Biosecurity SOP applied to the Faculty of Veterinary Medicine of the Latvia University of Agriculture

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Responsible Administration: Faculty of Veterinary Medicine (FVM) of the Latvia University of Agriculture (LLU)

Responsible Services: All services of the FVM

Secretariat: Ad hoc Biosecurity Working Group of the FVM

Destination:

- The Rector of the LLU
- The Dean of the FVM
- Directors of institutes of the FVM
- The Director of the LLU Veterinary clinic
- All technical services of the FVM
- All members of the FVM
- All students of the FVM
- Workplace safety engineer of LLU
- The Director of LLU

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Used abbreviations:

BRRPZE: Bird, Rabbit, Rodent, Poultry, Zoological and Exotic
VH: LLU Veterinary Hospital
EU: European Union
FVS: Food and Veterinary Service
FVM: Faculty of Veterinary Medicine
HACCP: Hazard Analysis and Critical Control Points
ISO: International Organization for standardization
MRSA: Methicillin Resistant *Staphylococcus aureus*
OIE: Office international des Epizooties
sas: Equine isolation area
SOP: Standard Operating Policies and Procedures
VRE: Vancomycin Resistant *Entercocci*
WOAH: World Organisation for Animal Health

*: procedure immediately installed
**: installation of procedure at long term

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Chapter 1. GENERAL BIOSECURITY SOP

1. GENERAL BIOSECURITY STANDARD OPERATING POLICIES AND PROCEDURES (SOP) APPLICABLE IN ALL OF THE FVM

The international definition of biosecurity in the domain of animal health is quite broad: "*Biosecurity is the implementation of measures that reduce the risk of introduction (bioexclusion) and spread of disease agents (biocontainment); it requires the adoption of a set of attitudes and behaviours by people to reduce risk in all activities involving domestic, captive exotic and wild birds and their products"* (World Organisation for Animal Health, 2008).

FVM Philosophy Regarding Infection Prevention and Control: Biosecurity, infection prevention and control, and biosafety are essential functions at all health care and research facilities, including veterinary hospitals. 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 FVM are intended to reduce the risk of all nosocomial and zoonotic illness. Biosecurity and Infection prevention and control procedures used at the FVM are specifically tailored to address contagious disease threats as they are encountered in this unique environment.

Goals for the FVM Biosecurity Program

- Protect hospital personnel and students and clients from exposure to zoonotic disease agents.
- 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.
- Provide outreach to clients and other members of the public regarding the control and prevention of infectious and parasitic diseases in animals and humans.
- Protect operational capabilities at the FVM.

Infection Prevention and Control Principles: The following principles have guided the development of all procedures described in this document: 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, 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 FVM.
- ***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 for these guidelines and procedures.

1.1. DEFINITIONS

Antiseptic: A chemical that can be applied to epithelial surfaces 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 3 and 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.). NOTE: Care must be used with barrier garments in order to prevent contamination of

materials and hand contact surfaces.

Table I. 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)	< 4.0	< 0.6
Porcine	> 40.0°C	< 10	< 1
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	< 2.5
NW Camelid	> 39.5°C	< 7.5	< 4.6
Ovine	> 40.0°C	< 4.0	< 0.7

Contagious disease: A disease that is capable of being transmitted 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)
Disinfection: A process that is used to reduce the number of microorganisms to a level that is not harmful to health.
Hospital Dedicated Attire: Clothing, footwear, and outer garments that are worn only when working at the FVM or while on field service duty.
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 Entercocci.
Nosocomial Infection: A localized or systemic condition that results from an adverse reaction to the presence of an infectious agent or toxin and that was not present or incubating at the time of admission.
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, booties, 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: A disease that is caused by the invasion of the body by a microorganism(s) that 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 or laboratory tests.
Personnel: Refers to all people working in the FVM environment in any capacity, regardless of whether they are employees, visiting veterinarians, scientists, or volunteers.
Zoonosis: Disease that can be transferred between vertebrate animals and humans, or vice versa.

1.1.1. CLASSIFICATION OF RISK CATEGORIES

The specific diseases entering in the specific classes for each species are listed under the corresponding hospital service.
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 II. Classification of risk categories

CLASS 1: NORMAL HOUSING Infectious diseases caused by agents that have no likelihood of transmission to other 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 Subclass A: Resistant bacteria. Infections caused by bacteria with highly resistant antimicrobic susceptibility pattern, as determined by the external Bacteriology laboratory. Subclass B: Infectious diseases caused by agents with a moderate level of transmission and/or are potential human pathogens.
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 organisms.

- ***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 to prevent cross-contamination of different body sites
  - After handling laboratory specimens or cultures
  - After cleaning cages or stalls
  - Before meals, breaks, smoking or leaving work for the day
  - Before and after using the restroom
- ***Recommended technique for hand washing***:
  - Wet hands and forearms with warm water.
  - Add at least 3-5 ml (1-2 full pumps) of soap to palm of hand.
  - Lather up and vigorously scrub each side of the hands beyond the wrist for 10-30 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 for 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.

FVM 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.

1.2.2. BARRIER NURSING PRECAUTION

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

1.2.3. STANDARD ATTIRE

- Dedicating attire specifically for use in the FVM is the first line of defence against taking animal and human pathogens to your home environment.
- The FVM 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.
- All personnel and students working with patients or their environments are encouraged to wear hospital dedicated attire (clothing, footwear, and outer garments that are worn only when working at the FVM 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 hospital may not be appropriate for use in the large animal hospital. For staff and students working in the small animal hospitalization area, closed toe wear is demanded.
- All personnel and students working with patients or their environment and with long hair are encouraged to have their hair bonded.
- 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 hospitals and in FVM

teaching or scientific laboratories must have attire available that is appropriate for different areas of the hospital.

- Specific requirements regarding attire to be worn in various FVM sections are listed under the corresponding section.

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 FVM 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.
- If patients defecate outside their stall or cage (whether inside or outside a building), their faeces need 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.
- Also the environment around the cage or stall should be clean, tidy and neat. This means no medications or materials lying around, no bedding outside the stable or cage, no camping equipment from students. All members of staff and students are expected to arrange material once used and to leave the location in its original condition.
- Specific requirements regarding patient hygiene in various hospital sections are listed under the corresponding hospital service.

1.2.4.2. MINIMIZE UNNECESSARY CONTACT WITH PATIENTS

- Accomplishing the patient care and teaching mission of the FVM obviously requires intensive contact with multiple patients through routine activities. However, it is important to remember that this contact is 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 if possible with the use of cameras.
- In order to decrease the potential for inadvertent trafficking of infectious agents, personnel and students should also minimize, when possible, movements into areas used by different services. For example, when possible, medicine personnel and students should minimize visiting the surgery department, personnel and students assigned to the large animal hospital should avoid visiting the small animal department, etc.
- Personnel and students should avoid entering stalls/cages except when necessary (e.g., avoid entering stalls/cages during rounds) 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.

- It is permissible for food and beverages to be consumed and stored in:
  - The cafeteria of the FVM
  - The kitchen of each department
  - Technicians' and clinicians' offices
  - Outside of the clinical departments
- Because eating and drinking is allowed in these areas, 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 (e.g., equine laboratory, small animal hospitalisation kitchen) are not to be used to heat food intended for people.

1.2.5.1. Faculty cafeteria

- Faculty personnel and students are prohibited from wearing professional attire (e.g.: blue outfit, lab coat, boots, stethoscope etc.) in the Faculty cafeteria. All members of the cafeteria staff should make sure that students and personnel follow these hygienic rules. Companion animals are not allowed in the Faculty cafeteria.

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: temperature, in the dark), and should not be subjected to important temperature changes and/or humidity.
- Medication should be arranged in an orderly fashion (e.g. alphabetically/by class).
- Opened medication percipients should be stored in a separate room or place from closed stocked percipients.
- The storage room of medication should not be accessible to people not affiliated to the department, nor to children or to animals (hospitalised or other animals, including vermin).
- Opioid narcotics, ketamine and euthanasia drugs should be stored in a secured room or safe and only active 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.
- 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.

1.2.6.4. RETURN OF MEDICATIONS

- Discontinued or unneeded medications that cannot be returned to the Pharmacy must be disposed of in the yellow dustbins.

1.2.7. CLEANING SERVICE

1.2.7.1. GENERAL CONSIDERATIONS

- Dispose of sharps in special containers before returning laundry, equipment, or instruments to Central Supply.
- Do not put hangers, trash, hay or bedding, sharps, or animal body parts with bagged dirty laundry.
- Remove all animal tissue samples or body parts before returning surgical instruments or equipment to Central Supply.
- Buckets, pumps, and tubing need to be cleansed or rinsed. Any traces of oil must be removed before turning these items to Central Supply.
- Laundry will not wash any client owned items. They are often lost or damaged.
- Laundry will not wash any personal items. This includes blankets, student scrubs or student smocks.

1.2.8. DISPOSAL OF WASTE PRODUCTS

- A file on waste management is provided by each department.
- 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 outlined in this chapter. For specific waste products, please see under various hospital sections.
- General hospital waste from animals without any suspicion of involvement of a zoonotic or highly infectious agent ought to be discarded in ad hoc waste bags.
- Hospital waste from animals with a suspicion of involvement of a zoonotic or highly infectious agent ought to be discarded in yellow waste containers.
- All waste generated in the isolation ward needs to be discarded in yellow waste 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. Please follow procedures in this document for environmental disinfection and disposal of these materials.
- Biological samples or parts of dead animals (feathers, foot, skeleton, etc.) are not allowed to leave the hospital other than for medical and teaching purpose or destruction.

1.3. BASIC CLEANING AND DISINFECTION

- Personnel and students using disinfectants in the FVM 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 FVM.
- Organic material rapidly deactivates most disinfectants. The likelihood that organic material will

be present on surfaces should be considered when choosing a disinfectant.

- 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.
- Ensuring maximal decontamination requires that disinfectant solutions be applied at appropriate dilutions with an adequate contact time (often at least 10-15 min).
- 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.

1.3.1. PROPER CLEANING

1.3.1.1. 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 or high pressure washer is used to de-bulk material, care must be taken to minimize aerosolisation 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 ideally remain in contact with surfaces for 15 minutes, particularly 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 (e.g. Virkon S misting), only personnel trained and approved to wear and use the required personal protective equipment will be allowed access to areas being disinfected.

1.3.2. DISINFECTANTS

- A variety of disinfectants are used at the FVM 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 FVM. See also table III for a summary of detergents and disinfectants approved for use in the FVM.
- 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), Virocid, Virkon S, 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. FOOTBATHS AND FOOTMATS

- Infectious agents are frequently recovered from floor surfaces in the environment around infected animals.
- Footbaths or footmats solutions are changed every morning by students, technicians or veterinarians.
- Footbaths or footmats should be changed whenever they are judged to contain excessive amounts of bedding or dirt.
- Footmats or footbaths 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 (students, staff, or faculty 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 FVM 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 hospital areas will be discussed under their respective hospital areas. See also table III for a summary of detergents and disinfectants approved for use in the FVM.
- **Thermometers:**
  - Glass thermometers are not to be used in the FVM 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 and/or chlorhexidine wipes. 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 is required when thermometers are visibly soiled or after examination of a patient.
- **Endoscopes:**
  - Endoscopes should be cleaned and disinfected after each use with quaternary ammonium compounds or other disinfectant that is approved by manufacturer of endoscope.
  - 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 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 FVM

- Detergents and disinfectants approved for use at the FVM are selected from approved lists (according to the field activity) by the State Ltd "Latvian Environment, Geology and Meteorology Centre": http://www.meteo.lv/lapas/vide/kimiskas-vielas/biocidi/biocidi?id=995&nid=399

