.g. horseflies (cutaneous), ingestion of undercooked contaminated meat by humans (GI)	Horses very susceptible, can present as acute enteritis with signs of colic, usually very rapid progression, septicaemia, fever, haemorrhagic enteritis, depression, death	Cutaneous (most common), pruritic macule leading to black eschar. Pulmonary, febrile respiratory disease rapidly fatal. Intestinal, febrile GI disease	High level of bacteraemia on smears of blood or aspirated oedema fluid. Culture and 10 possible but fluorescent antibody testing of smears of froth, blood or splenic aspirate safer for personnel	Anthrax spores resistant to heat, drying and many disinfectants. Spores killed by 2% glutaraldehyde or 5% formalin	Complete protection (gloves, boots, protective coveralls respiratory and eye protection) required when handling suspects. Avoid necropsy of infected or suspect cases beyond blood collection. Unopened carcass decomposes rapidly and spores are destroyed. Burn or deep bury carcass
Clostridial enteritis+	<i>Clostridium difficile</i> Neonatal foals, adults primarily during or immediately after antimicrobial therapy and <i>Clostridium perfringens</i> neonatal foals. <i>C. difficile</i> most important in terms of nosocomial infection. 8-24 hours	Faecal-oral spread by direct contact, environmental contamination, on fomites, via humans on hands, etc. Public health risk of equine clostridial infections uncertain	Acute colitis, abdominal pain, diarrhoea of varying severity, may be accompanied by dehydration, fever, toxemia and leukopenia	Sudden onset abdominal discomfort, diarrhoea, nausea; vomiting and fever usually absent. Generally self-limiting, short duration but may be more severe disease; necrotising enteritis, sepsis. <i>C. difficile</i> common cause of antimicrobial-associated and nosocomial diarrhoea. <i>C. perfringens</i> more frequently food borne	Culture and toxin detection in faecal samples, blood culture	Vegetative form killed by exposure to air, spores resistant to many disinfectants but can be reduced by thorough cleaning with a detergent followed by disinfection with diluted (1 : 10) bleach solution	Isolation of confirmed cases with protective clothing (boots, barrier gown, gloves). Strict hand hygiene. Minimize stress especially dietary. Judicious use of antimicrobials. Consider routine examination for <i>C. difficile</i> and toxins A and B in foals and with antimicrobial-associated diarrhoea
Dermatoses - Dermatophytosis (ringworm)	<i>Trichophyton equinum</i> most common; also <i>T. mentagrophytes</i> <i>Microsporum equinum</i> (<i>M. canis</i> and <i>M. gypseum</i>) 4-14 days	Direct contact or indirect contact with fomites-saddle blankets, grooming equipment, etc.	Round hairless, scaly skin lesions	Circular or annular lesions with scaling, occasionally erythema, itching	Direct exam of hair, culture, histology of biopsy. Wood's lamp unreliable for equine dermatophytosis	Diluted (1 : 10) bleach (sodium hypochlorite) solution	Gloves, strict hygiene, disposal or disinfection of grooming and other equipment

- Dermatophilosis (rain rot)	<i>Oermatophilus congo/ensis</i> Less than 7 days	Direct contact. Trauma and biting insects aid in spread	Exudative crusted skin lesions, hair in "paintbrush" clumps	Rare zoonosis. Afebrile, acute to chronic pustular to exudative dermatitis	Cytology - Gram stain of crust, histology, culture		For dermatophilosis also minimize exposure to excessive moisture, employ insect control/repellents
Ectoparasites - Acariasis (mange), zoonotic scabies	Sarcoptes, psoroptes, chorioptes, demodex (rare in horses) and other mites. 1-2 weeks after infestation	Highly contagious by direct contact with infected animal. Also transmitted on fomites	Intense pruritis, alopecia, crusting may be lichenification of skin. Location depends on mite involved	Resolves spontaneously not transmitted between humans	Physical examination	Most effectively controlled by treating infested animal with acaricides	Gloves, boots and protective clothing. Do not share equipment. Discard or disinfect equipment used on infected animal
- Pediculosis	Biting or chewing lice <i>Werneckiella (Oamalinia) equi</i> or sucking lice <i>Haematopinus esini</i> . Obligate parasite, all stages on horse, egg to egg development time 4-5 weeks	Direct contact but can possibly spread on blankets and other equipment	Itching and skin irritation leading to scratching, rubbing, and biting. Most common location affected are head, mane and ventral neck area	Non zoonotic	Physical examination	As above, treat with insecticides such as pyrethrins	Separate grooming equipment, blankets etc. Lice can live 2-3 weeks off host, but a few days more typical. Eggs may continue to hatch over 2-3 weeks in warm weather. Rigorously clean and disinfect areas that housed infested animals
Equine herpesvirus infection (equine rhinopneumonitis)*+	Eight different types, EHV-1 and EHV-4 of major concern in horses. Incubation 2-10 days. Abortion occur 2-12 weeks after infection, usually between 7 and 11 months of gestation	Direct contact, aerosol (up to 35 feet), fomites	EHV-1 inapparent to mild respiratory disease with fever, to abortion in mares, to rapidly progressing, often fatal, neurological disease (ascending paralysis). EHV-4 rhinopneumonitis primarily horses <3 years of age	Non zoonotic	PCR or virus isolation from nasopharyngeal secretions or white blood cells	Easily killed by many disinfectants including 1 % bleach, 70% ethanol, iodine-based disinfectants, quaternary ammonium disinfectants, peroxygen disinfectant, phenolics, etc.	Isolation for AHV-1 infection, monitor temperature of surrounding animals, submit samples for testing if fever (~38.6°C) develops. Proper disposal of aborted fetuses and related material. EHV-4 barrier precautions, no sharing of equipment

Equine infectious anaemia (EIA, swamp fever) *+	Lentivirus, related to other important lentivirus including HIV but not zoonotic. 1-3 weeks but may be as long as 3 months	Primarily via transfer of contaminated blood by biting insects (most often tabanids) or fomites contaminated with blood	Intermittent fever, depression, inappetence, weight loss, oedema, thrombocytopenia, transitory or progressive anaemia. No therapy	Non zoonotic	AGIO (Coggins test); for animals testing positive a second confirmatory test recommended. Other ELISA tests available	Diluted (1 : 10) bleach solution, 70% ethanol, 2% glutaraldehyde peroxygen disinfectants, phenolics	Proper handling and disposal of biohazard material. Strict insect-proof isolation until testing confirmed. Due to lifelong infection risk, consider euthanasia for positive animals
Equine influenza *+	Orthomyxovirus A Usually 1-3 days, range 18 hours to 5, or rarely 7, days. Most frequently diagnosed and economically important viral respiratory disease of the horse	Respiratory route; aerosol, direct contact with infected secretions. Survives and may spread on fomites for several hours. Highly contagious, despite careful hygiene horses sharing same air space likely to become infected	Acute, febrile, respiratory disease. High fevers, coughing, nasal discharge common; as are depression, anorexia, weakness. Occasionally pneumonia or other complications	Although influenza A viruses can infect humans, equine-lineage viruses have very limited zoonotic risk. Recently, however, transmission of equine-lineage H3N8 virus has caused influenza in dogs in the United States	Virus isolation from nasopharyngeal swab collected as soon as possible after onset of illness, or paired serology. Directigen Flu-A test can be used "stalls ide"	Easily killed by many disinfectants - see EHVabove	Isolation. Avoid sharing equipment. Strict hand hygiene. Maintain isolation until no symptoms and body temperature normal for 2:5 days. Consider vaccination of contact animals to control an outbreak
Equine viral arteritis (EVA) *+	Arterivirus, equine arteritis virus. Average 7 days, range 2 to 13 days	Respiratory from acutely infected horse, direct contact or via relatively close contact, e.g. adjacent stall, limited spread on fomites. Venereal from acute or chronically infected stallion	May be subclinical or only transient oedema, or acute fever, depression, dependent oedema especially limbs, scrotum and prepuce in stallions conjunctivitis, nasal discharge, abortion	Non zoonotic	Virus isolation or PCR from nasal secretions, conjunctival swabs or buffy coat. Paired serology. Virus isolation from semen of infected stallions	Easily killed by many disinfectants - see EHVabove	Isolation of cases. Quarantine close contacts for at least 21 days after last clinical case, 30 days used in some previous outbreaks
Multidrug-resistant bacterial infections or infections caused by organisms with antimicrobial resistance of concern+	Various including <i>Salmonella</i> , MRSA, <i>E. coli</i> , <i>Klebsiella</i> , <i>Enterobacter</i> , <i>Enterococcus</i> (VRE and non-VRE), <i>Pseudomonas</i> , <i>Acinetobacter</i> , organism resistant to extended spectrum beta lactams, etc	Multiple including faecal-oral, by direct contact with infected animals, via humans, or on fomites, in some cases aerosol. For some organisms, e.g. MRSA, <i>Salmonella</i> animals and/or humans can be inapparent carriers	Depending on organism, many different clinical presentations, e.g., GI respiratory, catheter-related, or surgical site infections, septicaemia (especially in foals), etc. Nosocomial cases may occur as low level endemic infections or in epidemic outbreaks of varying severity	Many have zoonotic potential. Clinical signs depend on organism involved	Culture and sensitivity. Regular monitoring required to assess incidence and detect changes that may require investigation or intervention. Additional molecular I0 may be necessary if a nosocomial problem is suspected	Often susceptible to many disinfectants. Regular cleaning and disinfection controls environmental load. If nosocomial problem identified additional cleaning and disinfection of specific areas may be required. Conduct of disinfectant kill-curves may aid in control	Judicious use of antimicrobials. Barrier precautions or possibly isolation for confirmed cases (organism dependent). Strict hand hygiene. Maintenance of good, regular hygienic practices for equipment and environment
Rabies (not a	Rhabdovirus of	Contact (saliva, CSF,	Wide range of	Early signs of	No definitive	Lipid solvents (soap	Clearly label as

<p>nosocomial problem but an important zoonotic disease) *</p>	<p>genus <i>Lyssa virus</i>. Few days to several years, most cases apparent after 1-3 months</p>	<p>neural tissue). Mucous membranes or compromised skin, bites, cuts, etc</p>	<p>possible clinical signs. Progression of encephalic signs may be aggression (furious form, more common), or depression (paralytic, dumb form). Average survival from onset of clinical signs 5 days, maximum 10 days.</p>	<p>malaise, fever, headache, pruritis at site of virus entry. Progressive anxiety, confusion, abnormal behaviour. Encephalitic or paralytic form can occur. Death usually in 2-10 days</p>	<p>antemortem test. Brain from suspect animal must be submitted to an approved laboratory for rabies testing</p>	<p>solutions, acetone), 2% bleach, 2% glutaraldehyde, 45%-75% ethanol, iodine-based or quaternary ammonium disinfectants. Inactivated by sunlight, limited environmental survival</p>	<p>rabies suspect. Strictly limit number of personnel involved in managing suspect animal. Record all in-contact personnel. Clearly label any laboratory specimens as rabies suspect. Full barrier precautions including gloves, boots, protective clothing, face shield. Promptly submit necropsy samples using approved methods</p>
<p><i>Rhodococcus equi</i> infection</p>	<p><i>Rhodococcus equi</i>, incubation period uncertain, often insidious onset</p>	<p>Environmental exposure (soil), aerosol, contact, rarely via wound contamination</p>	<p>Most often respiratory but other body systems can be involved. Most commonly fever, coughing, increased respiratory rate and effort, mucopurulent nasal discharge, pyogranulomatous pneumonia. Primarily foals 1-6 months old</p>	<p>Rare human infection, only in the severely immunocompromised, appears to be via environmental exposure. Slowly progressive granulomatous pneumonia</p>	<p>Culture of tracheobronchial aspirate or other samples. PCR can be valuable but best used in conjunction with culture. Radiographs useful</p>	<p>70% ethanol, 2% glutaraldehyde, phenolics, and formaldehyde</p>	<p>Shed in faeces, prompt removal of manure and good hygiene limits accumulation. Frequent hand washing. Uncertain infection risk but consider barrier precautions on affected foals (at least up to 72 hours after starting antimicrobial therapy) if susceptible foals housed in same area</p>

	Rotavirus infection *+	Rotavirus group A 12-24 hours	Faecal-oral, highly contagious, spreads readily on fomites or other contaminated material	Variable severity of diarrhoea in foals from mild to life threatening	Non zoonotic	Shed in faeces of foals for several weeks after diarrhoea ceases. Where introduction a concern, test faecal swab using faecal antigen test, e.g., Virogen Rotatest, Rotazyme	Phenolics are virucidal even in presence of organic material	Isolate. Full barrier precautions. Proper sanitation and disinfection of contaminated material and equipment. In general, without other explanation, e.g., typical foal heat, diarrhoeic foals should be considered infectious and possibly contagious until proven otherwise. Good hygiene critical
	Salmonellosis *+	Various <i>Salmonella enterica</i> 12-72 hours in humans, possibly similar in debilitated horses, incubation in the healthy exposed animal variable and uncertain	Contact with faeces from an infected animal, most commonly ingestion, possibly via inhalation. Readily spread on fomites, in feed, water or via vermin, birds, insects. Good environmental survival, can be very difficult to control	Inapparent, to fever, leukopenia, severe diarrhoea, to septicaemia. Anorexia and depression common	Most common equine zoonosis. Inapparent, to self-limiting but often severe gastroenteritis (diarrhoea generally much more prominent than vomiting), can be invasive leading to septicaemia	Faecal culture (sensitivity for MDR), gastrointestinal reflux may also be cultured. Consider additional molecular 10 if a nosocomial problem is suspected	2% bleach, 70% ethanol, 2% glutaraldehyde, iodine-based disinfectants, phenolics, peroxygen disinfectants and formaldehyde	Isolate confirmed cases. Strict hygiene. Prompt cleaning of all areas contaminated with faeces. Gloves, frequent hand washing, protective clothing, boots or footwear that can be easily cleaned, face mask/shield with pipe-stream diarrhoea
	Staphylococcosis *+	<i>Staphylococcus</i> sp Methicillin (oxacillin) resistant <i>S. aureus</i> of special concern	Direct contact most important, particularly hand-to-nose transfer. Purulent discharge from infected sites very infectious. Aerosol less important but can occur with coughing or snorting	Inapparent nasal carriage (including of MRSA), to thrombophlebitis, other suppurative draining lesions	Subclinical, can be nasal carriers of MRSA and spread to other animals or people. Clinical may be suppurative lesions, usually skin (impetigo, boils). Gastroenteritis associated with toxin ingestion sudden onset nausea, cramps, vomiting	Standard culture with speciation to identify <i>S. aureus</i> because MRSA strains in horses can be very weakly coagulase positive and may be misidentified. Sensitivity, Oxacillin resistant = MRSA	2% bleach 70% ethanol, 2% glutaraldehyde, iodine-based disinfectants, quaternary ammonium disinfectants phenolics, peroxygen disinfectants	Gown, gloves, boots strict hand hygiene. Surgeon-type face mask may help limit hand-to-nose transfer in personnel. Consider isolation with full barrier precautions for MRSA positive animals