Table III. 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**
Chlorhexidine 0.05%-0.5% *Used for disinfection of items that contact skin or mucosal surfaces (e.g., muzzles, endotracheal tubes, etc)*	Rapidly Reduced	• Mycoplasmas: V. Effective • Mycobacteria: Variable • Gm+ Bacteria: V. Effective • Gm– Bacteria: V. Effective • Pseudomonas: Ltd. Activity • Rickettsiae: Ltd. Activity • Env. Viruses: Ltd. Activity • Chlamydiaceae: Ltd. Activity • Non-Env. Viruses: No Activity • Fungal Spores: Ltd. Activity • Bacterial Spores: No Activity • Cryptosporidia: No Activity • Prions: No Activity	• Broad antibacterial spectrum but limited in effectiveness against viruses. • Used to disinfect materials that patients closely contact (muzzels, endotracheal tubes, etc.) • Easily inactivated by soaps and detergents. • Low toxicity potential; Typical dilutions are non-irritating even when contacting mucosa. Inactivated by anionic detergents. • Bactericidal activity on skin is more rapid than many other compounds, including iodophors. • Residual effect on skin diminishes re- growth. • Only function at limited pH (5-7). • Toxic to fish, should not be discharged into the environment.
Povidone Iodine *Used for skin decontamination and disinfection (e.g. surgical preparation).*	Rapidly Reduced	• Mycoplasmas: V. Effective • Mycobacteria: Ltd. Activity • Gm+ Bacteria: Effective • Gm– Bacteria: Effective • Pseudomonas: Effective • Rickettsiae: Effective • Env. Viruses: Effective • Chlamydiaceae: Effective: • Non-Env. Viruses: Ltd. Activity • Fungal Spores: Effective • Bacterial Spores: Effective • Cryptosporidia: No Activity • Prions: No Activity	• Broad spectrum. • Very low toxicity potential; appropriately diluted solutions are suitable for use on tissues or on materials that contact skin or 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.
Alcohol (90% isopropanol or 70% denatured ethanol) *Used to disinfect materials that personne,students and patients closely contact (e.g. muzzles, instruments, hand sanitizing solutions, etc)*	Reduced	• Mycoplasmas: V. Effective • Mycobacteria: Effective • Gm+ Bacteria: V. Effective • Gm– Bacteria: V. Effective • Pseudomonas: Effective • Rickettsiae: Ltd. Activity • Env. Viruses: Effective • Chlamydiaceae: Ltd. Activity • Non-Env. Viruses: No Activity • Fungal Spores: Ltd. Activity • Bacterial Spores: No Activity • Cryptosporidia: No Activity • Prions: No Activity	• Broad spectrum. • Very low toxicity potential • Appropriately diluted solutions are suitable for use on tissues or on materials that contact skin or mucous membranes. • No residual activity on surfaces. • Fast acting • Leaves no residue. • Rapid evaporation. • Extremely flammable.

Sodium Hypochlorite (Bleach)* *Used for disinfection of clean surfaces, especially to augment the spectrum of activity of disinfectant.*	Rapidly Reduced	• Mycoplasmas: V. Effective • Mycobacteria: Effective • Gm+ Bacteria: Effective • Gm– Bacteria: Effective • Pseudomonas: Effective • Rickettsiae: Effective • Env. Viruses: Effective • Chlamydiaceae: Effective • Non-Env. Viruses: Effective at higher concentrations • Fungal Spores: Effective • Bacterial Spores: Effective • Cryptosporidia: No Activity • Prions: No Activity	• Broad spectrum. • Relatively low toxicity potential with standard dilutions, although higher concentrations or prolonged contact can result in irritation to mucous membranes or skin. • Can be used in the presence of anionic detergents; not affected by water hardness. • Inexpensive • Bacteriocidal activity is reduced with increasing pH, lower temperatures, and in the presence of ammonia and nitrogen, which is important to consider when urine is present. Also inactivated by cationic

			soaps/detergents, sunlight and some metals. • 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 sliver, and aluminum (not stainless steel). • Limited stability for stored solutions.
Quaternary Ammonium Compounds *Primary surface disinfectant used at the FVM(spot disinfection as well as general environmental disinfection) Contact time: at least 15 minute*	Moderate	• Mycoplasmas: Effective • Mycobacteria: Variable • Gm+ Bacteria: V. Effective • Gm– Bacteria: Effective • Pseudomonas: No Activity • Rickettsiae: Ltd. Activity • Env. Viruses: Effective • Chlamydiaceae: No Activity • Non-Env. Viruses: Ltd. Activity • Fungal Spores: Ltd. Activity • Bacterial Spores: No Activity • Cryptosporidia: No Activity • Prions: No Activity	• 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
Oxidizing Agents: Hydrogen Peroxide. *Hydrogen peroxide is used in all disinfectant footbaths and for disinfectant misting (fogging) in the large animal hospital.* *Contact time: At least 15 minutes*	Variable in class, Very good for peroxymono- sulfate and accelerated hydrogen peroxide.	• Mycoplasmas: V. Effective • Mycobacteria: Effective • Gm+ Bacteria: Effective • Gm– Bacteria: Effective • Pseudomonas: Effective • Rickettsiae: Effective • Env. Viruses: Effective • Chlamydiaceae: Effective • Non-Env. Viruses: Ltd. Activity • Fungal Spores: Ltd. Activity • Bacterial Spores: Effective • Cryptosporidia: Ltd. Activity • Prions: No Activity	• Broad spectrum. • Products listed have very low toxic potential but can cause skin irritation through drying, especially as powder or in concentrated solutions. • Other compounds not used in FVMcan 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.

Phenols *Used only for disinfection of instruments and necropsy areas that may be contaminated with prions (e.g., Chronic Wasting Disease, scrapie).*	Very Good	• Mycoplasmas: V. Effective • Mycobacteria: Variable • Gm+ Bacteria: V. Effective • Gm– Bacteria: V. Effective •Pseudomonas: V. Effective • Rickettsiae: Effective • Env. Viruses: Effective • Chlamydiaceae: Ltd Activity • Non-Env. Viruses: Ltd. Activity • Fungal Spores: Effective • Bacterial Spores: No Activity • Cryptosporidia: No Activity • Prions: Ltd Activity, variable among compounds	• Broad spectrum. • Irritation potential is variable among compounds in this class, but phenolic disinfectant products are generally considered highly irritating and should not be used on surfaces that contact skin or mucosa. • Concentrations over 2% are highly toxic to animals, expecially cats. • Activity not affected by water hardness. • Some residual activity after drying. • Effective over broad pH range. • Non-corrosive. • Stable in storage

Table IV. The Antimicrobial Spectrum of Disinfectants (Adapted from: Linton et al., 1987; Maris, 1995; William and Weber, 2008; Shirai et al., 2000)

Most susceptible	**Chemical Disinfectants**									
	Note : Removal of organic material must always precede the use of any disinfectant									
	Acids (hydrochloric acid, acetic acid, citric acid)	**Alcohols** (ethyl alcohol, isopropyl alcohol)	**Aldehydes** (formaldehyde, paraformaldehyde, glutaraldehyde)	**Allcalis** (sodium or ammonium hydroxide, sodium carbonate)	**Biguanides** (chlorhexidine)	**Halogens**		**Oxidizing Agents** (hydrogen peroxide, peroxyacetic acid)	**Phenolic compounds**	**Quaternary Ammonium compounds**
						hypochlorite	iodine			
Mycoplasmas	+	++	++	++	++	++	++	++	++	+
Gram-positive bacteria	+	++	++	+	++	+	+	+	++	++
Gram-negative bacteria	+	++	++	+	++	+	+	+	++	+
Pseudomonads	+	++	++	+	±	+	+	+	++	-
Rickettsiae	±	+	+	+	±	+	+	+	+	±
Enveloped viruses	+	+	++	+	±	+	+	+	±a	±
Chlamydiae	±	±	+	+	±	+	+	+	±	-
Non-enveloped viruses	-	-	+	±	-	+	±	±	-	-
Fungal spores	±	±	+	+	±	+	+	±	+	±
Picornaviruses (i.e. FMD)	++	+	+	+	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.

Antiseptic and disinfectant action, activity and resistance is described in: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC88911/

Table 5. The disinfectants in use in FVM

Purpose	Commercial name	Active ingredient	Working concentration	Minimal exposition time
Foot baths	Virocid	Didecyldimethylammonium chloride, Alkyldimethylbenzylammonium chloride, glutaraldehyde	1%	30s
	HI-7	Alkyldimethylbenzylammonium chloride, didecyldimethylammonium chloride, glyoxal, glutaraldehyde, formaldehyde, isopropanol	0,5-1%	30s
Floors, walls	Virocid	Didecyldimethylammonium chloride, Alkyldimethylbenzylammonium chloride, glutaraldehyde	0,5%	15 min
	HI-7	Alkyldimethylbenzylammonium chloride, didecyldimethylammonium chloride, glyoxal, glutaraldehyde, formaldehyde, isopropanol	0,5%	15 min
Transportation	Virocid	Didecyldimethylammonium chloride, Alkyldimethylbenzylammonium chloride, glutaraldehyde	1%	15 min
	HI-7	Alkyldimethylbenzylammonium chloride, didecyldimethylammonium chloride, glyoxal, glutaraldehyde, formaldehyde, isopropanol	1%	15 min
Equipment	Virobac Plus	Quaternary ammonium compounds, glutaraldehyde, ethanol	1-2%	60-15 min
Instruments	Sekusept Plus	Glucoprotamin	1,5-4%	60-15min
Surface cleaning and disinfection in case of infectious diseases	Sterisept forte	Quaternary ammonium compounds, dodecyldiamine, ethanol, solvents, non-ionic surfactants, corrosion inhibitor; pH 10-11	0,25-1%	60-15 min
Teaching laboratory and examination room table surfaces	Ethanol	Ethanol	70%	>60s
Clothes disinfection and washing	ORLAV-107 or Havon Perfect	Washing powder with disinfectant properties	Direction of use by producer	Washing cycle
Hand sanitation	Ethanol	Ethanol	70%	15s
	Commercial hand sanitisers with ethanol	Ethanol	Ready to use	15s

BREAKING TRANSMISSION CYCLES

1.3.6. GENERAL BEHAVIOUR

- Prohibitions on smoking in the workplace must be respected.
- Dogs should walk on leash at the site of the FVM.
- Members of University staff are encouraged not to take their pets to the FVM unless for medical reasons.

1.3.7. VISITORS IN THE FVM

- Educating the public about the role veterinarians have in society is an important function of the FVM, and allowing visitors to have some access to the FVM supports this mission. However, there are unique safety and health issues associated with exposure to the FVM environment, and visitors are a potential mechanism for spreading infectious agents in the hospital environment.
- Visitors must be directly supervised while visiting the FVM. Physical contact with patients that are not owned by those specific visitors is not allowed. Tours for the public are coordinated through the FVM Deans office and are led by trained personnel.
- Visitors are never allowed to enter any isolation department or laboratory with biosafety level 2 or above.
- FVM personnel supervising visitors should inform them about zoonotic and nosocomial disease hazards that are associated with hospitalized animals.
- Visiting laypeople should not be allowed to enter anaesthesia preparation areas, emergency rooms and surgery theatres.
  - Special arrangements can be made by contacting the LLU Veterinary Hospital Director's Office or 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 LLU Veterinary Hospital

- Clients are allowed unescorted access to LLU Veterinary Hospital (VH) waiting rooms and adjacent restrooms, library, and the cafeteria. Clients must be escorted to other areas of the hospital by VH personnel or students.
- 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 hospital departments, unless expressly permitted by the primary clinician.
- VH 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 FVM

- There are unique safety and health risks associated with the FVM environment. The consequences of a child becoming ill or injured through exposure to the FVM 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 (minors <18 years old) from patient care areas whenever there are concerns about safety or disruption of the work environment.
- Children (minors <18 years old) are not permitted to remain in the hospital when the parent is working as a member of the FVM personnel (including students), unless supervised by an adult.
- Children visiting the FVM must be directly supervised by an adult at all times while in the FVM.
- 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 FVM

- There are notable health and safety risks related to the presence of non-patient animals in the FVM. In accordance with FVM policy, animals are not permitted to be in clinic facilities except for medical purpose.
- Animals are only permitted in the FVM if they are patients admitted to the hospital, if they are scheduled for blood donation at the FVM, 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.
- Personnel and students must adhere to all FVM policies when handling and managing animals in the hospital.
- Pets are not allowed in offices, classrooms, or the cafeteria unless they are being used in classroom activities.

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.
- Pathogenic 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 direct 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 hospital 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 diarrhoea 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. DIRECT AND INDIRECT CONTACT TRANSMISSION

- Direct and indirect 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 hospital 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 hospital. 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 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, referring veterinarian, student, and staff contacts should be recorded and reported to the ad hoc Biosecurity Working Group by phone or e-mail.
- The Chairman of the ad hoc Biosecurity Working Group and the faculty clinician in charge of the case will then 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 FVM is strongly encouraged to seek medical attention immediately after reporting the event to a supervisor.
- Also, any known or suspected exposure to zoonotic agents should be reported to the Chairman of the ad hoc Biosecurity Working Group and the VH Director by the veterinarian with primary responsibility for the patient.

- 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 FVM personnel or students, who might have increased risk of serious consequences of zoonotic infection, are encouraged to discuss potential risks with the FVM supervisor, section chief, the Biosecurity Working Group chairman or their own health care provider.

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 supervisors and hospital director 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.
- All discussions will be kept confidential; however, communication among staff about the situation may be necessary for implementation of appropriate precautions and / or alteration of normal clinical or teaching procedures in the hospital.

1.4. RISK COMMUNICATION

FVM 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 FVM and the number 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 FVM, 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 FVM patients should be evaluated by clinicians to identify contagious disease risks. It is the responsibility of the senior clinician to appropriately assess the risk of contagious disease transmission and to institute appropriate infectious disease control efforts consistent with Biosecurity SOP.
- The Biosecurity Working group 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. MRSA or VRE), 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.
- All significant contagious disease risks must be appropriately communicated to FVM 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.

1.4.1. FLOOR LINES APPLIED TO THE FLOOR

- To make access more visible to personnel, clients, visitors and students, floor lines have been applied to specific parts of the FVM and VH. The colour of the line explains if passage is allowed, restricted, or not allowed:
  - **Green:** no restriction, passage is allowed.
  - **Yellow or yellow and black:** passage is restricted (for example: entry of the hospitalisation or laboratory).
  - **Red or red and white:** passage is not allowed unless authorization of a responsible person (example: surgery bloc, the isolation unit and laboratory).
- A poster should always be present explaining the necessary precautions prior to passing one of these lines.

1.4.2. SMALL ANIMAL, EQUINE AND FARM ANIMAL HOSPITAL

- 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 II**)
  - 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 and students responsible for patients with contagious diseases must ensure that information has been appropriately communicated to the mailing list of the Biosecurity working group.

1.4.3. PROTOCOL FOR FRONT DESK PERSONNEL

- If a client call indicates an acute case of vomiting, diarrhoea, 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 (see chapter 1.4.5. for exclusion criteria for entry and/or hospitalisation)
  - The presenting complaint will be indicated on the schedule as “acute diarrhoea” “acute vomiting”, “acute coughing” or “acute sneezing”, etc.
  - “iespējami infekciozs” 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 hospital or in the emergency room by an intern or clinician to allocate the animal in a certain risk category (see chapter 1.4.6. 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 hospital 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 hospital contamination.

1.4.4. PROTOCOL FOR STUDENTS

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

- The presenting complaint will be written on the schedule in English or in Latvian "acute diarrhoea" "acute vomiting", "acute coughing" or "acute sneezing", etc.
- "*iespējami infekciozs*" 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 hospital or in the emergency room by an intern or clinician to allocate the animal in a certain risk category (see chapter 1.4.6. 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 hospital contamination.
- Every attempt should be made to reduce any direct contact with the patient and any other VH 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 vacated, areas or equipment contaminated 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 (video instructions, course, and faculty website) and to follow procedures as determined by this biosecurity protocol when contacting cases with contagious disease.

1.4.5. EXCLUSION CRITERIA FOR ENTRY AND/OR HOSPITALISATION

- In case of official reportable diseases in Latvia (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 hospital or to be hospitalised. The specific refusal criteria for each species are listed under the corresponding hospital service.
- Only clinicians 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 FVM. Environmental and patient samples are cultured to detect specific microorganisms, general environmental contamination, and disease syndromes potentially associated with nosocomial infections and complications.
- In general:
  - Clinicians should report the occurrence of known or suspected nosocomial events to the Biosecurity working group as soon as possible.
  - The Biosecurity working group should also be alerted to any suspected trends in nosocomial events, even if the clinical consequences are not considered severe.
  - The Biosecurity working group should be alerted to all known or suspected zoonotic infections that are thought to have arisen through exposure in the FVM.
  - 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 bio surveillance. In the equine, bovine and small animal hospital of the VH the computer program Ārstu birojs is being used to keep a complete databank of all incoming cases, the contact information of their owners and referring veterinarians and used medications.

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 VH 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 VH 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 senior 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 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.
- Biosecurity personnel should be notified by the veterinarian with primary case responsibility, as soon as possible that there is a reasonable index of suspicion that a hospitalized patient may be infected with one of the agents listed below.

1.5.2. DISEASE DIFFERENTIALS FOR WHICH TESTING IS MANDATORY

- Testing of appropriate samples is mandatory if the following disease or condition is a reasonable differential. 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/animal-health-in-the-world/
  - Terrestrial Animal Health Code:
  - http://www.oie.int/international-standard-setting/terrestrial-code/access-online/
  - Manual of Diagnostic Tests and Vaccines for Terrestrial Animals:
  - http://www.oie.int/manual-of-diagnostic-tests-and-vaccines-for-terrestrial-animals/
  - Manual of Diagnostic Tests for Aquatic Animals:
  - http://www.oie.int/international-standard-setting/aquatic-manual/access-online/
  - Aquatic Animal Health Code:
  - http://www.oie.int/international-standard-setting/aquatic-code/

- In the VH, a special attention should be devoted to:
  - Acute diarrhoea in Dogs and Cats (*Salmonella*, *Campylobacter*, Parvovirus, Canine coronavirus, *Cryptosporidium*, *Giardia*)
  - Canine Distemper Virus
  - *Chlamydophila psittici* (Avian)
  - The neurologic form of Equine Herpesvirus type 1
  - Influenza (Avian)
  - Leptospirosis
  - Rabies
  - *Streptococcus equi* subsp *equi*
  - S*almonella* (Large animals)

1.5.3. ENVIRONMENTAL *SALMONELLA* SURVEILLANCE LARGE ANIMALS

1.5.3.1. STALL AND CAGE CULTURES

- Stalls or cages that housed animals which were culture-positive for *Salmonella* must be cultured after routine cleaning and disinfection and before they are released for use by another patient.
- Technicians responsible for these stalls or cages or the veterinarians primarily responsible for patients should notify the Biosecurity working group when these stalls or cages are vacated to arrange for samples to be obtained.
- FVM Staff reports culture results back to the Biosecurity working group responsible for the stall or

cage as soon as results become available.
- These data are routinely summarized and reported by the Biosecurity working group.

1.5.3.2. ROUTINE ENVIRONMENTAL SURVEILLANCE

- Electrostatic dust collection wipes are used for routine environmental surveillance on smooth floors and hand-contact surfaces throughout the hospital. Sampling is scheduled every 6 months for most areas, and more frequently for areas which are more commonly contaminated with *Salmonella* (isolation every 3 months).
  - FVM Staff responsible for the positive area reports any positive culture results back to the Biosecurity working group as soon as results become available.
  - These data are routinely summarized and reported by the Biosecurity working group.

1.5.4. 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 FVM personnel, students, clients, and to other patients. As such, they are managed with increased biosecurity precautions (class 3) intended to discourage dissemination in the FVM (see Table II).

1.5.5. ANTIMICROBIAL RESISTANCE AND ANTIMICROBIAL DRUG USE

- Antimicrobial resistance is one of the most important issues of the 21st century. Any aggressive program for infection control program must consider the important impact that antimicrobial resistance can have on the ability to provide quality medical care. The Biosecurity working group is charged with monitoring antimicrobial drug use at the FVM, and promoting conservative use practices that help to preserve the usefulness of antimicrobial drugs. A laboratory routinely summarizes antimicrobial resistance patterns among commonly isolated bacteria, and makes this report available.
- NOTE: These results summarize results from specimens submitted to the diagnostic laboratory and therefore represent a biased sample of bacteria present in animal populations. As such, isolates represented by this report are likely to be more resistant than those encountered in average animal populations.

1.5.6. ANIMAL DISEASES IN LATVIA THAT ARE REPORTABLE, NOTABLE OR ARE IN STATE SURVEILLANCE

- It is FVM policy to investigate and rule-out the potential for any diseases that are reportable to the FVS. Contact the Biosecurity working group ASAP when reportable animal diseases are diagnosed or suspected. The primary clinician or the Biosecurity working group should directly contact: Regional FVS.

These reportable diseases in Latvia include the following (Cabinet of Ministers nr. 127 from 21th February of 2012): http://likumi.lv/doc.php?id=244507

1.5.6.1. RESEARCH AND TEACHING ANIMALS

- Personnel and students using animals for research and teaching in the FVM must adhere to all applicable biosecurity procedures. Approval should be obtained from the FVM Dean or Director of Clinical Institute prior to initiating these activities.
- Teaching and research animals may NOT be housed in patient housing areas of the VH with the exception of extraordinary circumstances or medical reason

Chapter 2. EQUINE BIOSECURITY SOP

2. EQUINE BIOSECURITY SOP

2.1 GENERAL ATTIRE FOR THE EQUINE HOSPITAL

The FVM promotes the use of hospital 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 Equine Hospital.
- 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***: Light green blouse with name card. Light green scrubs when working in the surgical theatre.
  - ***Clinicians***: Blouse with name card. Scrubs when working in the surgical theatre.
  - ***Technical staff***: blouse with name card. Scrubs when working in the surgical theatre.

- Footwear: It is recommended that all personnel wear sturdy boots or shoes at all times while working in the Equine Hospital. 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 horses.
- Personnel must be willing to disinfect footwear while working, which provides a good check regarding suitability. Water-impervious footwear is strongly recommended to limit damage to footwear that will eventually occur after exposure to footbath solutions.

2.1. FOOD AND BEVERAGES

- Food and beverages may only be stored and consumed in the kitchen of the Equine Hospital.
- Students can eat in student room, seminar room or in the faculty cafeteria.
- In the kitchen of the Equine Hospital a refrigerator and a microwave are present to store and heat food or beverage intended for human use. This refrigerator and microwave are not used for storage of medication, samples or other medical equipment, or for medical use. No other form of storage of medication, samples or other medical equipment is allowed in the kitchen of the Equine Clinic.

2.2. GENERAL CLEANLINESS AND HYGIENE

- Maintaining hospital cleanliness and appropriate personal hygiene are responsibilities of ALL personnel working in the Equine Hospital.
- It is recommended that hands are washed with soap or cleaned with an alcohol-based hand sanitizer prior to, and after examining each patient. (See page 8 for the hand washing protocol).
- Hand washing is mandatory before and after the following acts: treating wounds and changing bandages, ophthalmologic care, placing a catheter, performing endoscopy, contact of a class 3 and 4 case. It is also mandatory when hands are visibly soiled.
- Clean exam gloves should be worn when handling high-risk patients (i.e. infectious disease suspected or neonatal foals) or when handling excretions, secretions, or wounds.

- 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 staff and students are expected to arrange material once used and to leave the location in its original condition.

2.2.1. SUMMARY OF SOAPS, DETERGENTS AND DISINFECTANTS APPROVED FOR USE IN THE EQUINE HOSPITAL

- See Table 5.

2.2.2. PATIENT HYGIENE

- It is of major importance for basic hygiene and for reducing the infection pressure that the patients of the Equine Hospital are housed in a **proper stall**. Before a new horse enters the stall, faeces or dirty bedding should be removed. Stablemen clean the stalls and the hallways every day. In the case a stall is dirty outside working hours of stablemen, students, and/or clinicians should remove faeces and wet bedding and add fresh bedding. In the case of neonates, patient hygiene is of extreme importance and thus a pile of faeces or wet bedding should be directly removed from the stall by students and interns.
- **Water buckets or automatic drinkers** need to be proper and regularly cleaned and disinfected, and cleaned in between use by different horses. When a horse enters into a stall, the automatic drinker should be checked to work correctly and the owner should be asked if the horse knows how to drink from automatic drinkers. If the horse 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 horses. If a horse has not eaten its feed, this should be reported to the clinician and the feed should be removed from the feeding bowl.

- **Horses** 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.

- **The environment around the stall** should be clean, tidy and neat. This means without medications or materials lying around, no bedding outside the stable or cage, and no camping equipment from students. All members of staff and students are expected to arrange material once used and to leave the location in its original condition.

- If horses **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 throughout the barn. If this concerns diarrhoea, 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.

2.2.3. PROPER CLEANING

- Maintaining hospital cleanliness and appropriate personal hygiene are responsibilities of ALL personnel and students working in the Equine Animal Hospital.