	Strang lest	<i>Streptococcus equi</i> 3 to 15 days	Direct contact, also spread on fomites contaminated with infected secretions	Abrupt onset fever, mucopurulent nasal discharge, acute swelling and subsequent abscessation of submandibular, retropharyngeal lymph nodes. May be metastatic spread, purpura haemorrhagica or other complications	Non zoonotic	peR and aerobic culture of nasal/pharyngeal wash or swab, pus from abscesses ± guttural pouch/upper airway endoscopy especially in suspected carriers	Quaternary ammonium disinfectants, 1 % bleach, 70% ethanol, iodine-based disinfectants, phenolics	Isolation. Fever occurs 2-3 days before nasal shedding; promptly isolate febrile horses in an outbreak. Good hygiene and sanitation, careful cleaning or disposal of contaminated equipment or other material
	Vesicular stomatitis *+	Rhabdovirus of genus <i>Vesiculovirus</i> 3-7 days	Direct contact or aerosol, insect vectors (sand flies, black flies). In endemic areas, oral examination prior to admission may prevent introduction during outbreaks	Excess salivation, fever, vesicles on mucous membranes of mouth, epithelium of tongue, coronary band	Infection rates in exposed humans are low. Manifest as fever, headache, myalgia, rarely oral blisters. Recovery usually in 4-7 days	Standard test for VSV antibodies is virus neutralisation, complement fixation or ELISA can also be used	2% solution carbonate, 4% sodium hydroxide, 2% iodophor disinfectants, chlorine dioxide	Vector control, gloves, protective clothing including facemask, strict hand hygiene

*- World Animal Health Organisation (OIE) listed diseases.

+ - Agents that have been linked to nosocomial outbreaks of disease

5.3. Patient biosecurity

- It is of major importance for basic hygiene and for reducing the infection pressure that the patients of the large animal clinic are housed in a proper stall.
- Before a new patient enters the stall, faeces or dirty bedding should be removed and stall should be disinfected.
- Technical personnel clean the stalls and the hallways every day.
- In the case of neonates, patient hygiene is of extreme importance and thus a pile of faeces or wet bedding should directly be removed from the stall.
- Water buckets or automatic drinkers need to be proper and regularly cleaned and disinfected, and cleaned in between use by different animals. When patient enters into a stall, the automatic drinker should be checked to work correctly and the owner should be asked if the animal knows how to drink from automatic drinkers. If the animal drinks from a bucket, the presence of water in the bucket should regularly be checked and regularly be filled with fresh water.
- Feeding bowls need to be proper and regularly cleaned and disinfected, and cleaned in between use by different animals. If an animal has not eaten its feed, this should be reported to the veterinarian and the feed should be removed from the feeding bowl. The amount of feed leftover should be written on the patient's card.
- Feed for the small ruminants should be given into the bowls and water should be changed two times per day.
- Animals should be kept as clean as possible, regularly be brushed and have their hoofs picked, and excretions or secretions on the horse should be removed.
- All personnel and students must use disposable materials.
- If animal defecate outside their stall (whether inside or outside a building), their faeces need to be removed immediately after defecation. Shovels are available in many locations around. If this concerns diarrhea, the faeces need to be removed and the floor cleaned, disinfected and dried. If patients urinate inside (but not outside a building), the urine needs to be removed and the floor cleaned and dried.
- All personnel of Large Animal Clinic are responsible for cleanness of the clinic and personal hygiene.

5.4. General cleaning and disinfection

- Gloves and appropriate attire should be worn whenever using disinfectants. Additional personal protective equipment (mask, face shields, goggles, impervious clothing, boots) should be worn only when there is a probability of splash from the disinfection process resulting in contact that is not merely incidental.
- Remove all bedding and faeces prior to disinfection. The presence of gross contamination and urine will inactivate most disinfectants.
- Wash the affected stall, including walls, doors, automatic water drinker and feeding bowl, with water and detergent or soap; scrubbing or mechanical disruption is always needed to break down films and residual debris that prevents or inhibits the disinfection process.
- Thoroughly rinse the cleaned area to remove any detergent residue. Note: some disinfectants may be inactivated by detergents or soap; therefore, it is very important to rinse well after washing the area.
- Allow area to drain or dry as much as possible to prevent dilution of disinfectant solutions.
- Wet the affected stall, including walls, doors, automatic water drinker and feeding bowl, thoroughly with bleach. This disinfectant should remain in contact with surfaces for at least 15 minutes (but check the time for each disinfectant), particularly if infectious agent is suspected. The disinfectant should be rinsed off all surfaces prior to housing a patient in a cage or stall. After disinfecting, remove the protective attire and wash your hands.

- For non-routine disinfection measures, only personnel trained and approved to wear and use the required personal protective equipment will be allowed access to areas being disinfected.
- All multiple use areas (stocks, examination rooms, etc.) where animals are examined or treated, should be ranged, cleaned and disinfected following use by personnel responsible for the patient - irrespective of infectious disease status of the individual animal. Cleaning tools must be cleaned and disinfected after use (including handles).
- Footmats. Footmats solutions are changed every morning. Footbaths should be changed whenever they are judged to contain excessive amounts of bedding or dirt and they should be refilled when noticed that they are dry or low on volume; this is the responsibility of ALL people working in this area (students, technical personnel, residents and veterinarians).
- Personnel and students are required to use footbaths appropriately whenever they are encountered. Footbaths require full immersion of feet, and therefore water impervious footwear must be worn wherever footbaths are employed.

5.5. Disinfection protocol for instruments and equipment

- All instruments, equipment or other objects, including stomach tubes, floats, mouth speculums, endoscopes, grooming tools, clipper blades, etc. must be cleaned and sterilized or disinfected between uses on different patients. Materials that are sterilized between uses (Instruments and equipment such as surgical instruments) must be cleaned with soap and water and disinfected with a 0.5% chlorhexidine solution after use on patients. The equipment should then be returned to procedures room for sterilization.
- Stethoscopes:
 - Cleaning: wiping or washing with soap to remove gross material. Disinfection: chlorhexidine or hand sanitizer solution available throughout the hospital
 - Stethoscopes owned by personnel may be used on animals in the non-contagious areas, but must be regularly cleaned and disinfected (at the beginning and at the end of the day is recommended). Immediate cleaning and disinfection is required when stethoscopes are visibly soiled. Individual, owned stethoscopes are assigned for use with each high risk contagious patient (class 4). These are stored at patients' stalls during hospitalization and cleaned and disinfected after discharge.
- Thermometers:
 - Cleaning: wiping or washing with soap to remove gross faecal material. Disinfection: hand sanitizer solution available throughout the clinic
 - Glass thermometers are not to be used in the Large Animal Clinic in order to decrease risks associated with broken thermometers and mercury exposures. Electronic thermometers are used instead. Electronic thermometers owned by personnel may be used on animals in the non-contagious areas, but should regularly be cleaned and disinfected (at the beginning and at the end of the day is recommended). Probes from thermometers used in continuous temperature monitoring (for example during anaesthesia or intensive care) should be thoroughly cleaned and disinfected between patients. Immediate cleaning and disinfection is required when thermometers are visibly soiled. Individual thermometers are assigned for use with each high risk contagious patient (*class 3 and 4*). These are stored at patients' stalls during hospitalization and cleaned and disinfected after discharge.
- Hoof picks:
 - One hoof pick assigned to each patient. Cleaning: washing with soap to remove gross material. Disinfection: soaking in alcohol or chlorhexidine.
 - Personnel and students should use hoof picks to clean feet before the patient leaves its stall. The hoof picks should be cleaned and disinfected once a week by technical personnel. After use on an animal with bacterial or mycotic hoof problems, the hoof picks should be immediately cleaned and disinfected. Individual hoof picks are assigned for use with each high

risk contagious patient (*class 3 and 4*). These are stored at patients' stalls during hospitalization and cleaned and disinfected after discharge.

Brushes:

- One brush assigned to each patient. Cleaning: washing with soap to remove gross material. In the case of use for a patient with parasitic skin disease (chiroptes, psoroptes, sarcoptes, lice, etc) the brush should be treated with an antiparasitic before disinfection and in the case of use for a patient with mycotic infections with an anti-mycotic before disinfection.

- Disinfection: soaking in alcohol or chlorhexidine.

- Technical personnel and students should regularly brush animals. The brushes should be cleaned and disinfected (using alcohol or 0.5% chlorhexidine) once a week by technical personnel. Individual brushes are assigned for use with each high risk contagious patient (*class 3 and 4*). These are stored at patients' stalls during hospitalization and cleaned and disinfected after discharge. Before and after use on a patient with a dermatological problem (either contagious either very sensible to be infected) the brushes should be immediately cleaned and disinfected.

Twiches:

- Cleaning: washing with soap to remove gross material. Disinfection: soaking in chlorhexidine. Twiches must be cleaned and disinfected every 2 weeks by technical personnel. After use on a horse with a class 3 or 4 disease the twitch should be immediately cleaned and disinfected. Other instruments and equipment owned by personnel may carried and used on multiple patients, but they must be regularly cleaned and disinfected using alcohol or 0.5% chlorhexidine available in the Pharmacy and at various areas in the Large Animal Clinic (isolation boxes and ambulatory boxes). After use on a patient with infectious disease, the instruments or equipment should be immediately cleaned and disinfected.

Cleaning and disinfection protocols for environment and facilities

- Trailer parking area and courtyard: the technical personnel crew is cleaning the area daily on regular workdays.

- Ambulatory examination areas and corridors: ambulatory patient examination is performed in the corridor, which has a rubber floors or stone bricks and efficient lightening. The examination places are thoroughly cleaned daily by the technical personnel. The corridor is cleaned (e.g. swept and hosed) daily and disinfected weekly by the technical personnel.

Routine stall cleaning at the Large Animal Clinic

- For disinfectants to be effective, it must be used on clean surfaces. Cleaning procedures in the main areas of the Large Animal Clinic:

- Daily picking of the stalls and adding of fresh bedding by the technical personnel.

- Use appropriate clothing (coveralls; waterproof clothing where required).

- Try to avoid that patients have contact with the dumpsters, especially those suspected with infectious diseases.

- Cleaning tools used for class 1 and 2 stalls should be cleaned and disinfected once a week.

- Cleaning tools used for class 3 and class 4 stalls should be cleaned and disinfected after each use.

- Aisle-way must be hosed daily and regularly disinfected.

General procedures for cleaning

- If a patient is discharged, the stall should be cleaned as soon as possible.

- If it concerns a patient with a contagious disease (or it is suspected), the box should be marked by clinician or other responsible personnel: "Dezinfekuoti" ("To disinfect" in English).

- If the infectious agent is known or suspected, suitability of the disinfectant should be always checked and if necessary, the protocol adapted in collaboration with biosecurity personnel.
- Technical personnel should empty, clean and disinfect this box as soon as possible, but after cleaning non-contagious stalls. The stall is considered contagious area until disinfected and thus no patient should enter before it has been cleaned and disinfected.
- Weekly Routines:
 - The Large Animal Clinic feed room floors should be cleaned and disinfected before each new delivery of feed.
 - Sinks in aisle-ways, in the general treatment area and in the examination rooms should be cleaned and disinfected once a week by technical personnel. A walking way must be cleaned and disinfected once a week also.
- Monthly Routines:
 - Areas that are not used on a daily basis (i.e. tops of walls, areas not used often, etc.) should be hosed on a monthly basis in order to prevent accumulation of dust.
- Annual Routines:
 - The entire large animal clinic is thoroughly cleaned, scrubbed and disinfected from top to bottom by technical personnel and all equipment by veterinary residents

Guidelines for receiving and managing patients

- Ambulatory patients (coming for a consultation but not hospitalized).
- The client will be asked to check in before unloading the patient. Following the check in, a quick clinical impression will be obtained by an resident or clinician to allocate the animal in a certain risk category. According the risk category and circumstances, the animal may then be unloaded in the trailer parking area near the clinics and be directed to one of the exam rooms, or be send home.
- Inpatients:
 - At the check-in, the client will be asked for the official papers of the animals. These papers will stay with the horse during the whole period of hospitalization.
 - Large Animal Clinic planning.
 - Stall assignments: stalls for housing inpatients are assigned by the responsible veterinarians.
 - Isolator: for suspected infectious diseases and zoonoses classified as 4 class.

Patient records and medications

- Hospitalized patient- is assigned an animal registration card which includes information about the owner of the patient, history of the patient. The patient immediately must be registered to the computer patient registration system GYKIS. The paper form of registration document is kept at the reception room during all treatment.
- Ambulatory patient- filling up of ambulatory registration form, which includes information about the owner of the patient and anamnesis of the patient. When patient is released home the registration form is kept at the reception of the large animal clinics.
- All records about the treatment of the patient must be entered to the computer program GYKIS. This programme is accessible to the all personnel and students (except personal information of the owners of the animals).
- Animal everyday record card, which includes clinical parameters and remarks about the patient symptoms is on the front door of the stall. These records can be read by students, residents, veterinarians, but it must stay on place.
- Medication and other materials for a certain clinical case must be kept in the procedure room locked. On the shelves should be written for example: ointments, liniments etc.