2.2.4. GENERAL CLEANING AND DISINFECTION PROTOCOL

- 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. 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 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: disinfectants and bleach 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 15 minutes, particularly if infectious agent is suspected.
- Remove excess disinfectant with water.
- The bleach 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).

2.2.5. FOOTBATHS AND FOOTMATS

- Footbaths solutions with disinfectant are changed every morning by stablemen.
- 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 staff, interns and clinicians).
- 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.

2.2.6. 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 Central Supply 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 hospital

When?

- 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, FVM-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.
- At the primary clinicians' discretion, higher quality stethoscopes owned by personnel may be used for special exams for class 4 patients, but this should not be routine for all exams and

stethoscopes must be thoroughly 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 hospital or soaking in alcohol or chlorhexidine

When?

- Glass thermometers are not to be used in the FVM 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 horse
- Cleaning: washing with soap to remove gross material
- Disinfection: soaking in alcohol or chlorhexidine

When?

- Personnel and students should use hoof picks to clean feet before the horse leaves its stall.
- The hoof picks should be cleaned and disinfected once a week by stableman.
- After use on a horse 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 horse
- Cleaning: washing with soap to remove gross material. In the case of use for a horse with parasitic skin disease (chorioptes, psoroptes, sarcoptes, lice, etc) the brush should be treated with an anti-parasitic before disinfection and in the case of use for a horse with mycotic infections with an anti-mycotic (Imaverol®) before disinfection.
- Disinfection: soaking in alcohol or chlorhexidine

When?

- Personnel and students should regularly brush horses.
- The brushes should be cleaned and disinfected (using alcohol or 0.5% chlorhexidine) once a week by stableman.
- 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 horse with a dermatological problem (either contagious either very sensible to be infected) the brushes should be immediately cleaned and disinfected.

Twitches:

- Cleaning: washing with soap to remove gross material
- Disinfection: soaking in alcohol or chlorhexidine

When?

- Twitches 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 (e.g., hemostats, scissors, etc.) 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 Equine Hospital (isolation boxes and intensive care boxes). After use on a horse with a class 3 or 4 disease the instruments or equipment should be immediately cleaned and disinfected.

2.2.7. CLEANING AND DISINFECTION PROTOCOLS FOR EQUINE FACILITIES

2.2.7.1. EQUINE TRAILER/PARKING AREA AND COURTYARD

- The technical staff/stablemen crew will clean the area daily on regular workdays (Monday-Saturday). A shovel is available in the courtyard.

2.2.7.2. EQUINE OUTPATIENT EXAMINATION AREAS AND BREEZEWAY

- For the moment, the Equine Hospital has no Outpatient stalls.
- The examination rooms are thoroughly cleaned and disinfected daily by the technical staff.
- The breezeway is cleaned (e.g. swept and hosed) daily and disinfected weekly by the stablemen.

2.2.7.3. ROUTINE STALL CLEANING AT THE EQUINE HOSPITAL

- It is imperative to remember that with disinfectants, more does not mean better! Using the proper dilutions of disinfectants provides optimum disinfecting action. Overuse of disinfectants may encourage resistance in microorganisms and may contribute to the formation of biofilms. For disinfectants to be effective, they must be used on CLEAN surfaces. Biofilm formation occurs in areas of standing water, and where disinfectant is allowed to sit on dirty surfaces. Use care when working in high-risk areas - avoid contamination of equipment or other areas (e.g. when cleaning stalls into dumpsters, take care not to drop faeces outside of the dumpster).

Cleaning procedures for Occupied Stalls in the Main Hospital

- Daily picking of the stalls and adding of fresh bedding by the stablemen
- Use appropriate clothing (coveralls; barrier clothing where required).
- Use the appropriate dumpster for the area (separate dumpsters and cleaning material for class 3 and 4 cases are available) - care should be taken to avoid dropping manure/straw outside the dumpster.
- Try to avoid that patients have contact with the dumpsters, especially those in the colic aisle and the Isolation facility.
- 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 use.
- Dumpsters used in the Food Animal facility should not be moved into the Equine facility or vice versa.
- Aisle-way must be hosed daily and regularly disinfected.

General Procedures for Cleaning a Vacated Equine Stall

- If a horse is discharged, the stall should be cleaned as soon as possible.
- If it concerns a horse with a contagious disease, the box should be marked by clinician: "to be disinfected". If the infectious agent is known or suspected, effectivity of the disinfectant should be checked.
- The stablemen 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 horse should enter before it has been cleaned and disinfected.
- Boxes used by horses with non-contagious disease are regularly emptied, cleaned and disinfected. The stall should be cleaned in between use by different horses, but the frequency of disinfection is dependent on the case turnover; this is not necessary after each horse, but as frequent as possible.

Weekly Routines

- The Equine Hospital feed room floors should be cleaned and disinfected before each new delivery of food.
- Sinks in aisle-ways, in the general treatment area and in the examination rooms should be cleaned and disinfected by technicians or stablemen.

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 Equine Hospital is thoroughly cleaned, scrubbed and disinfected from top to bottom, including all equipment (bug-out).

2.3. GUIDELINES FOR RECEIVING AND MANAGING EQUINE PATIENTS

2.3.1. OUTPATIENTS (COMING FOR A CONSULTATION BUT NOT HOSPITALIZED)

- The client will be asked to check in before unloading the horse. Following the check in, a quick clinical impression will be obtained by an intern or clinician to allocate the animal in a certain risk category (see paragraph 2.5.3 and 2.5.4 for classification and for exclusion criteria for entry and/or hospitalisation). According the risk category and circumstances, the animal may then be unloaded in the equine trailer parking area and be directed to the exam rooms or outpatient stall, or be send home.
- At the check-in, the client will be asked for the official papers of the horse. If the owner has no official papers of the horse with him, the owner (and only the owner!) will assume the consequences of this governmental infraction.
- Outpatients should be taken into equine inpatient areas as less as possible.

2.3.2. INPATIENTS

- The client will be asked to check in before unloading the horse. Following the check in, a quick clinical impression will be obtained by an intern or clinician to allocate the animal in a certain risk category (see paragraph 2.5.3 and 2.5.4 for classification and for exclusion criteria for entry and/or hospitalisation). According the risk category and circumstances, the animal may then be unloaded in the equine trailer parking area and be directed to the exam room, or be send home.
- At the check-in, the client will be asked for the official papers of the horse. These papers will stay with the horse during the whole period of hospitalization.

2.3.2.1. STALL ASSIGNMENTS

Stall Assignments: Stalls for housing equine inpatients are assigned by the clinicians and the stablemen. Personnel and students should check with the clinician and the stablemen to find out where to put newly admitted inpatients prior to placing the horse into a stall in the hospital.

In general:

- Stalls in the examination room are for intensive care patients (for example colic and post-operative colic patients), including foals and their mares when admitted for intensive neonatal care.
- Stalls in the main corridor are for outpatients.
- Stalls in the stationary (medicine and surgery aisle): pre and post-surgical horses with short, middle or long-term stay classified in class 1 or 2 and/or healthy horses, other medicine cases: class 1 or 2 respiratory, digestive, dermatologic cases, etc.
- The Isolation Unit: known or suspected contagious or zoonotic infections of class 3 and 4.
- In exceptional cases the units of stall in the stationary third to the left, can be closed and used for class 3 diseases, for example during an influenza outbreak in the surgery aisle.

2.3.2.2. PATIENT RECORDS AND MEDICATIONS

- Records of the cases should be stored in front of the stalls (the front sheet, the directives and the recent clinical exams) and at the secretary (records of complementary exams, old clinical exams). These records may be consulted by students, interns and clinicians, but may not leave the area of the stall or the secretary, respectively.
- Medications and other materials used in the care of cases should be stored at the pharmacy (medication, flush, other material), in a little box clipped to the door of the stall (ophthalmological treatments, creams/pastes) or at a caddie (alcohol, betadine, syringes and needles).

2.3.2.3. STALL CARDS, TREATMENT ORDERS, AND PATIENT CENSUS BOARD

A stall card **must** be posted at the time that 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 fed, and drinking from a bucket if the horse is not familiar with an automatic drinker should 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 Secretary. Anticipated discharge date and time should also be noted on the census board when this becomes available.
- Treatment orders are posted at the directives in the stall doors.

- 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.

2.3.2.4. FEED AND WATER

- All grain or other supplements (including that provided by clients) must be stored in containers with tight fitting covers.
- Only minimal amounts of bedding, forage, and concentrate feeds are to be stored in the Equine Hospital in order to decrease the likelihood of contamination and to decrease the availability of food and hiding places for wildlife.
- The Equine Hospital feed room floors should be cleaned and disinfected before each new delivery of food
- Information about what forage and/or concentrates to be fed and the frequency should be written clearly on the stall card.

2.3.2.5. BEDDING

- Students and clinicians are responsible for bedding stalls and feeding for patients as they arrive.
- Occupied stalls are cleaned and re-bedded with clean straw or shavings every morning by stablemen. If at other times the stalls are noted to be excessively soiled or wet, students, clinicians, and technical staff are responsible for cleaning and re-bedding stalls.

2.3.2.6. DISCHARGE

- 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 Secretary.
- Stablemen 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 collected at the Secretary.
- Stalls used to house patients of class 1 and 2 should be cleaned (remove manure and wet bedding) before a new horse 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 horse is allowed to enter these stalls before cleaning and disinfection.
- Students, nursing staff, and clinicians are responsible for breaking down items around stall and ensuring that they are discarded, filed, or cleaned and disinfected (fluids, brushes, barrier gowns, etc.).

2.3.2.7. TACK (e.g. halters, leads, blankets, leg wraps, etc.)

- Tack or other items owned by clients is not to be left with patients at the FVM, except for halters and blankets.
- The FVM supplies leads for patients (muzzles and blankets are also available if required).
- FVM owned tack is stored at the patients’ stall when not in use.
- All tack supplied by the FVM is cleaned and disinfected between patients by soaking in chlorhexidine solution.

2.3.2.8. WALKING AND GRAZING AREA

When may horses be walked?

- When their disease or problem allows the horse to walk and the clinician has given permission for the horse to be walked.
- When they have a disease or problem of class 1 or 2. Horses with a class 4 disease are never allowed to leave their box unless degraded to a lower class.
- Horses with a class 3 disease are only allowed to leave their box for necessary medical examinations, but not for walking.
- When accompanied by a person used to handling horses.

Where?: The walking area is restricted to the meadows around the Equine Hospital and the corridor. Any dropped faeces in these walking areas should be removed as soon as possible.

When may horses be grazed?

- When their disease or problem allows the horse to walk and graze 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.
- Horses with a class 4 disease are never allowed to leave their box unless degraded to a lower class.
- Horses with a class 3 disease are only allowed to leave their box for necessary medical examinations, but for walking and grazing.
- When accompanied by a person used to handling horses.

Where? **:** The grazing area is restricted to the meadows around the Equine Hospital. Any dropped faeces on these meadows should be removed as soon as possible.

2.3.3. *SALMONELLA* SURVEILLANCE IN THE EQUINE HOSPITAL

- Stalls that housed animals which were culture-positive for *Salmonella* must be cultured after routine cleaning and disinfection and before they are released for use by another patient.
- Technicians responsible for these stalls or cages or the veterinarians primarily responsible for patients should notify the Biosecurity working group when these stalls or cages are vacated to arrange for samples to be obtained.
- FVM Staff reports culture results back to The Person responsible for the Biosecurity in clinic as soon as results become available.

Routine Environmental surveillance

- Routine environmental surveillance on smooth floors and hand-contact surfaces throughout the hospital will be conducted every 6 months for most areas, and more frequently for areas which are more commonly contaminated with *Salmonella* (Isolation Unit every 3 months).
- FVM Staff responsible for the positive area reports any positive culture results back to the Biosecurity working group as soon as results become available.
- These data are routinely summarized and reported by the Biosecurity working group.

2.4. 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 elevated contagious disease risk will be managed isolated from the general equine hospital population and discharged as soon as possible.
- Clinicians or students are encouraged to conduct initial physical examinations on these patients outside 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 Person responsible for the Biosecurity in the clinic should be notified as soon as possible when patients with elevated contagious disease risk (***class 3 and 4***) are admitted or develop these problems while hospitalized.
- Only The Person responsible for the Biosecurity in the clinic or the Hospital Director can give permission to house equine patients with known or suspected highly contagious diseases (***class 4***) in locations other than Equine Isolation Facility (exceptional circumstance).
- When patients with elevated contagious disease risk status of ***class 3*** are housed in the main inpatient areas, effort must be made to use appropriate barrier nursing and bio-containment practices with the patient.
  - Barrier nursing precautions must be used at all times.
  - Disinfectant footbaths or foot-mats are required.
  - The unit of stalls housing these patients should be cordoned off by closing the sliding door.
  - Stalls on either side and across the aisle should be maintained empty or occupied by similar contagious patients.
  - 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 Person responsible for the Biosecurity in the clinic ASAP so that this person can assist in communication and evaluating if appropriate precautions are being taken to house the animal.**

2.4.1. CLASSIFICATION OF SUSPECTED/CONFIRMED CONTAGIOUS ANIMALS

- 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 Equine Hospital, 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 animal similar conditions

CLASS 2: NORMAL HOUSING - green

Infectious diseases caused by agents that have a low level of transmission and may include non-resistant 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 antimicrobic susceptibility pattern, as determined by the external Bacteriology laboratory.
Subclass B: Infectious diseases caused by agents with a moderate level of transmission and/or are potential human pathogens.

- Patients with class 3 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.
- The stalls used for this purpose are separated from other patients by closing the unit. If possible, the boxes of the medicine aisle will be used for this purpose, (for example if multiple horses develop fever and respiratory problems during their hospitalization).
- In the Equine Hospital, the following conditions/patients are included:
  - Fever and/or leukopenia 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
  - Diarrhoea without fever and/or leukopenia
  - Non-surgical digestive problem with haemorrhagic reflux OR non-haemorrhagic reflux with fever and/or leukopenia. In this case the reflux should not be performed by aspirating by mouth.
  - MRSA or other multi-resistant bacterial infections
  - Contagious dermatologic infections: dermatophytosis, dermatophylosis congolensis, chorioptes, lice and other parasites

CLASS 4: ISOLATION - red

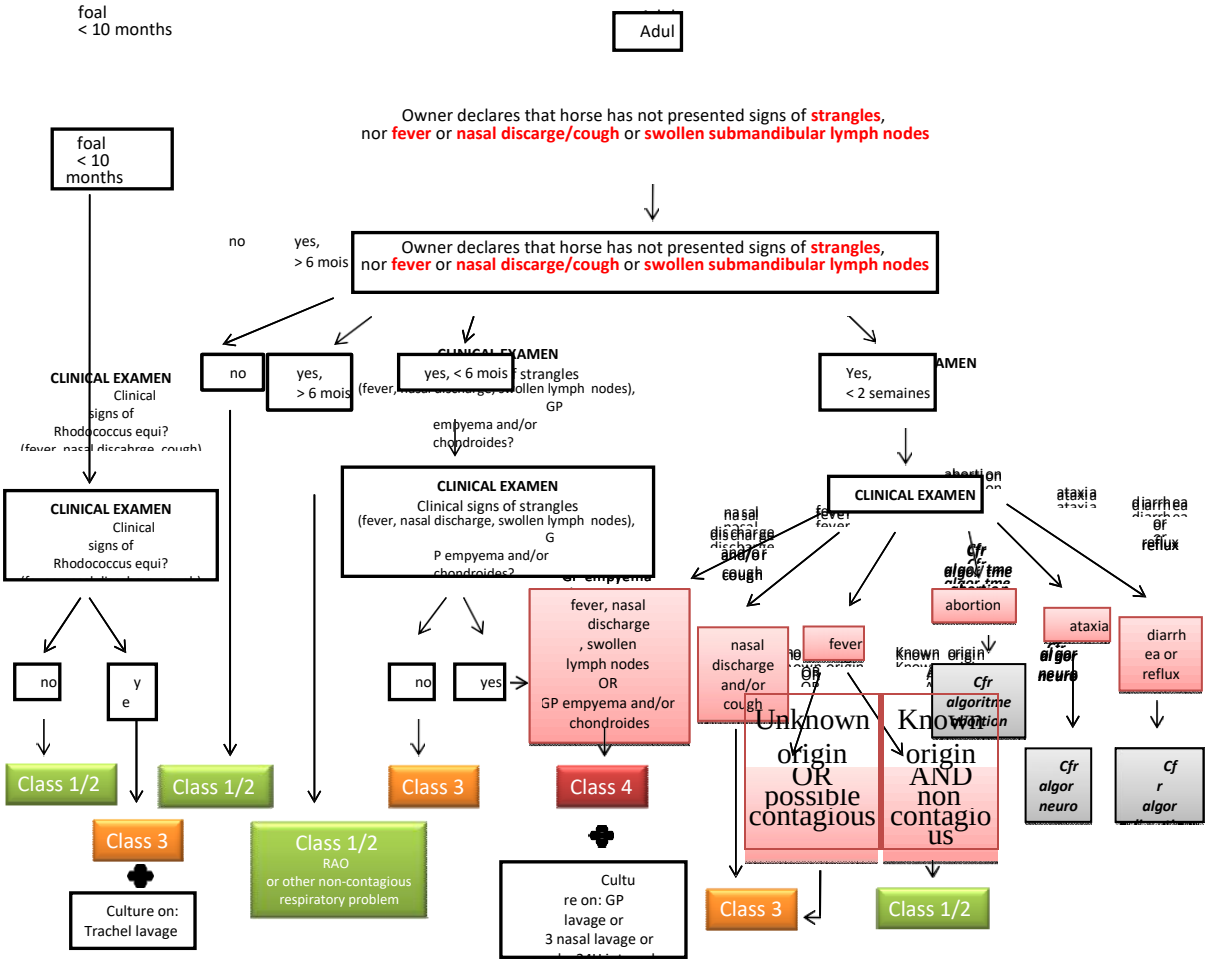
- Infectious diseases caused by agents that are considered to have a high level of transmission and/or are extremely serious human pathogens.

- 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 Equine Hospital, the following conditions/patients are included:
  - Strangles: swollen submandibulary lymphnodes, nasal discharge, cough, fever OR suspicion of guttural pouch empyema and/or chondroids in the guttural pouches.
  - 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 EHV1)
  - 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*), equine infectious anaemia, brucellosis, anthrax, *Mycobacterium bovis & tuberculosis*, etc.

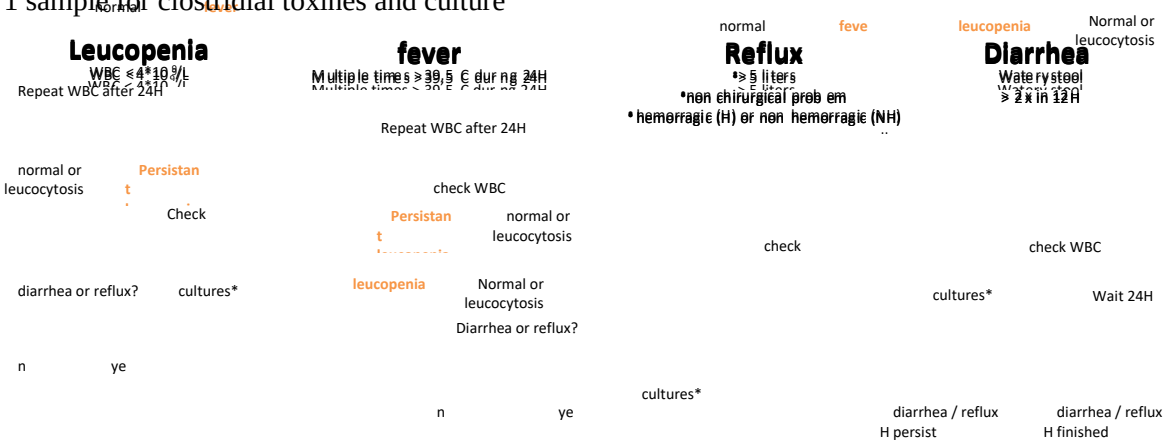
- Horses that have been in contact with a horse suffering from a suspected or confirmed contagious disease are considered contagious until proven otherwise or until the incubation time has passed without the horse developing clinical signs. Attention for diseases where the clinical signs of the disease can be subclinical and where the horse still can transmit the disease.
- The following algorithms / decisional trees are also included and are available in the Clinicians Office:

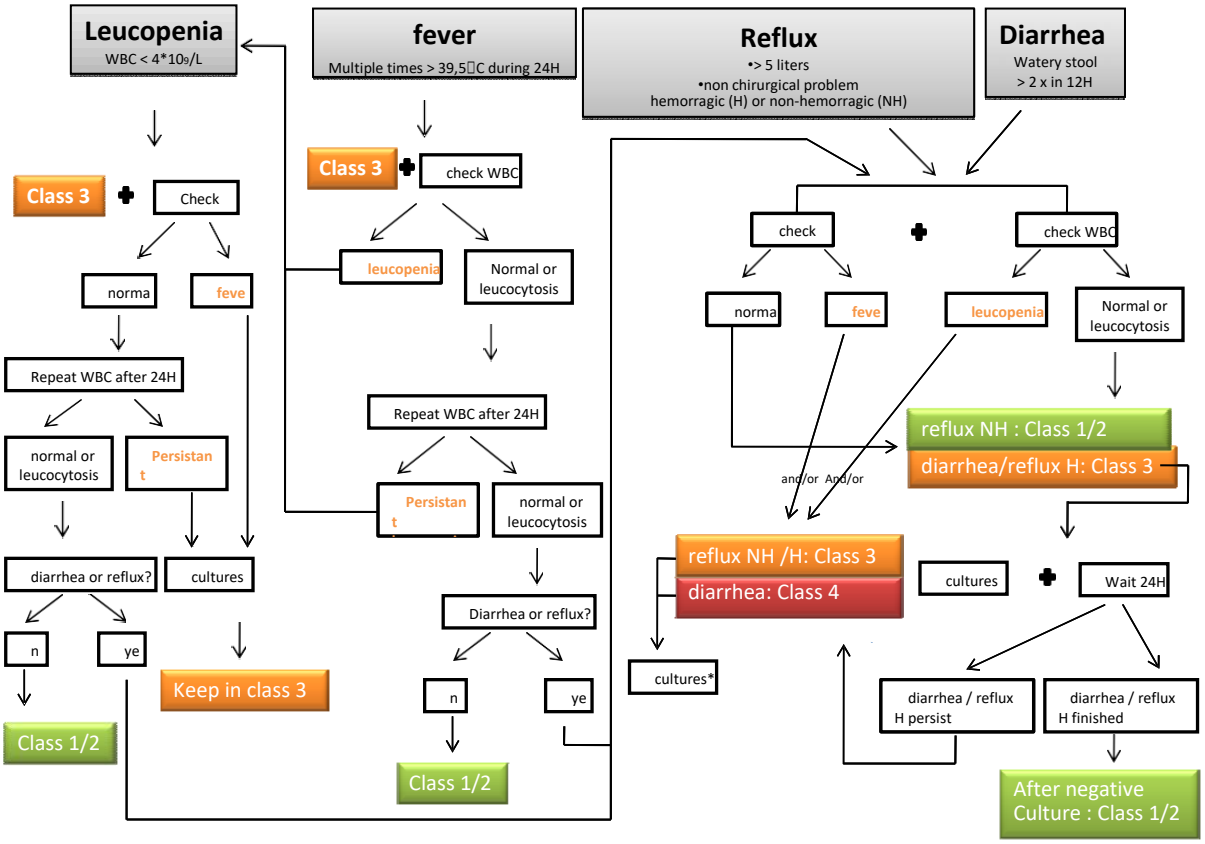
Algoritme 1: Decision isolation fever or respiratory signs