- Stall cards, treatment orders.
- A stall card must be posted at the time when patients are admitted or as soon as possible.
- The stall card must list patient identification, the type and frequency of forage (none, grass, hay, silage, other) and concentrates (mash, normal mix, others) to feed, and drinking from a bucket if the animal is not familiar with an automatic drinker must also be listed.
- A card with the class of infectious disease status will be placed on the stall and the unit. This allows all personnel and students to better understand the infectious disease hazards and the associated precautions that should be associated with patients.
- The infectious disease status must be updated as patients' status change during hospitalization.
- Patient diagnosis and infectious disease status must also be recorded on the census board located at the reception. Anticipated discharge date and time should also be noted on the census board when this becomes available.
- Stall cards and treatment orders contain confidential patient information. As such, visitors should never be allowed to read this information for animals that they do not own.

Feed and water

- All grain or other supplements (including that provided by clients) must be stored in containers with tight fitting covers if delivered not packed.
- Only minimal amounts of bedding, forage, and concentrate feeds are to be stored in the Large Animal Clinic in order to decrease the likelihood of contamination and to decrease the availability of feed and hiding places for rodents.
- The Large Animal Clinic feed storage facilities should be cleaned and disinfected before each new delivery of feed.
- Information about what forage and/or concentrates to be fed and the frequency should be written clearly on the stall card.

Bedding

- Technical personnel and veterinarians are responsible for bedding stalls and feeding of patients.
- Occupied stalls are cleaned and re-bedded with clean straw or shavings every morning by technical personnel.

5.10. Discharge

- When applicable, prior to discharge, clients or their agents must be instructed about infectious disease hazards associated with patients and recommendations about control of these hazards on the home premises. The anticipated time and date of discharge should be noted on the census board at the Information board.
- Technical personnel should be notified if patients will be discharged, so that unnecessary effort is not expended cleaning these stalls.
- When the patient is discharged, the stall card should be cleaned to indicate that the animal is no longer hospitalized and all records should be entered to the GYKIS programe.
- Stalls used to house patients of class I and 2 should be cleaned (remove manure and wet bedding) before a new animal enters the stall.
- Stalls used to house patients with known or suspected contagious agents (class 3 and 4) should be marked with a sign: "Dezinfekuoti" ("To disinfect" in English). No other animal is allowed to enter these stalls before cleaning and disinfection.
- Students, technical personnel, and veterinarians are responsible for items around stall and ensuring that they are discarded, filed, or cleaned and disinfected (fluids, brushes, barrier gowns, etc).

Personal belongings of the patient

- Tack or other items owned by clients is not to be left with patients at the Large Animal Clinic, except for halters and blankets.
- Owned tack is stored at the patients' stall when not in use.

Walking and grazing area**Walking**

- Walking is allowed when a disease or problem allows the horse to walk and the clinician has given permission for the horse to be walked and grazed.
- When they have a disease or problem of class 1 or 2.
- Patients with a class 4 disease are never allowed to leave their box unless degraded to a lower class.
- Patients with a class 3 disease are only allowed to leave their box for necessary medical examinations, but not for walking and grazing.
- Patients are walked and grazed by a students or technical personnel, who is used to handle large animals.
- The walking and grazing area is restricted to the hallways of the Large Animal Clinic, the courtyard, the little meadows around the Large Animal Clinic and the manege. Any dropped faeces in these walking areas should be removed as soon as possible.

Salmonella surveillance in the Large Animal Clinic

- Stalls where housed animals were culture-positive for *Salmonella* must be cultured after routine cleaning and disinfection and before they are allowed for use by another patient.
 - Technical personnel responsible for these stalls or cages or the veterinarians primarily responsible for patients should notify biosecurity personnel of the Clinic when these stalls or cages are vacated to arrange for samples to be obtained.
 - Large Animal Clinic personnel reports surveillance results back to the Biosecurity Committee as soon as results become available.
 - These data are routinely summarized and reported by the Biosecurity Committee.
- Routine environmental surveillance.
- On smooth floors and hand-contact surfaces throughout the Large Animal Clinic will be conducted every 6 months for most areas, and more frequently for areas which are more likely to be contaminated with *Salmonella*.

Managing patients with suspected contagious disease

- Special precautions are required when managing patients known or suspected to be infected with contagious disease agents. Conditions of special concern because of the potential for nosocomial transmission include patients with acute gastrointestinal disorders (e.g. diarrhoea), acute respiratory tract infections, acute neurologic diseases, abortions or infections with bacteria that are resistant to multiple antimicrobial drugs.
- Patients with increased contagious disease risk will be managed isolated from the general Large Animal Clinic population and discharged as soon as possible.
- Veterinarians, residents or students (under supervision) are encouraged to conduct initial physical examinations on these patients outside the clinics, e.g., at the trailer in order to evaluate the contagious disease risk.
- Personnel should consider implementing barrier nursing precautions when handling these patients until evaluations suggest that the risk of contagious disease transmission is negligible.
- The Biosecurity Committee should be notified as soon as possible when patients with elevated contagious disease risk (class 4) are admitted or develop these problems while hospitalized.

- When patients with elevated contagious disease risk are housed in the main inpatient areas, effort must be made to use appropriate barrier nursing and biocontainment practices with the patient.

- Disinfectant footbaths or footmats are required.
- Stalls on either side and across the aisle should be maintained empty.
- Using stalls at the end of aisles is preferred to stabling near main traffic corridors.
- The suspected or confirmed disease status must be relayed to the Biosecurity Committee ASAP so that they can assist in communication and evaluating if appropriate precautions are being taken to house the animal.

- Infectious diseases encountered in hospitalized animals are assigned by the primary clinician to the following classification levels, based on transmissibility of the agent to other animals and/or zoonotic potential.

Class 1: normal housing - green

- Non-infectious diseases or infectious diseases caused by agents that have no likelihood of transmission to other animals and no potential for human infection.

- In the Large Animal Clinic, the following conditions/patients are included:
- No fever, no respiratory problem, no history of fever or respiratory problems during the last 6 months

- Trauma, wounds
- Pre- et postoperative patients, excl., colic patients (without contagious complications)
- Ophthalmologic patients
- Non-contagious neonates
- And other similar conditions with no treat for infectiveness

Class 2: normal housing - green

- Infectious diseases caused by agents that have a low level of transmission and may include nonresistant bacterial infections.

- In the Equine Hospital, the following conditions/patients are included:
- Wounds infected with non-resistant bacterial infections
- Bacterial pneumonia, pleuropneumonia without suspicion of contagious bacteria
- Bacterial corneal ulcers with non-resistant bacterial infections
- And other animal similar conditions

Class 3: barrier nursing – orange

- Subclass A: Resistant bacteria. Infections caused by bacteria with highly resistant antimicrobial susceptibility pattern, as determined by laboratory investigation.

- Subclass B: Infectious diseases caused by agents with a moderate level of transmission and/or are potential human pathogens. The stalls used for this purpose are separated from other patients by closing the unit.

In the Large Animal Clinic, the following conditions/patients are included:

- Fever and/or leucopenia of unknown origin
- Viral respiratory diseases: cough, nasal discharge « 2 weeks), possibly accompanied with fever.

- Rhodococcus equi: foals under the age of 10 months with respiratory problems and fever Diarrhea without fever and/or leucopenia

- Non-surgical digestive problem with haemorrhagic reflux or non-haemorrhagic reflux with fever and/or leucopenia. In this case the reflux should not be performed by aspirating by mouth.

- MRSA or other multi-resistant bacterial infections
- Contagious dermatologic infections: dermatophytosis, dermatophytosis congolensis, chorioptes, lice and other parasites

Class 4: isolation - red

- Infectious diseases caused by agents that are considered to have a high level of transmission and/or are extremely serious human pathogens.
- Patients with class 4 infectious diseases are housed in the Isolation Unit. Exceptionally, when the Isolation Unit is occupied, they can be housed in the medicine aisle; however, the barrier precautions will remain the same as in the Isolation Unit.
 - In the Large Animal Clinic, the following conditions/patients are included:
 - Acute diarrhoea with leucopenia and/or fever
 - Acute, rapidly deteriorating neurological disease or acute neurological disease accompanied with fever (e.g., suspicion of the neurologic form of EHVI)
 - Abortion (150-300 days of gestation)
 - Perinatal death (> 300 days of gestation) without presence of dystocia, premature placental separation, a congenital abnormality or twins explaining the perinatal death.
 - Diseases with a zoonotic risk (for example): rabies, malleus (*Burkholderia mallei*), brucellosis, anthrax, Mycobacterium bovis & tuberculosis, etc
 - Strangles: swollen submandibular lymphnodes, nasal discharge, cough, fever or suspicion of guttural pouch empyema and/or chondroids in the guttural pouches.
 - Animals that have been in contact with an animal suffering from a suspected or confirmed contagious disease are considered contagious until proven otherwise or until the incubation time has passed without the patient developing clinical signs.
 - Attention for diseases where the clinical signs of the disease can be subclinical and where the horse still can transmit the disease.
 - A table containing incubation times, transmission modes, clinical signs, diagnostic tests and disinfectants recommended for each contagious disease is included at (Table 6).
 - The following algorithms / decisional trees are also included and are available for the personnel:

Table 7. Decision isolation fever or respiratory signs

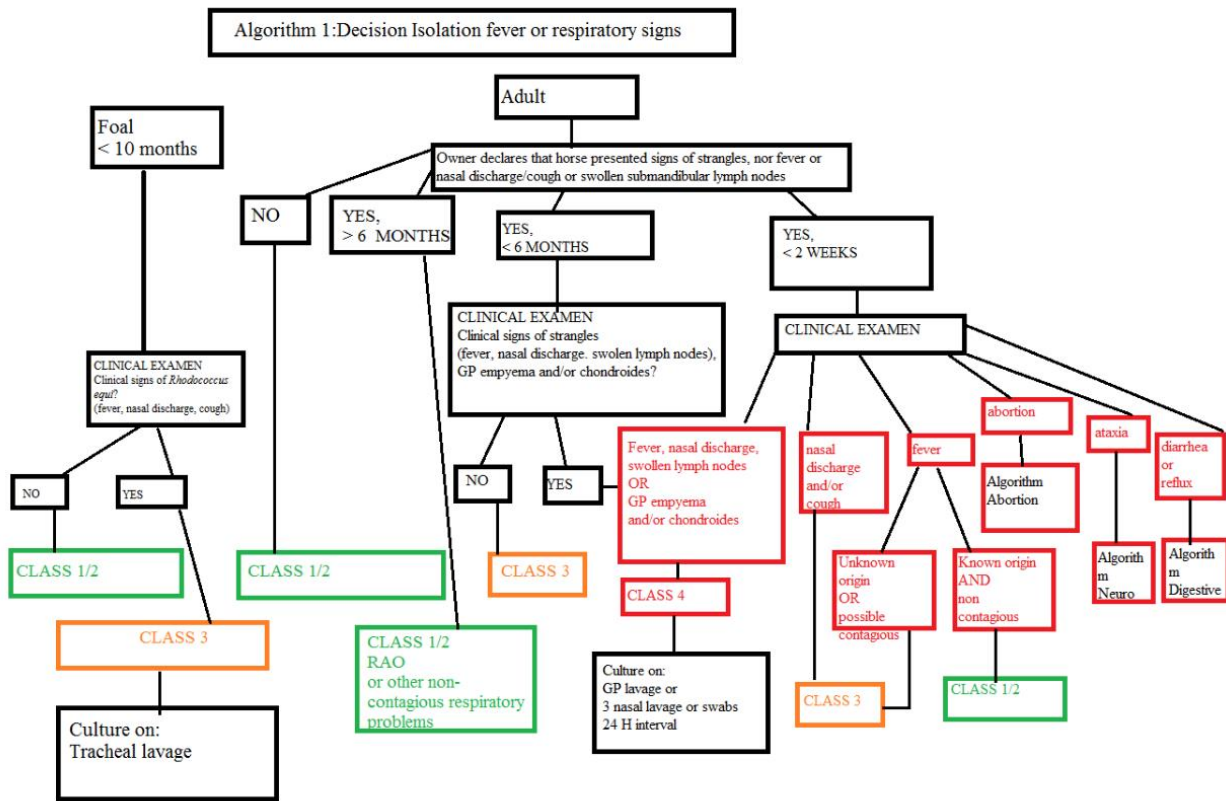


Table 8. Decision isolation digestive

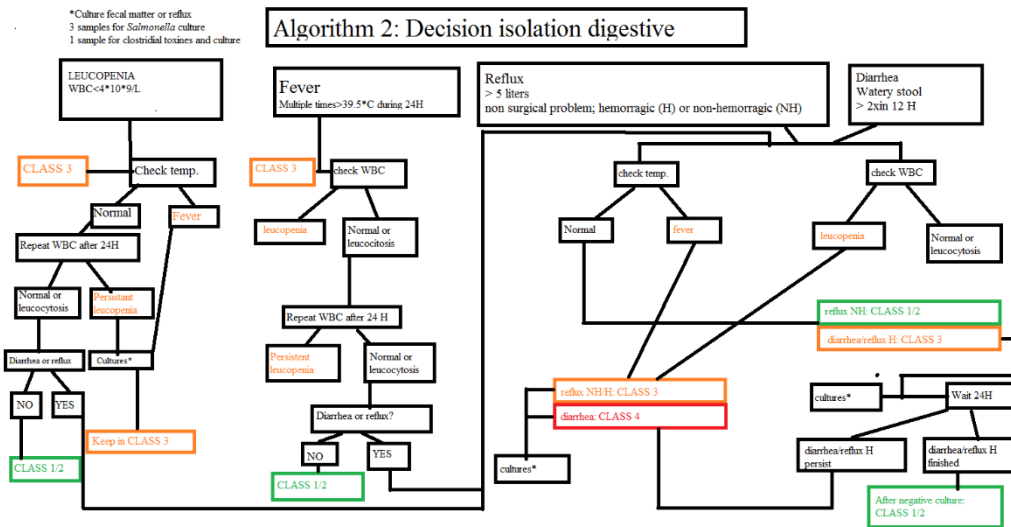


Table 9. Decision isolation abortion

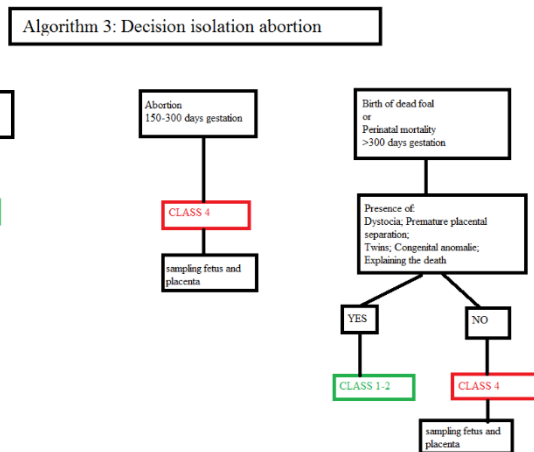
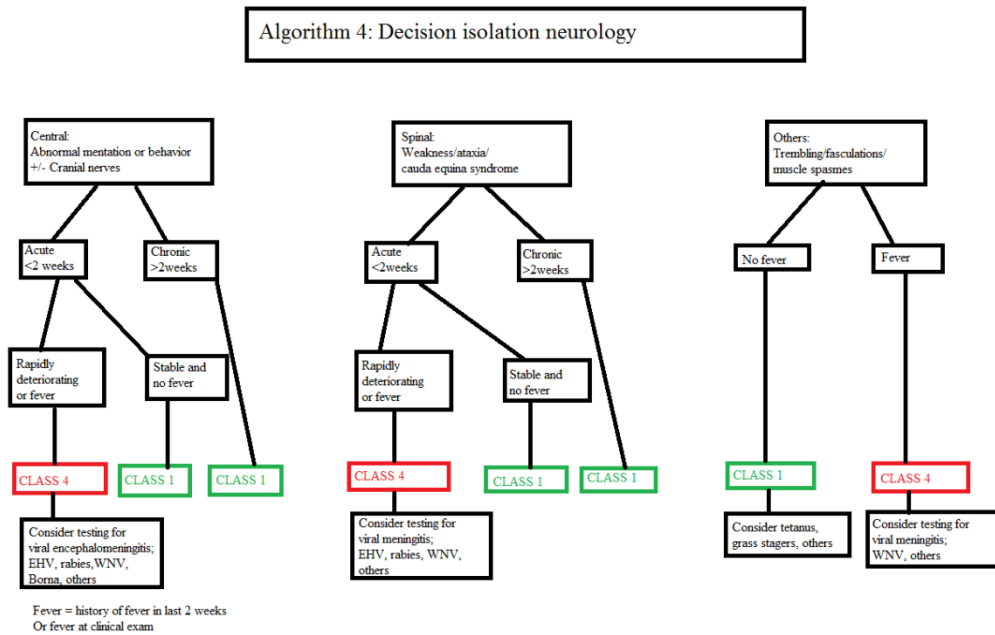


Table 10. Decision isolation neurology



Exclusion criteria for entry and/or hospitalization

- Is considered in case of animal diseases reportable in Lithuania.
- If the risks for other hospitalised patients or personnel to become infected with the disease are too important compared to the health risk for the animal itself, the animal can be refused to enter the Large Animal Clinic or to be hospitalised.
- Only clinicians (not residents) are allowed to take the decision to refuse an animal.

The refusal criteria for horses are the following:

- Suspicion of viral respiratory diseases (cough, nasal discharge, fever for < 2 weeks) without the horse's life being in danger.
- Suspicion of strangles (swollen submandibular lymphnodes, nasal discharge, cough, fever OR suspicion of guttural pouch empyema and/or chondroids in the guttural pouches) without the horse's life being in danger or without surgical necessity.
- Suspicion of the neurological form of EHV 1 (acute ataxia with presence or history of fever, possibly other cases) without the horse's life being in danger.
- Abortion without the horse's life being in danger (this concerns the mare, the placenta and the foetus; however the placenta and the foetus can be admitted to the autopsy department).

The refusal criteria for cattle are the following:

- Considered in case of animal diseases reportable in Lithuania.
- Unknown reason abortion when there are several cases in the same farm.
- When lymphadenitis caseosus is suspected (abscesation of in lymph nodes area).

Requirements for the Large Animal Clinic and the Isolation unit:

- The head of the clinics, biosecurity responsible persons at the clinic and Biosecurity committee must be notified ASAP whenever patients of 4 are admitted at the Large Animal Clinic and when they are discharged. This notification can be made in person, by phone, or by e-mail, and should be performed by the veterinarian with primary responsibility for the patient.
- Responsible stablemen must be notified when patients with contagious diseases are placed in Large Animal Clinic unit or isolation unit (class 4) and when they are discharged or moved.
- Stalls must be visibly labelled with the according class (class 1&2, class 3 or class 4) and the infectious agents of concern, along with the required biosecurity precautions. It is very important to communicate the agent(s) of concern for these patients so that all personnel and students can take appropriate precautions for protecting human exposure and to ensure that appropriate cleaning and disinfection procedures are used.
- In order to optimize identification, animals allocated to class 3 will have an orange tape around their halter.

Guidelines for managing and caring for patients with suspected or confirmed contagious diseases

- Strict attention to hygiene and use of barriers are absolutely critical for appropriate containment of contagious disease agents.
- Before and after examining each patient, hands must be washed with soap and water or cleaned with alcohol-based hand sanitizer.
- Surfaces or equipment contaminated by faeces, other secretions or blood must be cleaned and disinfected immediately by personnel or students in charge of the patient.
- Special care must be taken to prevent contamination of environment by dirty hands, gloves, or boots.
- Use of footmats encountered.
- Environmental hygiene is the responsibility of all personnel working in the clinic and Isolation Unit. Do not wait for a technician or other personnel to clean. Avoid contaminating anterooms with straw or manure, and assist with general cleanup and maintenance whenever possible.
- Students and residents assigned to the contagious case are responsible for routine cleaning and organization of anterooms. This includes cleaning and disinfecting counters, door handles, and door knobs, changing footbaths when needed, and emptying trash into the dumpster.
- Food is not allowed in the Large Animal Clinic, and Isolation Unit, because of the risk of exposure to zoonotic agents.
- Class 4 - isolation:
 - Clean exam gloves must be worn at all times when working in the Isolation Unit perimeter anterooms, and patient stalls. Gloves must be changed between working in different anterooms, or stalls.
 - Entry into these units should only occur when absolutely necessary.
 - Personnel should not enter stalls unless contact with patients is required. Veterinarians may at their discretion take students into a stall for teaching purposes, but this should be minimized as much as possible, and all personnel entering stalls must use appropriate precautions.
 - Whenever possible and appropriate, personnel should utilize windows for general monitoring of patients' conditions in order to minimize foot traffic into the class 3 and 4 units.
 - Only the veterinarians, students, animal handlers and responsible cleaning personnel responsible for patient care should enter isolation.
 - When possible, it is optimal to have different people provide care for patients in these units (i.e., it is best if the same person is not caring for patients in the main clinical facilities as well as those in isolation or those barrier nursed). If it is necessary to work on patients in multiple housing areas, personnel should take optimal precautions when moving between areas

and handling patients with different infectious disease risks. When possible, students assigned to class 3 or 4 patients should not have contact with immune suppressed patients (leucopenic patients, young or very old animals, animals receiving immunosuppressive drugs, etc ...) elsewhere in the Large Animal Clinic. When caseload demands contact with infectious disease suspects, treat other patients before handling infectious class 3 or 4 cases.

- The appropriate barrier precautions must be worn by anybody entering the class 3 and 4 units.

- Required barrier precautions will be posted on the board outside.

- The primary clinician is responsible at all times, for ensuring that patients are receiving appropriate care.

- Barrier precautions

- Footbath

- Hand washing Disposable apron Gloves

- Boots

- Clients are not permitted to enter the Isolation unless in the exceptional circumstance of euthanasia and with permission from the primary veterinarian.

- Class 3 - barrier nursing:

- Barrier precautions these precautions count for the whole unit and not just for the stall!!

- Footbath before and after entering the unit (and stall if several animals are present in the unit) Hand washing before and after entering the unit (and stall if several animals are present in the unit)

- Disposable apron

- Owners (but not friends, not the manager and not the referring vet) can visit their animal only from the perimeter of the class 3 stall; they are not permitted to enter the stall. They should be informed about the contagious risks of their animal's disease for animals outside the Large Animal Clinic. As for owners of all animals, they are not allowed to visit other parts of the Large Animal Clinic.

- An individual thermometer, brush and hoof pick are assigned for use with each contagious patient (class 3). A sac containing these instruments is stored in front of the patients' stalls during hospitalization and cleaned and disinfected after discharge.

- Equipment and materials.

- Any materials taken into Isolation (class 4) unit should not be taken back to the main clinical facilities.

- If equipment or material that cannot be used or discarded (for example perfusions bidons, sling, etc) has entered the units, it should be thoroughly disinfected before taken back to the main clinical facilities.

- Any supplies taken into a barrier nurse (class 3) or Isolation (class 4) unit should be used for that patient or discarded.

- No equipment or supplies (bandages, syringes, disinfectant, etc.) should be taken to a barrier nurse (class 3) or Isolation (class 4) unit without first checking its need with the responsible clinician.

- Medications used on class 3 or 4 patients should be billed to the client and sent home at discharge or else discarded. Do not return their medications or intravenous fluids to the Pharmacy. All medications sent home with clients must be dispensed in appropriate containers with a complete prescription label.

- Additional cleaning supplies and disinfectants are stored in the Isolation unit.

- Additional scrubs, isolation gowns, supplies, etc., are stored in the Pharmacy.

Procedures for personnel entering and exiting the barrier- nursing unit or isolation unit

- The following policies also apply to all ancillary services.

- Cleaning personnel and/or stablemen are required to adhere to all relevant policies regarding attire in the equine barrier nursing unit and isolation unit.
- Regularly, door knobs should be cleaned with disinfectant.
- Procedures involving highly contaminated sites should be performed last (e.g. manipulation of mucous membranes, manipulation of MRSA infected wounds, rectal temperature, rectal palpation, manipulation of strangles abscesses, etc.).
- Faecal material into the hallway (of major importance for animal handler).
- Appropriately dispose of sharps or garbage in yellow trash bins.
- Class 3 - barrier nursing
- To enter the barrier nursing stall:
 - Put on a disposable apron at the income. All personnel are required to wear clean working clothes.
 - Wash hands or use hand sanitizer before entering the stall. Use the footbath/footmath before entering each stall.
 - Personnel handling, examining or feeding different isolated patients should change disposable apron and wash hands between patients.
 - Exiting the barrier nursing stall
 - Remove the disposable apron
 - Footbaths/footmaths must be used when exiting the stall.
 - Clean and disinfect used material/equipment not assigned to the case by wiping with alcohol.
 - Use hand sanitizer or wash hands.
 - Use the clean hands to complete flow sheets and process samples.
- Class 4 - isolation
- To enter the equine isolation area (entrance facilities):
 - Open the door of the entrance facilities with a key.
 - Change: hang clinic smocks or coveralls in the entrance facilities of the Isolation Area and put on disposable coveralls.
 - Change normal street shoes by white boots available in the entrance facilities of the isolation area. Wash hands and use hand sanitizer.
 - At a minimum all personnel are required to wear clean boots, clean scrubs.
 - To enter isolation stall
 - Put on gloves that are available at entrance facilities
 - Use footbath before the stall when entering the stall.
 - Footbaths before the stall must be used when exiting the stall.
 - To exit isolation stall
 - Clean and disinfect thermometer, stethoscope, and other used material/equipment by wiping with alcohol.
 - Use footbath at the perimeter of entrance facilities
 - Clean boots in footbath before entering the entrance facilities. In entrance facilities: remove boots and disposable coverall.
 - Use hand sanitizer or wash hands in the entrance facilities.
 - Put on normal clothes and shoes.
 - Exit the entrance facilities and close the door with the key.
- **Procedures for moving patients into the barrier-nursing unit or isolation unit**
- Stalls should be prepared for patients prior to moving them into a barrier nursed or isolation stall.
- Set up footbaths and/or footmats with disinfection solution.

- Patients from the inpatient areas of the facility that are to be moved to a barrier nursed stall or to the isolation facility should be walked on a path that exposes them to the least number of other animals. It is best to have 2 people assist with this effort.

- One person dresses in appropriate isolation facility attire, sets up the Isolation stall, and receives the patient at the gate.

- The other person moves the patient from the main clinical facilities towards the isolation ward.

- It is critical to clean and disinfect surfaces from faecal material or bodily fluids that contaminate surfaces during the process of moving animals.

- Personnel will place a "DISINFECTION REQUIRED" sign on the stall in the main clinics.

- Personnel responsible for the case will ensure that the stall has been "broken down", empty fluid bags have been discarded, etc. and all equipment can be properly disinfected.

Cleaning and feeding in the barrier-nursing unit and isolation unit

- All personnel and students are responsible for assisting with cleaning and maintenance of the barrier-nursing units and the Isolation area. Everyone should help clean when it is noticed that something needs to be done.

- Animal handler will clean and re-bed stalls once daily, in the morning, and they will clean stall, walls if contaminated with diarrhea, blood or other excretions/secretions.

- Footbaths and footmats are changed daily, in the morning, by stablemen.

- Additional cleaning should be done throughout the day by all personnel and students.

- Students and residents assigned to cases are responsible for routine cleaning in front of the stalls, and changing footbaths and footmats as needed during the day.

- Technical personnel are responsible for feeding equine patients of class 4. Do not enter the feed room with contaminated gloves, clothing or hands.

- Technical personnel and clinicians are responsible for overseeing cleaning and disinfection, and stocking of the Isolation sas.

Procedures for patients leaving the barrier-nursing unit or isolation unit (for discharge or diagnostic procedures, but while the animal is still contagious)

- Personnel must pick hooves in the stall prior to exiting.

- Just prior to exiting stall, scrub hooves using 0.5% chlorhexidine solution which should be prepared in isolation buckets.

- Personnel moving the patient are required to wear all appropriate attire and barrier precautions.

- Personnel handling the patient should avoid contaminating doors, gates, etc with contaminated gloves or hands in the process of moving patients.

- Personnel must ensure that instructions given to clients adequately address the infectious disease hazards associated with the patient (to other animals and to humans), and appropriately provide suggestions for mitigating risks to people and animals.