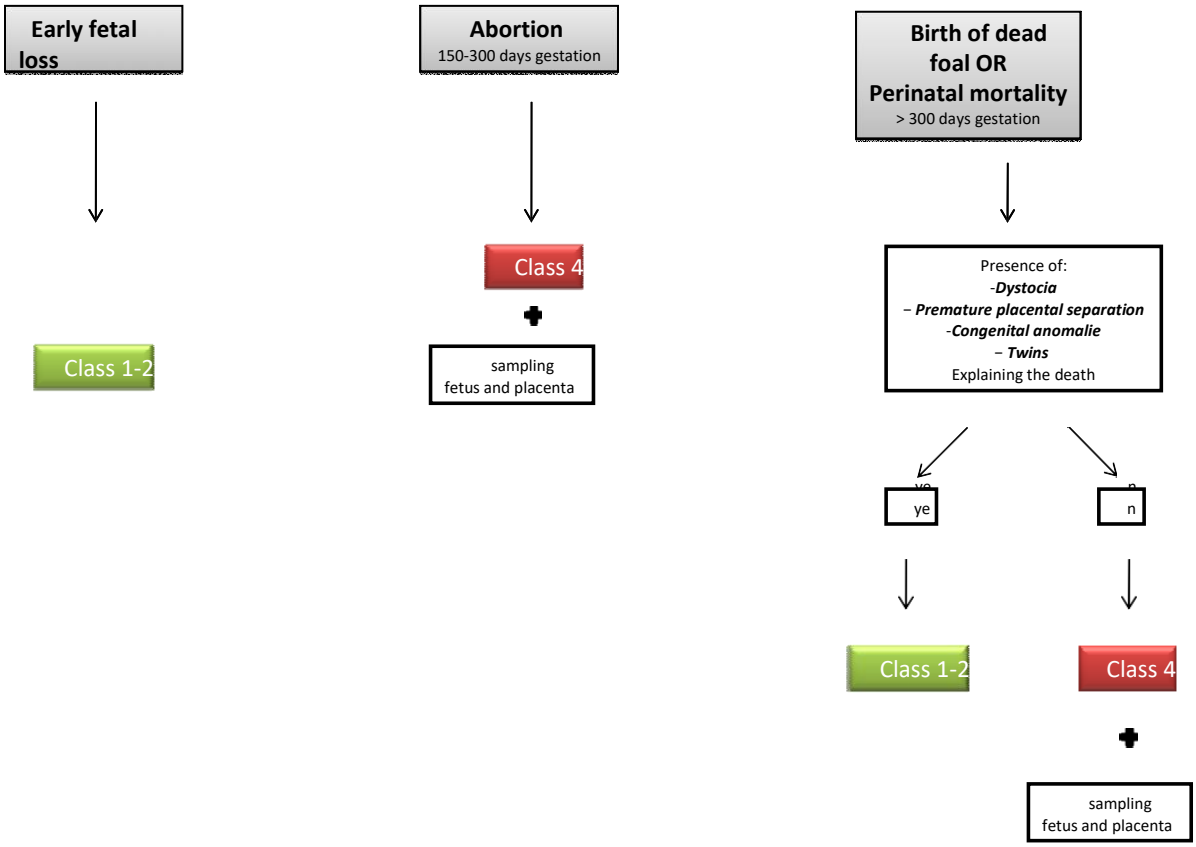
* Culture fecal matter or reflux= 3 samples for salmonella culture

1 sample for clostridial toxines and culture

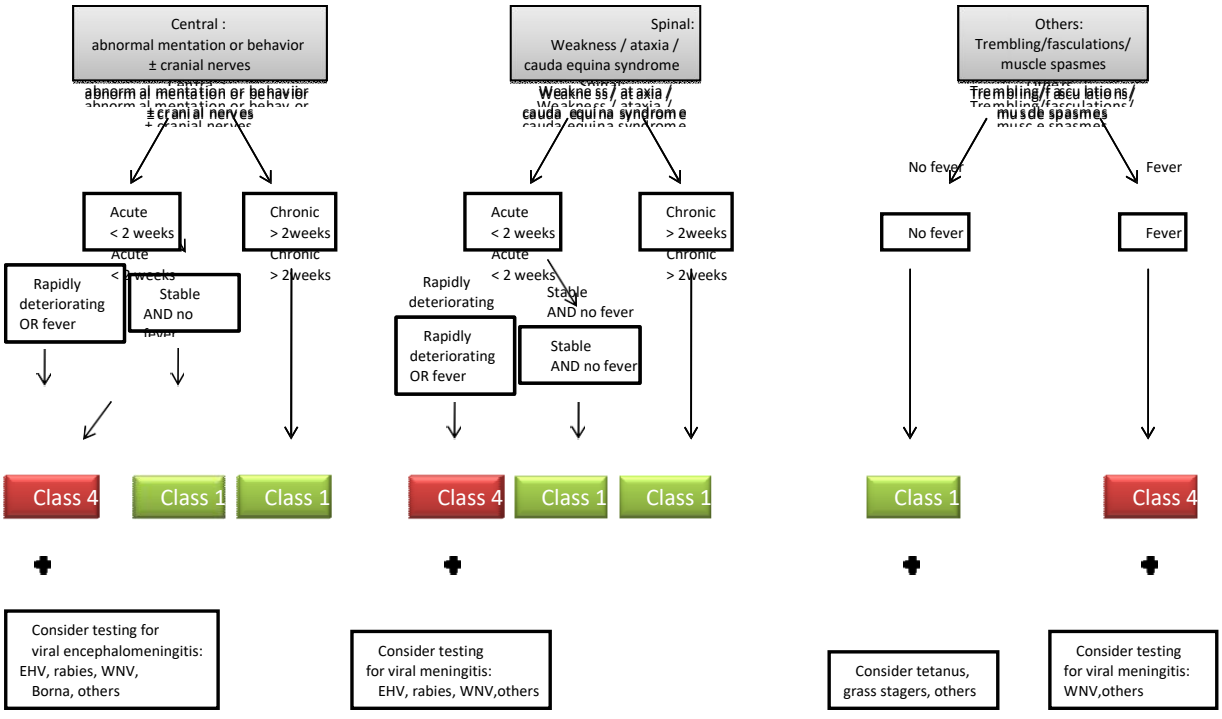



Leucopenia
WBC < 4*10⁹/L
Class 3
Check
norma
feve
Repeat WBC after 24H
normal or leucocytosis
Persistant
diarrhea or reflux?
cultures
n
ye
Class 1/2
Keep in class 3
fever
Multiple times > 39,5°C during 24H
Class 3
check WBC
leucopenia
Normal or leucocytosis
Repeat WBC after 24H
Persistant
normal or leucocytosis
Diarrhea or reflux?
n
ye
Class 1/2
Reflux
•> 5 liters
•non chirurgical problem
hemorragic (H) or non-hemorragic (NH)
Diarrhea
Watery stool
> 2 x in 12H
check
check WBC
norma
feve
leucopenia
Normal or leucocytosis
reflux NH : Class 1/2
diarrhea/reflux H: Class 3
and/or And/or
reflux NH /H: Class 3
diarrhea: Class 4
cultures*
cultures
Wait 24H
diarrhea / reflux H persist
diarrhea / reflux H finished
After negative Culture : Class 1/2

Algoritme 3: Decision isolation abortion



Algorithm 4: Decision isolation neurology



viral encephalomeningitis: EHV, rabies, WNV, Borna, others

for viral meningitis: EHV, rabies, WNV,others

grass stagers, others

for viral meningitis: WNV,others

Fever = history of fever in last 2 weeks OR fever at clinical exam

2.4.2. EXCLUSION CRITERIA FOR ENTRY AND/OR HOSPITALISATION

- In case of animal diseases reportable in Latvia. (These include: African Horse Sickness, West Nile Virus, Equine Infectious Anaemia, Malleus, Dourine)
- 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 hospital or to be hospitalised.
- Only clinicians 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 lymph nodes, 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 EHV1 (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).

2.4.3. COMMUNICATION REQUIREMENTS FOR THE EQUINE BARRIER-NURSING UNIT AND THE ISOLATION UNIT

- The Person responsible for Biosecurity in the clinic must be notified ASAP whenever patients of class 3 or 4 are admitted at the Equine Hospital and when they are discharged. This notification can be made in person, by phone, or by email 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 barrier nursing (class 3) or isolation (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.

2.4.4. GUIDELINES FOR MANAGING AND CARING FOR PATIENTS WITH SUSPECTED OR CONFIRMED CONTAGIOUS DISEASES

General:

- 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 all footbaths or foot-mats encountered.
- Environmental hygiene is the responsibility of **ALL** personnel working in the barrier nursing unit 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 clean-up and maintenance whenever possible.
- Students and interns 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 Equine Hospital, and in the Barrier Nursed or 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 (concrete apron), anterooms, and patient stalls. Gloves must be changed between working in different anterooms, or stalls.

2.4.5. MINIMIZING ENTRY INTO THE EQUINE BARRIER-NURSING UNIT OR ISOLATION UNIT

General:

- Entry into these units should only occur when absolutely necessary.
- Personnel should not enter stalls unless contact with patients is required. Primary clinicians 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 clinicians, students, technicians 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 hospital as well as those in isolation or those barriers 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 FVM. 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 / video instructions.
- **The primary clinician is responsible at all times, for ensuring that patients are receiving appropriate care.**

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 horses are present in the unit)
  - Hand washing before and after entering the unit (and stall if several horses are present in the unit)
  - Disposable apron
- Owners (but not friends, not the manager and not the referring vet) can visit their horses 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 horse's disease for horses outside the Equine Hospital (at the owner's home). As for owners of all horses, they are not allowed to visit other parts of the Equine Hospital.

Class 4 - isolation:

- Barrier precautions:
  - Footbath
  - Hand washing
  - Disposable apron
  - Gloves
  - Boots

- Clients are **not** permitted to enter the Equine Isolation unless in the exceptional circumstance of euthanasia and with permission from the primary clinician. Owners can see their horse through the window.

2.4.6. EQUIPMENT AND MATERIALS

General:

- If possible, materials taken into the barrier nurse (class 3) or Isolation (class 4) unit should not be taken back to the main hospital.
- 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 hospital.
- 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.

Class 3 – barrier nursing:

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

Class 4 - isolation:

- An individual stethoscope, thermometer, brush and hoof pick are assigned for use with ***each*** high risk contagious patient (***class 4***). A box containing these FVM-owned instruments is stored in front of the patients' stalls during hospitalization and cleaned and disinfected after discharge.

2.4.7. PROCEDURES FOR PERSONNEL ENTERING AND EXITING THE EQUINE BARRIER- NURSING UNIT OR ISOLATION UNIT

General:

- 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, doorknobs 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.).
- Avoid any bedding or faecal material into the hallway (of major importance for stablemen!!).
- Appropriately dispose of sharps or garbage in yellow trash bins.

Class 3 – barrier nursing

- To enter the barrier nursing unit:
  - Use the incoming disinfectant footbath or foot-mat while entering the barrier-nursing unit.
  - Put on a clean scrub which will be provided at the income of the unit (disposable apron)
- To enter the barrier nursing stall:
  - All personnel are required to wear clean scrubs
  - Wash hands or use hand sanitizer before entering each stall in the unit
  - Use the footbath before the stall when entering each stall in the unit.
  - Personnel handling, examining or feeding different isolated patients should change disposable apron and wash hands between patients.
- Exiting the barrier nursing stall
  - Footbaths before the stall 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.
- Exiting the barrier nursing unit:
  - Remove the disposable apron.
  - Use the footbath or foot-mat prior to exiting the unit. (if several horses are present in the unit; if only one horse present in the unit, only at exiting the stall).

Class 4 – isolation

- To enter the equine isolation area (entering the sas):
  - Open the door of the sas with a key.
  - Chance: hang clinic smocks or coveralls in the sas of the Isolation Area and put on disposable coveralls.
  - Change normal street shoes by single use boots available in the sas of the isolation area.
  - Wash hands or use hand sanitizer.
- To enter the isolation perimeter (surrounding the outside of the isolation facility)
  - Use the outgoing footbath or foot-mat at the sas of the isolation area.
  - At a minimum all personnel are required to wear clean boots, clean scrubs.
- To enter isolation stalls
  - Put on gloves that are available at each box
  - At a minimum all personnel are required to wear clean boots, clean scrubs and clean exam gloves.
  - Use footbath before the stall when entering the stall.
  - Personnel handling, examining or feeding different equine isolation patients should change gloves and scrubs between patients.
- Exiting occupied isolation stalls
  - Footbaths before the stall must be used when exiting the stall.
  - Clean and disinfect thermometer, stethoscope, and other used material/equipment by wiping with alcohol.
  - Store the thermometer, stethoscope in a box that is hung on the stall door of each class 4 patient.
  - Remove gloves.
- Exiting perimeter of occupied isolation stalls (entering sas):
  - Use footbath at the sas
  - Clean boots in footbath before before entering the sas.
  - In sas: Remove boots and disposable coverall.
  - Use hand sanitizer or wash hands in the sas.
  - Put on normal clothes and shoes.
  - Exit the sas and close the door with the key.

2.4.8. PROCEDURES FOR MOVING EQUINE PATIENTS INTO THE EQUINE BARRIER-NURSING UNIT OR ISOLATION UNIT

General:

- Stalls should be prepared for patients prior to moving them into a barrier nursed or isolation stall.
- Set up footbaths and/or foot-mats with disinfectant.
- Set up other barrier supplies dependant on its classification.
- Patients stabled in 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 horses. 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 hospital to the isolation perimeter.
- 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 "DO NOT USE, Disinfection Required" sign on the stall in the main hospital.
- 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.

Class 3 – barrier nursing:

- A bag with supplies for at the entry of the unit (disposable aprons) is available in the pharmacy.
- When possible, patients to be housed in barrier nursed stalls at the time of admission should be directly taken to their stall preventing contact with other areas, people or horses.

Class 4 - isolation:

- A bag with supplies for in the Isolation sas (disposable aprons, gloves) is available in the pharmacy
- When possible, patients to be housed in isolation at the time of admission should be transported directly to the Equine Isolation facility in the owners' trailer/transport vehicle and unloaded in the driveway of the Isolation area.

2.4.9. CLEANING AND FEEDING IN THE EQUINE 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.
- Hospital stablemen will clean and re-bed stalls once daily, in the morning, and they will clean stall walls if contaminated with diarrhoea, blood or other excretions/secretions.
- Footbaths and foot-mats are changed daily, in the morning, by stablemen.
- Additional cleaning should be done throughout the day by all personnel and students.
- Students and interns assigned to cases are responsible for routine cleaning in front of the stalls, and changing footbaths and foot-mats as needed during the day.
- Clinicians and students and are responsible for feeding equine patients of class 4. Do not enter the feed room with contaminated gloves, clothing or hands.
- Technical staff and clinicians are responsible for overseeing cleaning and disinfection, and stocking of the Isolation sas.

2.4.10. PROCEDURES FOR PATIENTS LEAVING THE EQUINE BARRIER-NURSING UNIT OR ISOLATION UNIT (*FOR DISCHARGE OR DIAGNOSTIC PROCEDURES, BUT WHILE THE HORSE IS STILL CONTAGIOUS)*

General:

- 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 using 100 ml of chlorhexidine to 1L of water.
- 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.
- Horses housed in the barrier-nursed units or the isolation unit may not be walked or exercised. Only if prior authorization is given by the Biosecurity working group horses 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 hospital 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 horse 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 theatre.
- Exiting the horse:
  - Personnel must brush the horse, clean the horse from feaces, 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 which should be prepared in isolation buckets using 100 ml of chlorhexidine (Ecutan 5%) to 1L of water.
  - 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 intervention:
  - Interventions will be planned at the end of the day, if possible.
  - During the whole intervention all personnel in the surgical theatre must wear appropriate attire and barrier precautions.

- Return to the isolation unit:
- Just prior to exiting the recovery box, scrub hooves using 0.5% chlorhexidine solution which should be prepared in isolation buckets using 100 ml of chlorhexidine to 1L of water.
- 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 theatre 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.

2.4.11. 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 FVM as this information is essential for appropriate management of disease risk for all FVM 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 FVM and therefore is billed to the client.
- 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.
- 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 a class 3 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, scintigraphy, surgery) which can only be performed in the main hospital facility, these procedures should be performed at the end of the day whenever possible.
- The person responsible for Biosecurity in the clinic must be consulted prior to moving any class 4 patient for diagnostic or surgical procedures.
- The attending clinician 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).
- This information should be written on all request forms.
- 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 senior clinician must ensure that all services assisting with procedures are informed of the known/suspected agent, and appropriate barrier clothing precautions.
- If the patient has diarrhoea, 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 senior clinician 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 hospital.

2.4.11.1. 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***, personnel 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.
- The portable ***radiograph*** machine should be used when possible on large animals with known or suspected infectious diseases.
- 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 foot-mats.
- Only the necessary material should be brought in the infectious unit. Alcohol and gel for ultrasound exams should be kept in the infectious unit.
- All radiography and ultrasonography equipment and supplies must be cleaned and disinfected with 0.5 % chlorhexidine or alcohol solution after the examination is performed.

2.4.11.2. BIOLOGICAL SPECIMENS FROM SUSPECTED OR CONFIRMED CONTAGIOUS PATIENTS

- Specimens obtained from high-risk patients should be correctly labelled with appropriate identification, then placed in a Ziplock 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.

2.4.12. BREAKDOWN OF THE EQUINE 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 clinician, intern 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.
- Throw away 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 staff can then collect the cart with the equipment for thorough cleaning and disinfection, and finally stocking.
- If another patient is being admitted before stablemen are able to disinfect the stall or unit, it must be disinfected by the student, or primary clinician, or technical staff.

2.4.13. 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). 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.

2.5. 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 FVM 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 FVM. 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.

2.6. BIOSECURITY PRECAUTIONS FOR MARES AND FOALS

- Young foals that are hospitalized at the FVM 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 peri-parturient 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.
  - For foals ***≤ 30 days-of-age***, barrier nursing precautions required for personnel when contacting patients or entering stalls include disposable exam gloves, and footbaths or foot-mats at every entry point to the mare and foal's stall.
  - Mares of hospitalized foals that are ***≤ 10 days-of-age*** are considered to have an increased risk of shedding *Salmonella*. As such, disposable exam gloves, gowns and disinfectant footbaths are required to be used by all personnel contacting mares or entering their stalls.
  - Exam gloves should be discarded every time personnel leave stalls to minimize potential contamination in other areas.
  - Barrier gowns are assigned to individual patients and are hung at the stall door. Care should be taken to always use one side of the gowns as the "outside" to minimize contamination of clothing.
  - Personnel should not enter stalls unless contact with patients is required. Primary clinicians 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 barrier nursing precautions.
  - This policy also applies to all ancillary services, and section uniforms are not a suitable alternative for this requirement.

2.7. EQUINE SURGERY AND ANESTHESIA

- **ATTIRE FOR THE "CLEAN" AREAS OF THE EQUINE SURGICAL FACILITY** Clean surgical scrubs are required for entry into designated "clean" areas of the surgical facility, including scrub rooms and surgical theatres. These are the areas located behind the red line painted on the floor of the facility.
- Shoe covers or footwear dedicated for use in designated "clean" surgical areas are also required for all personnel.
- Surgical scrubs are to be worn ONLY in the FVM; scrubs are not to be worn out of the FVM building, even when traveling to and from the FVM.
- Outside of designated "clean" areas of the surgical facility, all personnel should wear some type of clean outer garment over scrubs (e.g., white coat or coveralls). Personnel must also remove shoe covers when exiting "clean" surgical areas (personnel wearing dedicated surgical footwear should put on shoe covers prior to exiting designated "clean" areas).
- All personnel, including cleaning and maintenance personnel are required to adhere to all relevant policies regarding attire in equine surgery facilities.

2.7.1. HYGIENE FOR PERIOPERATIVE MANAGEMENT OF EQUINE PATIENTS

- High standards of cleanliness and hygiene must be maintained throughout the equine 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, staff, and faculty between the anaesthesia preparation area and the Equine Hospital will be kept to a minimum.
- Personnel must wear sterile exam gloves before placing IV catheters.

2.7.2. GUIDELINES FOR PERIOPERATIVE MANAGEMENT OF EQUINE 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 FVM.
- 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.
- If needed the floor should be hosed between patients and disinfected with appropriately diluted disinfectant.
- 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.

2.7.3. ANESTHESIA INDUCTION AREA

Activities conducted prior to entering the anaesthesia induction area:

- Pre-anaesthetic 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.
- Interns assigned to the case should take primary responsibility for ensuring that this is completed if 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. Interns 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. Interns assigned to the case should take primary responsibility for ensuring that this is completed.

Activities conducted in the anaesthesia induction area:

- Equine surgical patients will be delivered to the anaesthesia prep area one hour prior to scheduled procedures (i.e., scheduled table time), and placed in the anaesthesia prep area until the time of induction.
- Rinse the patient's mouth with water. The metal mouth syringe will be soaked in chlorhexidine solution between cases and should be rinsed prior to using on any patient.
- Prepare the IV catheter site aseptically and place the catheter using aseptic technique. Sterile exam gloves must be worn for this procedure.

2.7.4. POSTOPERATIVE ACTIVITIES

- Equine 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 disinfectant 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.

2.7.5. OTHER ROUTINE CLEANING AND DISINFECTION PROCEDURES

- All induction, surgery, and recovery areas are thoroughly cleaned and disinfected by technical staff.
- 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
- Environmental samples will be obtained from the recovery rooms and surgical theatres on a regular basis and cultured for the presence and of pathogenic bacteria and to quantify bacterial counts.

2.7.6. CLEANING OF THE SURGICAL THEATRE AND 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 disinfectant 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 disinfectant 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 overnight).
  - 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.

2.7.7. MANAGEMENT OF SURGICAL PATIENTS WITH CONTAGIOUS DISEASES

- Clinicians and interns assigned to surgical cases are responsible for identifying and communicating when patients are known or suspected to have contagious diseases (e.g., strangles etc.).
- Procedures on these cases should be scheduled for the end of the day or performed in the isolation unit whenever possible.
- Clinicians and students assigned to these cases are responsible for ensuring that induction and recovery areas have been appropriately identified as being potentially contaminated with contagious pathogens, as well as ensuring that they have been appropriately decontaminated prior to use with other patients.

2.8. EQUINE COLIC

2.8.1. ATTIRE AND PRECAUTIONS

- The following rules should be implied by all personnel entering the colic aisle with the intent to handle patients or enter stalls:
- Wear clean protective outer garment as in the rest of the Equine Hospital.
- Pass through a footbath when entering and leaving the Colic stall.
- Personnel should not enter stalls unless contact with patients is required. Primary clinicians 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.
- Personnel consulting from Special Services (radiology, ophthalmology, etc.) are required to follow the same requirements when entering the colic aisle or handling patients there.

2.8.2. GUIDELINES FOR MANAGING EQUINE COLIC PATIENTS

2.8.2.1. CASE DEFINITION

- *Salmonella*-positive and those suspected of being infected with *Salmonella* must be housed in the Isolation Facility. Diarrhoea cases will be housed in a barrier-nursing unit (class 3; without fever or leukopenia, not haemorrhagic) or isolation unit (class 4; with fever or leukopenia; or haemorrhagic) (cfr algorithm 2).

2.8.2.2. 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 in the colic aisle where it will be picked up by a technician and taken back to central supply to be re-sterilized.

2.8.2.3. 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.

2.8.3. COLIC STALL VISITATION BY CLIENTS

- Please ensure that clients stay with their horse and do not wander around the aisle observing or contacting other cases.
- The number of visitors per patient should be limited; please ask clients to use discretion.
- Clients must follow all of the colic aisle procedures pertaining to foot baths and hand washing.

2.9. DECEASED PATIENTS

2.9.1. BREAKDOWN OF PATIENT ENVIRONMENT

- Stablemen should be notified if a patient is deceased.
- When the patient is deceased, the stall card should be cleaned and all records should be collected at the Secretary.
- Stalls used to house patients of class 1 and 2 should be cleaned (remove manure and wet bedding) before a new horse 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 horse is allowed to enter these stalls before cleaning and disinfection. See paragraph 2.4.2. for the disinfection protocols of stalls.

- Students, nursing staff, and clinicians are responsible for breaking down items around stall and ensuring that they are discarded, filed, or cleaned and disinfected (fluids, brushes, barrier gowns, etc.).

2.9.2. STORAGE OF PATIENT BODY

- If the horse is deceased or euthanized in its stall, the cadaver should be removed from the stall as soon as possible using carriage.
- If the horse has been euthanized in a recovery box, the horse 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 cadaver from the stall / recovery box, the unit should be closed to limit the view for passing owners.
- The horse’s cadaver should be taken to the Autopsy Department.
- Deceased horses with a class 3 or 4 disease should stay in their stall until it is possible to bring the cadaver directly to the Autopsy Department.
- After transport of a cadaver, the carriage should be thoroughly cleaned and disinfected in the Autopsy Department.