- Animals housed in the barrier-nursed units or the isolation unit may not be walked or exercised.

- Only if prior authorization is given by the responsible veterinarian patients may be walked or exercised (for animal welfare purpose but only inside the surface limited by surrounding walls).

- Class 3 - barrier nursing: (for discharge or diagnostic procedures)

- Patients moving from barrier-nursed units should not be walked through the breezeway unless absolutely necessary (e.g., to enter surgical facilities). If it is absolutely necessary to move horses through the breezeway, personnel should take appropriate precautions to minimize contact with other patients, clients, and other personnel in the breezeway.

- Diagnostic and therapeutic procedures that must be performed in the main clinic on Isolation patients should be scheduled for the end of the day, and all surfaces and floors that are potentially contaminated must be promptly cleaned and disinfected in order to minimize the likelihood of nosocomial transmission.

- The animals should be labelled with an orange tape around its halter.
- Class 4 - isolation: (for discharge or highly exceptional surgical procedures)
- All diagnostic and therapeutic procedures are performed in the isolation unit.
- In the case of necessity of a surgical intervention, the surgical intervention will be performed in the Isolation Unit if it concerns an intervention of low risk and short duration, or exceptionally in the surgical theater.

- Exiting the patient:

- Personnel must brush the horse, clean the horse from feces, body secretions/excretions and pick hooves in the stall prior to exiting the isolation unit.

- Just prior to exiting stall, wipe the horse's coat from head to tail with a cloth drenched in chlorhexidine solution and scrub hooves using 0.5% chlorhexidine solution.

- Personnel moving the patient are required to wear all appropriate attire and barrier precautions.

- Personnel handling the patient should avoid contaminating doors, gates, etc with contaminated gloves or hands in the process of moving patients.

- It is critical to clean and disinfect surfaces from faecal material or bodily fluids that contaminate surfaces during the process of moving animals.

- The operational intervention:

- Interventions will be planned at the end of the day, if possible.

- During the whole intervention all personnel in the surgical theater must wear appropriate attire and barrier precautions.

- Return to the isolation unit:

- Personnel moving the patient are required to wear all appropriate attire and barrier precautions.

- Personnel handling the patient should avoid contaminating doors, gates, etc with contaminated gloves or hands in the process of moving patients.

- It is critical to clean and disinfect surfaces from faecal material or bodily fluids that contaminate surfaces during the process of moving animals.

- After use, the recovery box and surgical theater are considered contaminated area and should be thoroughly cleaned and disinfected. Under no circumstances will another horse undergo a surgical intervention before thorough cleaning and disinfection.

Required diagnostic testing and surgical procedures in patients with suspected infections

- Diagnostic testing to detect certain infectious and or zoonotic agents provides essential information for appropriate clinical management of infected patients. This testing provides direct benefit to the patient in addition to benefiting clients' by allowing them to appropriately manage their other animals and protect their families. It also benefits the Large Animal Clinic as this information is essential for appropriate management of disease risk for all Large Animal Clinic patients and personnel.

- It is therefore highly suggested for hospitalized patients to undergo diagnostic testing if infection with specific contagious or zoonotic agents is a reasonable probability. This diagnostic testing is considered essential to case management in the Large Animal Clinic and therefore is billed to the client.

- It is the responsibility of the veterinarian) responsible for a patient's care to ensure that appropriate samples are submitted for this testing, and that appropriate biosecurity precautions are taken with these patients.

- Biosecurity personnel at the clinics and Biosecurity Committee should be notified as soon as there is a reasonable suspicion that a hospitalized patient may be infected with a class 3 (high level of transmission and/or highly resistant) or class 4 disease.
- Whenever possible, diagnostic, surgical, or other procedures should be performed wherever high risk patients are housed, rather than moving the patient to common exam and treatment areas.
- Appropriate barrier nursing precautions must be followed by all personnel at all times during diagnostic or other procedures.
- If the patient requires diagnostics or other procedures (e.g., radiology, ultrasonography, surgery) which can only be performed in the main clinics facility, these procedures should be performed at the end of the day whenever possible.
- The Biosecurity responsible persons at the clinics and FVM Biosecurity committee must be consulted prior to moving any class 4 patient for diagnostic or surgical procedures.
- The attending veterinarian is responsible for notifying appropriate personnel of the suspected infectious agent and methods that are prudent for containment (this includes cleaning and disinfection after procedures).
- In general, all barrier nursing precautions that are required in the patient housing area will be required whenever handling that patient.
- Instruments, equipment, and the environment should be thoroughly cleaned and disinfected after the procedure, regardless of where the procedure is conducted.
- The responsible veterinarian must ensure that all services assisting with procedures are informed of the known/suspected agent, and appropriate barrier clothing precautions.
- If the patient has diarrhea, one person is needed to lead the animal, and another person must follow with a trash bag to catch any faecal matter, immediately clean/disinfect contaminated areas.
- The responsible veterinarian is also responsible for ensuring that the environment and equipment is appropriately cleaned and disinfected after the procedure. This includes induction areas, surgical areas, recovery stall, and any other applicable area of the clinics.

Use of ultrasonography, radiography, endoscopy or ecg in the equine barrier-nursing units and the isolation unit

- Personnel from ancillary services must wear appropriate clothing and barrier precautions when handling patients from class 3 and/or 4.
- Personnel from the ancillary service along with their necessary equipment should remain in front of the stall and not enter the stall unless absolutely essential to completion of the procedure.
- After performing an ECG, personnel must clean and disinfect the leads with a gauze sponge soaked in disinfectant (0.5 % chlorhexidine or alcohol) before leaving the unit, paying particular attention to cleaning and disinfecting the clips and wires that have touched the patient.
- After performing endoscopy, personell will clean and disinfect the endoscope, light source, etc. with alcohol wipes before leaving the unit. Once back in the endoscopy room, the material will be cleaned and disinfected again according to the recommended procedure.
- For radiology exams the cassette should be placed in a plastic bag which should be retrieved by a person with clean hands before processing.
- For ultrasound examinations the probe should be placed in a disposable glove to be protected.
- The probe and the cable should be carefully disinfected after the exam. The ultrasound machine should be kept in the corridor and not entered in the box and the wheel should be carefully disinfected after the exam. While exiting the unit, the ultrasound machine should roll over the footmatras.

- Only the necessary material should be brought in the infectious unit. Alcohol and gel for ultrasound exams should be kept in the infectious unit.

Biological specimens from suspected or confirmed contagious patients

- Specimens obtained from high risk patients should be correctly labeled with appropriate identification, then placed in a Zip lock bag.
- Care should be taken when placing specimens in bags to prevent contamination of the outside of the bag.
- Suspected conditions or disease agents should be clearly identified on all submission forms.
- Zoonotic conditions or disease agents should be double packed and clearly identified on all submission forms.

Breakdown of the barrier-nursing unit or isolation unit prior to disinfection

- Contact cleaning personnel immediately upon discharge so that they can clean and disinfect the stall or unit before another patient is admitted.
- The primary veterinarian, resident and student on the case are responsible for the following breakdown procedures of the unit so that the room fully can be cleaned and disinfected. The room will not be disinfected unless cleaning personnel is notified of the specific agent that was confirmed or suspected to be associated with the case.
- Throwaway all disposables, using yellow trash bans.
- Seal all yellow dustbins and leave in isolation to be removed by cleaning personnel.
- Disinfect grossly all medical equipment, and put them on a cart at the entry of the unit. Technical personnel can then collect the cart with the equipment for thorough cleaning and disinfection, and finally stocking.

Reducing biosecurity precautions for a patient housed in the equine barrier-nursing unit or isolation unit

- In general, biosecurity precautions will not be reduced for horses with class 4 diseases (remain in their stall in the Isolation unit) and colic horses (remain in their stall in the Colic Aisle). Biosecurity precautions of class 3 diseases can be reduced depending on the disease.
- Only the Biosecurity working group can give permission to amend precautionary requirements or reduce rigor of biosecurity precautions for patients that have an increased risk of contagious disease.

Management of patients infected or colonized with resistant bacteria

- Patients infected with bacteria resistant to important antimicrobial drugs or to multiple drug classes represent a potential health hazard to Large Animal Clinic personnel, clients, and to other patients. As such, they are managed as class 3 contagious diseases with increased biosecurity precautions intended to discourage dissemination in the Large Animal Clinic.
- Bandaging of wounds known to be infected with infectious agents of concern should be conducted in low traffic areas that can be easily cleaned and disinfected.

Biosecurity precautions for mares and foals

- Young foals that are hospitalized at the Large Animal Clinic often have an increased risk of acquiring infectious diseases because of existing disease processes including compromise to the innate and acquired immune system.
- In addition, hospitalized foals and their mares often shed enteric pathogens during the periparturient period.
- If foals or their dams have signs of contagious disease or are from farms experiencing outbreaks of contagious diseases they must be housed in the barrier-nursing units or isolation unit and all protocols followed.
- For those that do not have signs of contagious disease or are from farms with no known contagious disease outbreaks, they can be housed in the main equine hospital with the following

protocols applied: Barrier nursing precautions are required when handling foals or when entering their stalls.

Surgery and anaesthesia

Attire for the areas of the surgical facility

- Clean surgical scrubs are required for entry into designated surgical facility, including scrub rooms and surgical theatres. These are the areas located behind the procedures room.

- Shoe covers or footwear dedicated for use in surgical areas are also required for all personnel.

- Surgical scrubs are to be worn only in the surgical area; scrubs are not to be worn out of the surgical area, even when traveling to and from the Large Animal Clinic other units.

- Personnel must also remove shoe covers when exiting surgical areas (personnel wearing dedicated surgical footwear should put on shoe covers prior to exiting designated surgical areas).

- All personnel, including cleaning and maintenance personnel are required to adhere to all relevant policies regarding attire in surgery facilities.

- Hygiene for perioperative management of the patients.

- High standards of cleanliness and hygiene must be maintained throughout the surgery facility.

- The Surgical team and patient's surgery site must be aseptically prepared. Aseptic technique must be maintained while in surgery.

- Nonessential personnel are prohibited at all times.

- Movement of anaesthesia students, personnel, in the anaesthesia preparation area will be kept to a minimum.

- Personnel must wear clean exam gloves before placing IV catheters.

- Guidelines for perioperative management of the patients.

- Perioperative management of patients can greatly influence the likelihood of incisional or other nosocomial infections.

- As such, basic management procedures should always emphasize use of barrier nursing precautions and maximizing separation between patients. Standards for personal, patient, and environmental hygiene in the surgical and perioperative areas should be among the highest in the Large Animal Clinic.

- Hands must be washed or hand sanitizer used between all patient contacts. Hands should also be washed after patient contact to prevent contamination of hand-contact surfaces (e.g., doors, counter tops, equipment, etc). An alternative is to use exam gloves as a barrier nursing precaution and to discard gloves after each patient contact.

- Clean exam gloves must be worn whenever catheters or endotracheal tubes are being placed.

- Faecal material should be removed immediately from the anaesthesia prep area or other areas of the surgical facility.

- Equipment such as belly bands, hobbles, mouth syringe, endotracheal tubes, etc., will be cleaned and disinfected between uses using appropriately diluted chlorhexidine.

- Routine (e.g., daily) environmental cleaning and disinfection should be carried out in a rigorous manner following prescribed protocols.

Anaesthesia induction area

- Activities conducted prior to entering the anaesthesia induction area:

- Preanesthetic examination forms should be completed the day prior to procedures when possible. All known or suspected contagious diseases should be clearly noted on the form.

- Do not clip the surgery site of patients prior to the day that procedures are scheduled. This predisposes to colonization of incisional sites with potentially pathogenic bacteria.

- Patients should be thoroughly brushed or bathed prior to entering the anaesthesia induction area. The patient's mouth should be rinsed outside of the induction area. For extreme emergency surgeries the patient should be cleaned as possible. All personnel should take primary responsibility for ensuring that biosecurity measures are completed as required.

- Whenever possible, horses' shoes should be removed prior to entering the anaesthesia induction or standing surgery areas. Personnel should wear disposable gloves when handling patients' feet or thoroughly wash hands after completion. Residents should take primary responsibility for ensuring that this is completed.

- All horses' feet should be picked and scrubbed with chlorhexidine solution prior to entering the anaesthesia induction or standing surgery areas. Personnel should wear disposable gloves when handling patients' feet or thoroughly wash hands after completion. Residents assigned to the case should take primary responsibility for ensuring that this is completed.

Postoperative activities

- Patients must be returned to their stabling area as soon as it is safe after recovery to reduce the amount of faecal contamination in the recovery stalls, and to provide sufficient time for recovery stall cleaning.

- Recovery stalls must be swept and mopped with disinfection solution between cases.

- The oxygen insufflation hose used in recovery must be cleaned and sprayed with chlorhexidine solution (allowing 15 min contact time). The distal end of the tubing (the end used in the horse) must be cleaned of debris with soap and water, soaked in chlorhexidine solution (allowing 15 min contact time), and rinsed between cases.

- Anaesthesia machines must be cleaned and disinfected between cases:

- Valves and domes will be cleaned with water and dried.

- Y -pieces and reservoir bags will be rinsed thoroughly, soaked in chlorhexidine solution for a minimum of 15 minutes after each use, then thoroughly rinsed and dried before the next use.

- Y -piece adapters will be cleaned with soap and water, soaked in chlorhexidine solution (allowing 15 min contact time) and rinsed after each use.

- Other routine cleaning and disinfection procedures.

- All induction, surgery, and recovery areas are thoroughly cleaned and disinfected by technical personnel.

- Endotracheal tubes (ET):

- Clean inside and outside of ET tubes with mild soap and water, using a scrub brush.

- Soak ET tubes in a large barrel of chlorhexidine solution for at least 15 minutes. Thoroughly rinse ET tubes with warm water being careful not to set them down in the sink. Hang ET tubes to dry in designated cabinet in the anaesthesia induction area.

- ET tubes are stored in this cabinet until needed.

- Any ET tube laid on the ground will be require disinfection before use.

- The mouth gag must be soaked in chlorhexidine solution for 15 minutes after each use, then rinsed and then placed on the rack to dry and prevent corrosion.

- The hobbles are scrubbed with soap and water and soaked in chlorhexidine solution as needed.

- Lead ropes and halters used by anaesthesia service will be thoroughly rinsed in clean water before use, and scrubbed with soap and water and soaked in chlorhexidine solution as needed.

- All large animal anaesthetic machines and ventilators will be broken down and thoroughly cleaned/disinfected on a regular basis. A log file will be kept on days and times performed

Cleaning of the surgical unit

- After each procedure:

- All surgical equipment and carts and stands are put aside and cleaned properly.

- Blood and other dirt is removed and discarded in yellow bins.
- The theatre is pre-rinsed to remove all organic material from the floor The floor is cleaned / mopped with disinfection solution
 - End of the day or after invasive contaminated procedure (enterotomy, sinus drainage, abscess drainage)
 - Surgical theatre should be emptied of all carts, stand and material prior to cleaning. All blood or dirt on the floor should be removed and discarded in yellow bins.
 - The floor and walls are rinsed with hose.
 - Scrub floor with disinfection solution.
 - Rinse solution and leave to dry.
 - Clean wheels of carts and stands prior to entry in the surgical theatre.
 - All bins should be removed from theatre (no used yellow bins should remain in the theatre over night).
 - Doors should be kept closed at all times.
 - Once a week In empty.
 - Scrub walls till body level.
 - Clean & disinfect drains in theatre and hall. Clean table piston.
 - Remove dust from tablets and lights.
 - Management of surgical patients with contagious diseases
 - Veterinarians and residents assigned to surgical cases are responsible for identifying and communicating when patients are known or suspected to have contagious diseases.
 - Procedures on these cases should be scheduled for the end of the day or performed in the isolation unit whenever possible. (See paragraph 2.4.2)
 - Equine colic.
 - Because of documented increased risk of shedding Salmonella, colic patients must be hospitalized separately from other patients and are managed using more stringent biosecurity precautions.
 - All colic patients are hospitalized in the internal disease boxes, unless they meet criteria for hospitalization in the Barrier-nursing Units (class 3) or Isolation Unit (class 4).
 - Attire and precautions.
 - The following rules should be implied by all personnel working with colic patients:
 - Wear clean protective outer garment as in the rest of the Large Animal Clinic.
 - Pass through a footbath when entering and leaving the Unit
 - Personnel should not enter stalls unless contact with patients is required. Primary veterinarians may at their discretion take students into a stall for teaching purposes, but this should be minimized as much as possible.
 - Hands should be washed or hand sanitizer should be used before and after handling every patient.

Guidelines for managing equine colic patients

- All pre-operative and/or post-operative colic cases and acute and chronic/recurrent medical colic cases will be stalled in the colic aisle.
 - Salmonella-positive and those suspected of being infected with Salmonella must be housed in the Isolation Facility. Diarrhea cases will be housed in a barrier-nursing unit (class 3; without fever or leucopenia, not hemorrhagic) or isolation unit (class 4; with fever or leucopenia; or hemorrhagic) (cfr algorithm 2).
 - Colic equipment and materials.
 - If the patient has a naso-gastric tube placed to allow for reflux, all necessary equipment (including pump, tube, bucket and dose syringe if needed) should be brought down to the colic aisle and put stall side with the patient.

- When the patient does not need the equipment anymore, it should be thoroughly cleaned with soap and water, and then placed into the disinfecting barrel.
- Walking and grazing areas for colic horse
- If the horse defecates while on a walk, faeces should be picked up and thrown into the dumpster.

Deceased patients

- Breakdown of patient environment.
- Technical personnel should note the responsible veterinarian if a patient is deceased.
- Stalls used to house patients of class I and 2 should be cleaned and disinfected (remove manure and wet bedding) before a new patient enters the stall.
- Stalls used to house patients with known or suspected contagious agents (class 3 and 4) should be marked with a sign: "TO BE DISINFECTED". No other patient is allowed to enter these stalls before cleaning and disinfection.
- All personnel is responsible for breaking down items around stall and ensuring that they are discarded, filed, or cleaned and disinfected (fluids, brushes, barrier gowns, etc).
- Storage of patient body.
- If the patient is deceased or euthanized in its stall, the carcasse should be removed from the stall as soon as possible.
- If the patient has been euthanized in a recovery box, the patient should be removed from the recovery box as soon as possible. The recovery box should be cleaned and disinfected afterwards.
- During the process of euthanasia and removal of the carcass from the stall / recovery box, the unit should be closed to limit the view for passing owners.
- The horse's carcass should be taken to the LUHS VA Pathology center Autopsy Department.
- During week days and working hours: immediate transport of the carcass to the LUHS VA Pathology center.
- During evenings or weekends: the following morning transport of the carcass to the LUHS VA Pathology center.
- After transport of a carcass, the equipment should be thoroughly cleaned and disinfected.

CHAPTER 6. LARGE ANIMAL AMBULANCE BIOSECURITY SOP

6.1. General requirements for attire of the large animal ambulance

- Large animal ambulance uses dedicated attire in order to decrease the risk of carrying infectious agents home where people or animals may be exposed.
- All personnel are required to wear clean professional attire, clean protective outer garments, and clean, appropriate footwear at all times when working in outpatient areas of the Large animal ambulance.
- This attire should be appropriate to the job at hand (e.g. coveralls or blouses and heavy boots or shoes are probably the most appropriate footwear and protective outer garments when working with large animal patients performing tasks which are accompanied by a high risk of being soiled with infectious materials).
- Students: coverall with boots. If they do not wear correct attire they will be expelled from the ambulance.
- Residents: special costume.
- Veterinarians: special blue costume.
- Technical personnel: special costume.
- Footwear: it is recommended that all personnel wear sturdy boots or shoes at all times while working in the Large Animal Clinic. This type of footwear is easier to clean and disinfect compared to footwear constructed of porous materials (e.g. running shoes), and helps to protect against injury when working around large animals.
- Ambulance personnel must be willing to disinfect footwear while working. Water-impervious footwear is strongly recommended to limit damage to footwear that will eventually occur after exposure to footbath solutions.

6.2. General cleanliness and hygiene

- Maintaining ambulance cleanliness and appropriate personal hygiene are responsibilities of all personnel working in the large animal ambulance.
- It is recommended that hands are washed with soap or cleaned with an alcohol-based hand sanitizer prior to, and after examining each patient.
- Hand washing is mandatory before and after the clinical examination of the patient.
- Clean exam gloves should be worn when handling patients.

6.3. Disinfection protocol for instruments and equipment

- All instruments, equipment or other objects, including stomach tubes, floats, mouth speculums, endoscopes, grooming tools, clipper blades, etc. must be cleaned and sterilized or disinfected between uses on different patients.
- Materials that are sterilized between uses (Instruments and equipment such as surgical instruments) must be cleaned with soap and water and disinfected with a 0.5% chlorhexidine solution or alcohol after use on patients. The equipment should then be returned to procedures room for sterilization.
- Stethoscopes:
 - Cleaning: wiping or washing with soap to remove gross material. Disinfection: wipes of alcohol, chlorhexidine or hand sanitizer solution available throughout the ambulance.
 - Stethoscopes owned by personnel may be used on animals in the non-contagious areas, but must be regularly cleaned and disinfected (at the beginning and at the end of the day is recommended). Immediate cleaning and disinfection is required when stethoscopes are visibly soiled. Individual, owned stethoscopes are assigned for use with each high risk contagious patient (class 4). These are cleaned and disinfected after each use.

- Thermometers:
- Cleaning: wiping or washing with soap to remove gross faecal material. Disinfection: wipes of alcohol, chlorhexidine or hand sanitizer solution available throughout the clinic or soaking in alcohol or chlorhexidine.
- Glass thermometers are not to be used in the large animal ambulance in order to decrease risks associated with broken thermometers and mercury exposures. Electronic thermometers are used instead. Electronic thermometers should regularly be cleaned and disinfected (at the beginning and at the end of the day is recommended).

6.4. Patient records and medications

- Ambulance patient- animal registration card which includes information about the owner of the patient, signalment of the patient. The patient immediately must be registered to the computer patient registration system GYKIS. All records about the treatment of the patient must be entered to the computer program GYKIS. This program is accessible to the all personnel and students (except personal information about the owners of the animals).
- Medication and other materials for a certain clinical case must be kept in the procedure room locked. On the shelves should be written for example: ointments, liniments etc.

6.5. Managing patients with suspected contagious disease

- Special precautions are required when managing patients known or suspected to be infected with contagious disease agents. Conditions of special concern because of the potential for nosocomial transmission include patients with acute gastrointestinal disorders (e.g. diarrhea), acute respiratory tract infections, acute neurologic diseases.

6.6. Exclusion criteria for animal examination in ambulance

- When animals are sick with diseases, which are contagious to other animals. When there is quarantine in certain area.
- If the risks for personnel to become infected with the disease.
- Only veterinarians (not residents) are allowed to take the decision to refuse an animal.
- The refusal criteria for horses are the following:
 - Suspicion of viral respiratory diseases (cough, nasal discharge, fever for < 2 weeks) without the horse's life being in danger.
 - Suspicion of strangles (swollen submandibular lymphnodes, nasal discharge, cough, fever or suspicion of guttural pouch empyema and/or chondroids in the guttural pouches) without the horse's life being in danger or without surgical necessity.
 - Suspicion of the neurological form of EHV 1 (acute ataxia with presence or history of fever, possibly other cases) without the horse's life being in danger.
 - Abortion without the horse's life being in danger (this concerns the mare, the placenta and the foetus; however the placenta and the foetus can be admitted to the autopsy department).
- The refusal criteria for cattle are the following:
 - When animal is suspected with tuberculosis or brucellosis.
 - Unknown reason abortion when there are several cases in the same farm.
 - When lymphadenitis caseous is suspected (abscessation of in lymph nodes).

CHAPTER 7. PATHOLOGY CENTER BIOSECURITY SOP

7.1. Necropsy area biosecurity

- The personnel and students of the Pathology Centre must follow to the general requirements specified in Chapter 1 of this document and the work safety regulations approved by the Centre.
 - In the Pathology personnel and students are prohibited from eating, drinking, storing food or smoking in necropsy area, training laboratories and their auxiliary rooms.
 - It is not recommended to wear jewellery, including wedding rings, watches, artificial nails, and to carry other small things, except the means directly related for work in the training laboratories.
 - Infection risks are common in the autopsy site. Students and Faculty personnel expect protection from hazardous infections in their working practice. The aim is to reduce the risk as far as feasible within the resources available whilst teaching the students and maintaining a service to clinicians, practitioners and owners.
 - If a significant human infection risk is encountered, the service for prophylaxis, treatment and consultation must sought at a hospital.
 - If reportable animal diseases (Chapter 1, paragraph1.5.2.) are suspected or confirmed the State Food and Veterinary Service must be informed immediately and all measures to stop spread of such disease are implemented.
 - Infections in the autopsy room can be acquired by these five routes: percutaneous inoculation, inhalation, ingestion, skin contamination without inoculation, contamination of mucosal surfaces (eye, mouth, nose).
 - The main practical concerns during food or companion animal autopsies are rabies virus, *Mycobacterium spp*, and prions, *Salmonella*, *Clostridium*. For autopsies of monkeys, the main concerns are blood-borne viruses and inhaled pathogens such as *Mycobacterium tuberculosis*.
 - Hazard group 2 pathogens: the most likely route of transmission of these biological agents in the post-mortem room is by hand to mouth. Inoculation is also possible, but reduced to a minimum by standard modern universal precautions. Regarding autopsies on animals with granulomatous lesions, with the low risk of inhaled infection during the procedure, wearing a mask appropriate for a tuberculosis/tularaemia autopsy provides sufficient protection and additional antibiotic prophylaxis can be considered on a case-by-case basis.
 - Hazard group 3 human pathogens: these are biological agents that can cause severe human disease and presents a serious hazard to autopsy attendees; it may present a risk of spreading to the community. In practice, the only situations generating concerns of this type are autopsies of primates. In these cases, students do not have access to the autopsy suite. The autopsies and sampling procedures are exclusively made by skilled staff personnel wearing masks and eye protection.
 - Hazard group 4 animal pathogens: these are biological agents that can cause economically devastating epidemics due to restriction of trade from affected countries and stamping out procedures in affected areas. Whenever a suspect case is identified, students and faculty personnel attending the autopsy are required to avoid any contact with food animals, farms/farmers for a week.
 - Hazard group 4 human pathogens: this group includes the viral haemorrhagic fevers (VHF), for which there are no current vaccines: Marburg, Ebola, Lassa fever, Congo-Crimean haemorrhagic fever, and Nipah virus. These pathogens are not met in Lithuania.

7.2. Standard procedures during autopsies.

• It is important to comply the safety and hygiene requirements during all autopsy procedures. Students and personnel of Pathology Centre are required to wear during the autopsies: water-resistant disposable gown that completely covers the arms, chest and legs, protective gloves, rubber boots with reinforced toe-caps, if necessary, to use facemask to protect mouth and nose from direct splash contamination and eye protection whenever a power bone saw is used.

It is important, that students and personnel of Pathology Centre are aware of the fact that they have the duty to minimize risk to those who are involved in handling a carcass during and after autopsy.

• At the Centre using markings, letterings, painting of red lines on the floor or railings the following zones are selected:

- Changing room (with showers, toilets, sinks).
- Autopsy hall.
- Working area (for example tables).
- Disinfection area.
- The refrigerator room for temporarily storage of animal carcasses until autopsy.
- The freezer room for storing of animal carcasses and waste of animal origin after autopsy.
- When entering the premises of the Pathology Centre, there is a marked road leading to changing rooms where students leave their personal belongings in cabinets and dress themselves, use shoe covers or rubber boots.
- The "Clean" zone is separated from the "dirty" zone (autopsy hall, refrigerator room for temporarily storage of animal carcasses and the freezer room for storing of animal carcasses) by marking of floor with red line. General code for floor marking is applied in the Centre.
- There is a marked path to the main room of the Pathology Centre - the autopsy hall. Disinfection mats are place before entering the autopsy rooms.
- There are marked working area where disposable gloves and disinfected dissection tools and equipment are available.
- At the end of the practical work in the autopsy hall, students leave dissection equipment and tools, wash their boots, dispose their gloves and other disposable clothes to the yellow waste bag/container, wash and disinfect their hands. Return in the changing room where students wash and if necessary, take a shower.
- The Centre staff and students, who visit autopsy rooms, must strictly follow the "clean" and "dirty" areas and cannot cross it, except in case of emergency (e.g. fire).
- The staff of the FVM, students, other persons are restricted to access autopsy facilities if they are not directly involved in the Pathology Centre. They can enter the Pathology Centre only with a permission from the responsible person of the Centre.

7.4. Cleaning and disinfection

- Autopsy rooms (floors, tables, tools, equipment, strollers) – are washed and disinfected each day after autopsy. Doors, cabinets – are washed and disinfected once a week or more often, if necessary, walls - once a month or more frequently, if necessary, windows - once a quarter, or more often, if necessary.
- The refrigeration rooms are washed and disinfected after the removal of animal waste to the processing enterprise.
- Only approved disinfectants are used in the premises. A record of washing and disinfection of the premises are completed.
- Waterproof transportation containers are used.

- Transportation of carcass to the Centre is achieved via a waterproof transportation vehicle, containers or plastic bags.
- The delivered animal carcass must be put down at the reception room - the refrigerator in which it is stored before the autopsy.
- At the autopsy hall used moving transport, their tires, containers are washed with hot water and disinfected with the cleaner with high pressure.

CHAPTER 8. VETERINARY PATHOBIOLOGY DEPARTMENT BIOSECURITY SOP

8.1. General requirements

- Students and personnel of the Veterinary Pathobiology Department (VPD) must adhere to the general biological security requirements noted in the Chapter 1 of this document and the work safety rules approved at the department.

- VPD consists of the Microbiology, Parasitology, Virology laboratories for teaching of students and their auxiliary facilities, and the Laboratory for Parasitology Research. The activities in these facilities involve working with biological material. Pet animals are not allowed in these facilities, except in the case of the animal being used for the study process, and the risk for the animals is suitably assessed and evaluated. There are special signs on the doors where pet animals are not allowed.

- Personnel and students are not allowed to leave with the lab coats and single use gloves from the VPD Microbiology, Virology and Parasitology laboratories and their auxiliary facilities, and the Laboratory for Parasitology Research.

- It is forbidden for students to bring biological samples for study process in Microbiology, Virology, Parasitology laboratories, if it has not been arranged with the supervising teachers.

- It is not allowed to bring, keep or eat food, chew chewing gum in VPD Microbiology, Virology, Parasitology laboratories and their auxiliary facilities.

- The use of mobile phones in the educational laboratories is forbidden. They are not allowed to be kept on the desk or other places open to view.

- While in the VPD educational laboratories it is not recommended to wear jewellery or accessories including rings and wrist watches, also it is not recommended to have any other small objects with you except for the ones which are directly associated with the work being done.

- All manipulations of the samples for virology and bacteriology research must be done according to the requirements of antiseptic, preferably in the class II biosafety cabinets. In the Virology and Microbiology educational laboratories student for practice must use only the microorganism strains which are not dangerous to human health.

- All microorganism isolates used in student education which are kept in air-tight plastic test tubes or in ampules must have identification numbers and other necessary information. Entry in to the facility in which the microorganisms are kept is controlled by the lab manager or the person they authorized.

8.2. The principles of safety during VPD student practice work

- In every VPD laboratory, before teaching starts, the students are introduced to safety, biosecurity and biosafety rules which must be followed during the laboratory work, the possible threats and the risk factors of infectious diseases. They sign in the journal of safe work and biosafety.

- For practical work in the laboratories students must bring a clean white lab coat. While working in the Microbiology, Virology, Parasitology laboratories it is required to wear a white lab coat and to wear gloves, which are provided on place. Protective masks are provided if necessary.

- It is forbidden for students to open inoculated Petri dishes, to touch the microorganism colonies or fecal specimens with their hands or act in any other way which might cause a risk of infectious disease.

- All disposable equipment which had contact with biological samples possibly contaminated with infectious disease agents, must be disposed of into the yellow garbage bags. Multiple use implements are washed and disinfected or autoclaved. Waste for which no

restrictions is applied should be put into black colour waste bags; non-infectious waste for which restrictions are applied and should be put into green colour waste bags. The work places are cleaned with disinfectant solutions.

- Students in VPD must strictly maintain personal hygiene. After finishing work in the educational laboratories, it is mandatory to thoroughly wash hands with water and soap, or if handling biological samples (faeces or blood) use hand sanitiser.

- Single use disposable paper towels are used to wipe the hands. Work with single use gloves is not an alternative to washing hands.

- Tested organs, samples of faeces, meat infected with trichinella and other biological specimens after testing should be sealed into impermeable plastic bags and brought to the Pathology Centre for waste disposal. The work place and implements should be cleaned with disinfecting solutions.

CHAPTER 9. VIVARIUM BIOSECURITY SOP

9.1. General requirements

- Students and personnel at the Vivarium must adhere to the general biological security requirements noted in the Chapter 1 of this document and the work safety rules approved at the unit.
- All visitors must follow the instructions of the personnel. In the Vivarium only, healthy animals are kept. All animals are inspected routinely by veterinary personnel of Vivarium.
- Visitors are required to visit the Vivarium only with clean clothes.
- All the necessary personal protective equipment is provided on place. It is forbidden to bring personal protective equipment to the Vivarium.
- Visitors, personnel and students are required to wash and disinfect hands before and after work in Vivarium.
- It is not allowed to bring, keep or consume food, chew chewing gum and smoke in the Vivarium facilities.

CHAPTER 10. MICROBIOLOGY AND VIROLOGY INSTITUTE BIOSECURITY SOP

- The personnel and students of the Microbiology and Virology Institute (MVI) should follow general recommendations set in Chapter 1 of this Biosecurity SOP.
- Eating, drinking, and smoking in the MVI laboratories and their ancillary facilities are strictly forbidden. Facilities of the MVI should be used only for the purposes it is designed.
- MVI personnel is trained and has special skills to work with pathological materials and comply with biosecurity requirements and is responsible for the training of a new personnel and students, and take care of the facility maintenance.
- The entry into the MVI is controlled by electronic locks and is supervised by the responsible MVI personnel.
- All MVI laboratories are equipped with the necessary items, equipment and personal protective equipment. It is forbidden to bring into laboratory personal protective equipment or other items from other laboratories. Items and equipment for work are assigned to a particular workplace.
- Before entering into laboratory, people are warned about biological hazards and trained to react properly.
- A responsible laboratory member should introduce personnel and students with biosecurity and biological safety instructions and procedures for entering and exit laboratory facilities.
- Only laboratory dedicated clothing is used in laboratory facilities. Clothes should be changed in the dressing room. Before leaving the laboratory or going to the shower area, the personnel and the students leave the lab clothing in the interior changing room.
- The MVI personnel and students that handle biological samples are encouraged to maintain short fingernails and not to wear jewellery on their hands in order to minimize contamination and improve the cleanliness of hands.
- Safe working principles should be maintained when working with sharp items (needles, syringes, capillaries, pipettes, scalpels). Used sharp items should be carefully placed in stab-resistant container. Non-disposable sharp items should be placed in stab resistant containers before and after and during sterilisation. Sharp items (needles and syringes) could be used unless other alternatives does not exist. Laboratory glassware should be replaced with plasticware whenever it is possible.
- Biological waste is decontaminated by sterilisation (autoclave). After decontamination waste is disposed as noninfected veterinary medicine waste (green garbage bags). Biological waste could be disposed to the yellow bags/containers as infected.
- The laboratory equipment is disinfected after work if needed and especially after spillage or other accidents when risk of infectious disease is present. All laboratory equipment is sterilised when job with infectious agent is finished. All laboratory work places are sterilised before and immediately after the job is done. In case laboratory equipment is necessary to move outside the laboratory for technical maintenance/repair, equipment or parts of it are decontaminated. All decontamination carried out by approved biocides or UV lamps (black switch on the wall).
- Spilled probably infectious material is collected and cleaned by appropriately trained personnel in accordance with approved cleaning procedures. This cleaning procedure is described and posted at the laboratory workplaces.
- The MVI has a system for reporting an accident events in the laboratory environment which could impact of biological pollution or employee biosecurity violations (red switches).
- Samples (depending on the species or/and type) are stored in the refrigerators or freezers until they are ready for testing. All manipulations with samples for virologic - bacteriological

examination are carried out in the class I Microbiological Safety Cabinet, with aseptic requirements. Samples for bacteriological laboratory investigations are transmitted through a lift shaft directly to the Bacteriological Laboratory. All tested and analytical samples are stored for at least one year, or longer, in accordance with special instructions. Samples (depending on the type) are stored in the freezer at -20 °C or -80 °C (indicated in addition).

- In the Virology Research Laboratory, field virus samples and virus isolates are stored in deep freezers (-80 / -75 °C) in special plastic cryogenic tubes and boxes. Boxes are stored in a special stainless steel box holders. All virus isolates are stored in a freezer with a locking function. An access to the deep freezer is controlled by personnel in charge.

- In the Bacteriological Research Laboratory bacterial pathogens and control microorganisms are stored in deep freezers. Each bacterial strain has its own unique code. Microorganisms are grouped according to taxonomic positions and according to their purpose. Separate probiotic, control and field isolates are considered. Each group of isolates is stored in separate coloured boxes. Boxes are stored in a special stainless steel box holders. The bacterial strains are stored in a mixture of nutrient medium and glycerol in plastic cryogenic tubes. Pathogenic microorganisms are stored in a freezer with a locking function. The entrance to the deep freezer is controlled by the laboratory supervisor or his authorized person.

CHAPTER 11. PRACTICAL TRAINING AND TESTING CENTER BIOSECURITY SOP

11.1. General order

- In the LMSU Practical Training and Testing Centre (further PTTC) there are two cattle farms which are used for clinical training of VF students. Personnel and students should follow the general requirements of Biosecurity SOP chapter 1 and 6 when going to the farms. The PTTC farms are in the villages of Giraitė and Najieji Muniškiai and are in a distance of 5 -15 km from the FVM. The cattle farms used for educational and research purposes.

11.2. The identification, registering and movement of the animals

- The herds of the cattle have numbers of registration: Giraitė 10740300100 and Muniškiai 10740300045. Each calf born is identified with two ear tags not later than 7 days after birth.
- All animals are registered, inventoried and has their identification document. This documentation is controlled by the system of animal registry - as are all commercial cattle herds in Lithuania.
- The movement of cattle is controlled, including their movement when regrouping a herd, leaving the herd, transport to the slaughterhouse or in the event of death or culling.
- A new animal is held in a quarantine facility before being incorporated in to the herd. According to the documents and viewing of the animal, the identity is checked and the necessary tests are performed, depending on the epidemiological situation (eg.: clinical test, tuberculin test, testing of blood samples for enzootic bovine leucosis, brucellosis and others)
- Animals are included to the herds only if they are coming from brucellosis, tuberculosis and enzootic bovine leucosis free herds. An animal can only be incorporated in to a herd when the laboratory test results are proven to be negative.
- If an animal dies, the carcass is be housed in a separate facility until a post mortem examination is completed. Afterwards the carcass is properly utilised by certified contractor (UAB Rietavas veterinarine sanitarija, et present).

11.3. General hygiene

- PTTC employees must wear specially for the work on these farms designated clothes: suits, jackets, and boots which are to be worn only in the workplace in order to accomplish the work tasks. These clothes are to be worn only in the territory of the EF and they must be regularly washed.
- The employees must regularly wash their hands according to the written procedures.
- If the PTTC employees must visit other farms, they use different specialised purpose clothes (suits, jackets, boots)
- Eating and drinking is allowed only in the designated parts of the farms.
- Students must wear specialised purpose clothes, to be worn only in the territory of the PTTC.
- It is forbidden to wear different specialised purpose clothes which were used in other farms, the FVM units and laboratories. The specialised clothes worn in the PTTC are only ones to be used in the territory and are kept in lockers at farm.
- For clinical practice students must use only clean disinfected thermometers and stethoscopes. These devices must be regularly cleaned, washed and disinfected.
- Students wear specialised boots and overshoes, which they wear on top of their rubber boots. This specialised footwear is collected in a container after every visit for washing and disinfecting.

- The disinfectant solutions in footbaths and footmats must be changed regularly or when it is soiled. The specialised boots must be water tight, and the feet must be entirely submerged in to the disinfectant liquid.
- It is mandatory to wash and disinfect hands in accordance to the written procedures before and after work.

CHAPTER 12. DEPARTMENT OF ANIMAL BREEDING SOP

12.1. General requirements

- The personnel and students of Department of Animal Breeding (DAB) must comply with the general requirements of biosafety and biosecurity set out in Chapter 1 of Biosafety and biosecurity standard operating procedures of Veterinary Academy.
- Personnel, students, PhD students, must follow the DAB Biosafety and Biosecurity Rules when going entering to farms for study or research purposes.
- After the start of work at DAB and the first time before visit to the farm or other places of practical skills, students are instructed about the rules of safe work and biosafety and biosecurity on the farm and signs in the journal of a work safety and biosecurity.
- All personnel are instructed and signs that were introduced to a work safety, biosafety and biosecurity instructions, when working in the Laboratory of Animal Breeding Department.
- If zoonoses are detected or suspected on a farm, responsible staff must inform accompanying responsible staff to prevent students from coming into contact with infected objects: animals, secretions, excreta, etc. If necessary, always advise students to seek medical help if they are suspected of being at risk of infectious disease.
- Waste is managed in accordance with Chapter One of the Standard Operating Procedures for Biosafety and Biosafety of the Veterinary Academy - 1.2.8. Disposal of waste.

12.2. The principles of safety during student practical work

- Before starting work in the DAB laboratory students listen to the briefing about safe behaviour, biosecurity, and potential threats and risks that may be in laboratory during the work and sign in the journal of a work safety and biosecurity. Students must strictly observe personal hygiene, described in the Veterinary Academy Biosafety and Biosecurity Standard Operating Procedures - Chapter 1.2. General rules.
- Hand washing. Entering and leaving the DAB Laboratory of Animal Breeding Value Research and Selection Laboratory, farm / food company, using the toilet or getting dirty, hands should be thoroughly washed with water and antibacterial soap or cleaned with antibacterial wipes.
- Disposable paper towels are used for hand wiping. Students are provided with disposable gloves when needed, but this is not an alternative to hand washing. In case of scratches or wounds on the hands, disposable gloves should be worn.
- Student clothing. Students must wear lab coats at the DAB Laboratory. If necessary, students are provided with disposable gloves. Students must wear clean labcoats or working clothes at the farm / slaughterhouse / food company. Students must wear disposable caps, protective sleeves, boots or clean rubber boots, disposable gloves, aprons and helmets, if needed, when entering the area of industrial premises.
- Disposable clothes for students which are entering farms / slaughterhouses / food companies during the exercise are provided by the DAB.

12.3. Student movement in livestock and poultry slaughterhouse and meat production company

- To avoid the risk of cross-contamination, students begin their work in a slaughterhouse from a clean area, and finishes in the unclean.

- Upon arrival at the slaughterhouse, students are sent to the staff changing rooms, where they change into the clothing mentioned in the section and leave their personal belongings and jewellery in the lockers specially designed for students.
- Students begin their inspection of slaughter lines starting with a clean area and ending with a dirty one.
 - The visit shall end with the storage of the animals (birds) prior to slaughter.
 - Students do not perform inspection of carcasses, actually only gets to know the practical experience of a visit to a farm or company.
 - While visiting the meat dissection unit, students enter it through the clean slaughterhouse area.
 - After leaving the slaughterhouse or meat production unit, all disposable clothing is discarded in special containers.

Student movement on livestock farms

- Students wear special purpose clothing that is used only within the farm.
- It is forbidden to wear other special clothing that has been used in other departments and laboratories of the Veterinary Academy or the Faculty of Animal Sciences.
 - Special-purpose shoes must be completely waterproof and the feet must be completely immersed in disinfectant of disinfectant mats according to the Chapter One of the Standard Operating Procedures for Biosafety and Biosafety of the Veterinary Academy - 1.3.3 Footmats and footbaths.
 - For students, before starting and finishing their work, is required mandatory hand washing and disinfection according to the procedures described.

CHAPTER 13. DEPARTMENT OF ANIMAL NUTRITION SOP

13.1. General requirements

- The Department of Animal Nutrition (DAN) employees and students during their work must follow the general biosecurity and biosafety requirements outlined in Chapter 1 of VA SOP.
- Employees, students, PhD students, must follow DAN biosecurity and biosafety rules when traveling to farms for study or research purposes.
 - When first starting practical work at DAN, and for the first time going to a farm or in other practical skill places, students are informed instructed for safe work and biosecurity on the farm and sign in a work safety and biosecurity journal. Employees also sign in the journals after they have been introduced to safety and biosecurity instructions.
 - When working in the Animal Nutrition and Research Laboratory, employees and students must adhere to occupational safety and biosafety regulations. Animals shall not be examined in the Animal Nutrition and Research Laboratory except for products processed from experimental insects grown in other laboratories. The risk of infectious agents in the laboratory is minimal. However, the risk is assessed in each case by taking additional measures.
 - If zoonoses are detected or suspected on the farm, responsible staff must inform accompanying employees to prevent students from coming into contact with contaminated objects such as animals, secretions, etc. If necessary, always recommend that students seek medical attention if they are suspected of being at risk of infectious disease.

13.2. Principles of student safety during laboratory work

- Before starting laboratory work at the DAN Laboratory, students will receive an introduction on safe behavior, biosecurity, and potential threats and risk factors during lab work, and sign in the Occupational Safety and Biosafety journals.

Personal hygiene

- Students are strictly required to adhere to the personal hygiene described in Chapter One, Section 1.2 of the Veterinary Academy's Biosafety and Biosecurity Standard Operating Procedures.
 - Hand washing. When entering and leaving the Animal Nutrition Research Laboratory, Farm/Food Facility, after using a bathroom or getting soiled, wash hands thoroughly with water and anti-bacterial soap, or cleanse with antibacterial wipes.
 - Disposable paper towels are used for hand wiping. Students are provided with disposable gloves when needed, but this is not an alternative to hand washing. In case of scratches or wounds on the hands, disposable gloves are necessary.
 - Student outfits. In the Animal Nutrition Research Laboratory, students are required to wear cotton lab coats. If necessary, students are provided with disposable gloves.
 - Students must wear clean lab coats at the farm/slaughterhouse/food company. On lab coats, students also must wear disposable gowns, hats, protective sleeves, boot protections or clean rubber boots, disposable gloves, aprons and helmets when entering the production area.
 - DAN provides disposable clothing for students going to slaughterhouses during the practices.

13.3 Student movement in livestock and poultry slaughterhouse and meat production company

- To avoid the risk of cross-contamination, students begin their excursion in a slaughterhouse from a clean area and end it in a dirty area.

- Upon arrival at the slaughterhouse, students are sent to the staff changing rooms, where they change into the clothing mentioned in the section and leave their personal belongings and jewellery in the lockers specially designed for students.
- Students begin their inspection of slaughter lines starting with a clean area and ending with a dirty one.
- The visit ends with the area, where animals (birds) are kept before slaughtering.
- When visiting the meat cutting unit, students enter it through the clean slaughterhouse area.
- After leaving the slaughterhouse or meat production unit, all disposable clothing needs to be discarded in special containers.

Student movement in livestock farms

- Students come to farms to acquire practical work skills.
- Students wear special purpose clothing that is used exclusively within the farm.
- It is forbidden to wear other special clothing that has been used in other departments and laboratories of the Faculty of Veterinary or Faculty of Animal Sciences. In repetitive work, these garments are used and stored in special cabinets.
- Students have to wear special purpose shoes or shoe protections, that they will put on their shoes. These special purpose boots are collected in a special container and disposed properly after each visit.
- Disinfectant for disinfection mats and baths should be replaced when there is too much litter or dirt. Special purpose shoes must be completely waterproof and the feet must be completely immersed in disinfectant, according to Chapter 1.3.3 of the Veterinary Academy's Standard Operating Procedures for Biosafety and Biosecurity.
- Students are required to wash and disinfect hands prior to commencing and after completing their work in accordance with the procedures described.

Washing and disinfecting of tools

- The Animal Nutrition Research Laboratory collects all study-related material (feed, reagents, samples, etc.) in special labeled bags and special containers.
- Dispose of waste in accordance with the Veterinary Academy Biosafety and Biosecurity Standard Operating Procedures, Chapter One - 1.2.8 Waste Management Requirements.
- Workplaces shall be cleaned with disinfectant solutions according to Chapter One, 1.3 General Requirements for Cleaning and Disinfection, of the Veterinary Academy's Standard Operating Procedures for Biosafety and Biosecurity.

CHAPTER 14. INSTITUTE OF ANIMAL REARING TECHNOLOGIES SOP

14.1. General requirements

- During work personal and students of Institute of Animal Rearing Technologies (IART) must comply with the general requirements of biosafety and biosecurity set out in the Chapter 1 of the SOP.
- The SOP requirements must be met to avoid contamination of the environment with biological materials, animal products and their waste.
- Employees, students, PhD students traveling to farms, slaughterhouses or animal processing plants for study or research purposes must comply with IART biosecurity rules.
- After starting work at IART, and for the first time outing to farm, slaughterhouse, animal origin products processing plant, students are informed about work safety and biosecurity instructions and sign up for a work safety and biosecurity journals. Employees also sign that they have been instructed with work safety and biosecurity instructions. When working at IART laboratories, personnel and students adhere to occupational work safety and biosafety regulations.
- Students who go to a slaughterhouse or animal origin products processing plant during practical work sign in the Biosafety Journal before leaving and inform about their health status. A student suspected or suffering from an infectious disease presenting a risk of contamination of products must inform the responsible lecturer and cannot go to the slaughterhouse or animal origin products processing plant at that time.
- In the case of farm or slaughterhouse zoonotic diseases, responsible personnel must inform accompanying lecturer to prevent students from coming into contact with contaminated objects such as animals, carcasses, tissues, secretions, etc. If necessary, always recommend that students seek medical attention if they are suspected of being at risk of infectious disease.

14.2 Acceptance of biological and animal origin materials

- The delivered biological and/or animal material shall be accompanied by a document containing the following information: the location/source of the biological and/or animal origin materials, the purpose of the study, the supplier's contact details, name and signature.
- The person accepting biological and/or animal origin materials must wear appropriate clothing such as a lab coat and gloves.
- Biological and/or animal origin materials received to the laboratory must be recorded in a special journal.

14.3 Storage, handling and disposal of biological and animal origin materials

- If the research on the biological and/or animal origin materials received is carried out shortly after their delivery, they shall be temporarily transferred to refrigerator until the research begins. Where studies are scheduled for a later period, depending on the nature of the study, the animal material shall be transferred to a freezer (-18°C) or a deep-freezer (-80°C) for storage. Refrigerators and freezers are regularly cleaned and disinfected.
- For the intended research, sample preparation using biological and/or animal origin materials is carried out on a specially equipped laboratory table and working with hazardous chemicals - in a fume hood.
- You cannot leave the laboratory without taking off work clothes and gloves, when working with biological and/or animal origin materials.
- After working with animal origin products, all reusable working equipment must be washed, disinfected and prepared for subsequent use.

- Once the morphological composition of the animals in the IART laboratories is determined, all the animal waste is placed in to special yellow bags, then in labeled cardboard boxes and after writing a cover letter all waste is moved to the collection point on VA campus. The instruments, dishes, laboratory tables used for these tests are thoroughly cleaned and disinfected.

- At IART laboratories, all disposable sharps (pipette tips, syringes, filters, etc.) used in research are collected in specially marked yellow sharp waste containers. Workplace and equipment are cleaned with disinfectant solutions.

14.4 Principles of student safety during laboratory and practical work

- During practical work, students must follow the safe work requirements when working with meat, eggs and other animal origin products, requirements are introduced by lecturer during the first practical work. During these disciplines, lecturers pay particular attention to compliance with occupational safety and biosecurity requirements.

- During laboratory and practical work in IART laboratories drinking and eating are prohibited.

Student personal hygiene

- Students must strictly observe personal hygiene.
- Hand washing. When entering and leaving the IART laboratories, slaughterhouse and animal origin products processing plant, wash hands thoroughly with water and anti-bacterial soap when using the toilet or after being soiled.
- For hand wiping disposable paper towels are used. Students are provided with disposable gloves, but this is not an alternative to hand washing. Disposable gloves must be worn in case of scratches or wounds on the hands.

Student outfit

- At IART laboratories students must wear cotton lab coats. Students are provided with disposable gloves.

14.5 Student safety principles during visits to livestock farms, slaughterhouses and animal origin products processing plants

- The student visits at the slaughterhouse begin with a clean area and ends with a dirty one to avoid the risk of cross-contamination.

- Students must wear clean coats. When entering the production area, students must wear disposable coats, hats, protective sleeves, boots or clean rubber boots, if required disposable gloves, aprons, beard masks, helmets. Disposable coats for outing students are provided by the IART.

- Upon arrival at the slaughterhouse, students are sent to the staff changing rooms, where they change into the clothing mentioned in the section and leave their personal belongings and jewellery in the lockers specially designed for students.

- At the slaughterhouse and animal origin product processing plant, the hands are washed in wash basins controlled by path.

- During the visit, the students must not interfere with the operation of the slaughterhouse or animal origin product processing plant.

- After leaving the slaughterhouse or animal origin product processing plant, all disposable clothing is discarded in special containers.

- Students wear special purpose clothing that is used exclusively within the farm.

- Students must wear special purpose boots or disposable boots.

- Prior to starting and completing their work, students must wash and disinfect hands in accordance with the procedures described.

CHAPTER 15. INSTITUTE OF BIOLOGY SYSTEMS AND GENETIC RESEARCH SOP

15.1. General requirements

- Institute of biology systems and genetic research (IBSGR) staff and students must comply with the general biosecurity and biosecurity requirements set out in Chapter 1 of this SOP.
- The purpose of this document is to outline the biosafety requirements that must be met to avoid contamination of the environment with biological agents, pathogens and how the test material is to be accepted and genetic testing performed.
- The person working with the analyzed material before the work should be instructed and familiarized with occupational safety and health regulations, and biosafety requirements.
- After starting work at IBSGR Dr. K. Janusauskas Laboratory of Genetics, students introduced to safety and biosecurity instructions and sign in the work safety and biosecurity journal. Employees also sign that they have been introduced with safety and biosecurity instructions.
- In the event of an accident during work, the incident must be reported to the head of the structural unit, individuals those responsible for safety and health at work.
- Eating, drinking and smoking are prohibited in the laboratory.

15.2 Receiving, storing, handling and disposing of biological and animal materials

- The person receiving and / or handling the test material should wear appropriate clothing such as overall and gloves.
- The workstation must be prepared prior to receiving and processing the analyzed material: ventilation, tools, cleaning table.
- The sample is taken to the laboratory in a special container and properly labeled.
- The material shall be accompanied by a document listing the animal keeper, contacts, consignor, address, animal registration details, name of sample to be sent, method of sampling, time, purpose of sampling, names and signatures of consignor and keepers and others related notes.
- Depending on the nature of the specimen, accepted specimens are stored under certain conditions (for blood or tissue specimens - stored in the freezer; for oral epithelial or hair / bristle specimens - at room temperature).
- Sample residues are placed in a dedicated container, the contents of which will then be removed for disposal in accordance with LSMU VA procedures.
- All disposable sharps should be disposed of in special yellow, non-puncture containers with warning signs.
- Upon completion of sample collection and processing, all reusable work equipment should be disinfected, cleaned and prepared for subsequent use.
- All contaminated sharp disposable items should be disposed of in special yellow non-puncture containers with warning signs.
- Electrical equipment is disconnected from the mains after work, cleaned and, if necessary, disinfected.
- Biological waste in special yellow containers must be stored until disposal.
- The workstation should be prepared for the next application after receiving and processing the test substance: rinse with water and disinfectant solution, ventilate the premises (activate room ventilation).

- Upon completion of work, personal hygiene must be ensured after cleaning, disinfection and closure of the premises, i.e. wash hands and disinfect with a special antiseptic solution.