2.9.3. REFERRAL FOR

2.9.3.1. PATHOLOGY

- The horse’s cadaver in the Autopsy Department will be placed in:
  - The refrigerator if an autopsy needs to be performed. In this case, the request form for autopsy needs to be clearly present on and taped to the cadaver. On the outside of this request form it should be clearly mentioned to which class the horse belongs (class 1-2, 3 or 4).
  - The refrigerator if the cadaver can be destroyed without autopsy. This occurs when no request form is present on the horse. However, it should be clearly mentioned if the case belongs to a class 3 or class 4.

2.9.3.2. CREMATION

- This service is currently not available.

2.10. BREAKING TRANSMISSION CYCLES

2.10.1. VISITORS IN THE EQUINE HOSPITAL

- See the general part of the Biosecurity Protocol for more information concerning clients, visitors, children and pets in the FVM.
- Visiting hours for the Equine Hospital are 09H00 to18H30 Mondays to Fridays and 9H00 to 12H00 and 16H00 to 18H00 on Saturdays, Sundays and public Holidays. Under no circumstances are owners allowed to stay the night with their horse at the Equine Hospital.
- All visitors must check in at the Equine clinic Reception desk prior to entering the Equine Hospital. A student, clinician, or technician should escort clients to their animal’s stall.
- Clients must adhere to all barrier-nursing requirements that apply to their animals in order to touch the animals or enter stalls.
- All visitors should be instructed to wash their hands after leaving inpatient areas.
- Clients may visit their animals, but are not allowed to wander in the facility and specifically are not allowed to touch other patients or read stall cards or treatment orders. Information about other patients is confidential, including diagnoses, and should not be divulged.

- The general public is not allowed to tour inpatient areas of the Equine Hospital. Special arrangements can be made to provide tours.
- Owners or their designated agents may visit hospitalized inpatients; other interested parties are not allowed to visit inpatients without express permission of the owners.
- Owners (but not the neighbours, friends and not the referring vet) can visit their horses 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 horse's disease for horses outside the Equine Hospital as for owners of all horses, they are not allowed to visit other parts of the Equine Hospital.
- Clients are **never** allowed to visit animals housed in the Equine Isolation Unit. Exceptions to this visitation rule may be granted under extraordinary circumstances, such as when patients are to be euthanized. In this case the same biosecurity SOP is applied for owners. However, owners can see their horse through the window.
- Dogs or other pets are not allowed in the Equine Hospital.

2.11. RISK COMMUNICATION

See the general part of the Biosecurity Protocol for information concerning risk communication at the FVM

Chapter 3. AGRICULTURAL ANIMAL BIOSECURITY SOP

AGRICULTURAL ANIMAL BIOSECURITY SOP

3.1. General information

3.1.1. GENERAL ATTIRE FOR THE FOOD ANIMAL HOSPITAL AND STATIONARY

Footwear

- Washable boots are required for all students and categories of personnel in all patient care areas of the ruminants' hospital. They are recommended to be heavy and sturdy to protect feet from crush injuries.
- Boots may NOT be worn in the Food Animal Classrooms and in the offices or secretary's office.
- Personnel and students wearing inappropriate boots will be asked to leave the service until they can return with proper boots.
- Personnel and students must be willing to disinfect footwear while working, which provides a good check regarding suitability (are you willing to fully immerse them in a footbath!?).
- Rubber boots should be cleaned and disinfected regularly, and whenever they become obviously soiled or contaminated. A special system will be installed in hallway to scrub, clean and disinfect the boots without using the hands.
- Personnel may wear specific sturdy washable work shoes when not in contact with the animals or their excrements.

Outerwear

- Clean coveralls are compulsory to be worn by all personnel to minimize the risk of inadvertent transmission of infectious agents to people or animals outside of the FVM.
- Clean coveralls must be worn in all patient care areas of the ruminant hospital. Coveralls should be changed or cleaned daily or more frequently if they become noticeably contaminated.
- Washing of dirty coveralls worn by the personnel will be achieved by the FVM Small animal clinic.
- Students are responsible of the washing of their coveralls (60 to 90° C). Higher temperature as possible is recommended.
- Surgical Attire:
  - Clean scrubs or overalls and boots, cup, mask are required for surgical procedures.
  - Easily disinfectable water-impervious gown is needed for laparotomy on standing cattle.
  - Clean coveralls must be worn over scrubs when handling pre- and post-operative patients.

3.1.2 GENERAL CLEANLINESS AND HYGIENE

- General entrance to the Ruminants clinic and stationary is through doors from the hall, building S.
- Persons entering the Swine stationary should use the only entrance available looking of the building B42, after compulsory use of the biosecurity manual and footbath.
- Hands must be washed or cleaned with an alcohol-based hand sanitizer prior to, and after examining each patient (see section 1.2.1.)
- Clean exam gloves should be worn when handling high-risk patients (i.e. infectious disease suspect or neonatal calves) or when handling excretions, secretions or wounds.
- Surfaces or equipment contaminated by feces, secretions, or blood must be cleaned and disinfected immediately by personnel handling the patient. This is especially important regarding patients known or suspected of shedding important infectious disease agents. Cleanliness is the responsibility of **ALL** persons involved in the food animal services.
- Personnel are required to use all disinfectant footbaths and foot mats that are encountered. Personnel are expected to fully immerse footwear in footbaths. Footwear should be scrubbed with a brush to remove organic debris if necessary.

- All equipment or objects, including stomach tubes, paring knife, mouth speculums, endoscopes, thermometers and buckets must be sterilized or disinfected with 0.5% chlorhexidine or 70% alcohol before and after use on any patient.
- Equipment wheels or sides soiled with feces must be cleaned and disinfected prior to entering or leaving the facility or moving to another area of the facility.
- All rooms should be kept clean.

Proper cleaning

- It is of major importance for basic hygiene and for reducing the infection pressure that the patients of the Ruminants hospital and stationary are housed in a **proper stall**.
- Before a new patient enters the stall, feces or dirty bedding should be removed.
- Personnel and/or student clean the stalls and the hallways twice a day (as often, as needed).
- In the case of neonates, patient hygiene is of extreme importance and thus as soon as a pile of feces or wet bedding is present this should be removed from the stall by personnel or/and students.
- Biofilm formation occurs in areas of standing water, and where disinfectant is allowed to sit on dirty surfaces.
- Persons should be careful when working in high-risk areas—avoid contamination of equipment or other areas (*e.g.*, when cleaning stalls into dumpsters, take care not to drop faeces outside of the dumpster).
- For disinfectants (especially foam) to be effective, they must be used on CLEAN surfaces.

3.1.3. PROCEDURE

- **When a ruminant is discharged**, the stall should be cleaned, washed and disinfected as soon as possible.
  - If it concerns a ruminant with a contagious disease, disinfection is done according to protocol A.
  - Boxes used by ruminants with non-contagious disease disinfection is done according to protocol B.
- **Water buckets or automatic drinkers** need to be proper and regularly cleaned and disinfected in between use by different animals. When a ruminant enters into a stall, the automatic drinker should be checked to work correctly and it should be checked if the animal knows how to drink from automatic drinkers. If the ruminant drinks from a bucket, the presence of water in the bucket should regularly be checked and filled with fresh water.
- **Mangers** need to be proper and regularly cleaned and disinfected in between use by different animals. If a ruminant has not eaten its feed, this should be reported to the clinician and the feed should be removed from the manger.
- **Ruminants** should be kept as clean as possible, regularly be brushed and eventually be sheared or clipped.
- **The environment around the stall** should be clean, tidy and neat. This means without medications or materials lying around, no bedding outside the stable or box, and no camping equipment from students. An effort is expected from all staff to arrange material once it has been used and not to leave it for someone else.
- If ruminants **defecates in hallway, examination room or outside the stall,** feces must be removed immediately.
- If patient **urinates** in hallway or examination room, the floor must be washed immediately.

3.1.4. GENERAL DISINFECTION PLAN FOR RUMINAT AND SWINE BOX

1) Appropriate gloves and attire (mask, face shields, goggles, impervious clothing, boots) should be worn whenever using disinfectants.
2) Remove all bedding and feces 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.

3) Wash the affected stall, including walls, doors, automatic water drinker and manger, with water and detergent or soap; scrubbing or mechanical disruption is always needed to break down biofilms and residual debris that prevents or inhibits the disinfection process.
4) Thoroughly rinse the cleaned area to remove any detergent residue. Note: disinfectant may be inactivated by detergents or soap; therefore it is very important to rinse well after washing the area.
5) Allow area to drain or dry as much as possible to prevent dilution of disinfectant solutions.
6) Wet the affected stall, including walls, doors, automatic water drinker and manger, thoroughly with appropriate dilution of disinfectant (Table 5). This disinfectant should remain in contact with surfaces for 1-5 minutes, particularly if infectious agent is suspected.
7) After exposition time, the disinfectant should be rinsed off all surfaces (according to disinfectants annotation).
8) After disinfecting, remove the protective attire and wash your hands.

3.1.5. GENERAL DESINFECTION PLAN FOR EXAMINATION/OPERATION ROOM

1) Stocks and examination room, where animals are examined or treated, should be ranged, cleaned and disinfected by personnel responsible for the patient - irrespective of infectious disease status of the individual animal.
2) Floors, walls, surfaces and cattle crushes must be cleaned from dirt, feces, urine and disinfected immediately after every animal by personnel, students or clinicians responsible for the animal.

Footbaths and footmats

- This is the responsibility of ALL people working in this area (students, technical staff and clinicians):
  a) Footbaths and footmats solutions (Table 5) are changed every morning;
  b) Footbaths and footmats should be changed whenever they are judged to contain excessive amounts of bedding or dirt;
  c) Footbaths and footmats should be refilled when they are dry or low on volume;
  d) Personnel are required to use footbaths or footmats whenever they are entering or exiting area where footbaths are positioned. Footbaths require full immersion of feet, and therefore water impervious footwear must be worn.

3.1.6.. DISINFECTION PROTOCOL FOR INSTRUMENTS AND EQUIPMENT

- All instruments, equipment or other objects, including stomach tubes, paring knife, nose pinch, mouth speculums, endoscopes, grooming tools, clipper blades, etc. must be cleaned and disinfected or sterilized after it has been used on animal.
- Instruments that are supposed to be sterilized (e.g., surgical instruments) must be cleaned with soap and water and disinfected with 0.5% chlorhexidine solution. The equipment must be brought for sterilization by clinicians or students.

- **Stethoscopes**:
  - Stethoscopes owned by personnel may be used on animals in the non-contagious areas.
  - Immediate cleaning and disinfection is required when stethoscopes are visibly soiled or after examination of a patient with a suspect infectious disease.
  - Individual, FVM-owned stethoscopes are assigned for use with each high risk contagious patient. These are stored at patients' stalls during hospitalization and cleaned and disinfected after discharge.

- **Thermometers**:
  - Glass thermometers are not to be used in the FVM in order to decrease risks associated with broken thermometers.
  - Immediate cleaning and disinfection is required when thermometers are visibly soiled and after examination of every patient.
  - Individual thermometers are assigned for use with each high risk contagious patient. These are stored at patients' stalls during hospitalization.
- Other instruments and equipment owned by personnel (e.g., hemostats, scissors, etc.) may be carried and used on multiple patients, but they must be cleaned and disinfected between patients using 70% isopropyl alcohol or 0.5% chlorhexidine available in various areas.
- Personnel walking ruminants are responsible for cleaning any fecal material from the ground. Shovels and forks are available in many locations throughout the barn.

3.1.7. FOOD AND BEVERAGES

- No food or beverage is permitted in the Food Animal clinic or stationary except in the lounge area (Room Nr. S127).
- No food or beverages are allowed at any of the computer stations unless the computer is turned off and covered.
- Food and beverage should be sealed in non-spill containers and be stored in the lockers.
- Do Not Leave Food Out at Any Time.

3.2. GUIDELINES FOR RECEIVING AND MANAGING AGRICULTURAL ANIMAL PATIENTS

3.2.1.OUTPATIENTS

Outpatient Receiving

- Food animals without signs of reportable diseases should be unloaded next to the Farm animal clinic Building S central doors.
- Trailers should not block the access to the Food Animal Clinic and the road.
- Outpatients should never be fed.
- Water can be offered to the outpatients. If a bucket owned by the FVM is used, then personnel responsible for the case should clean and disinfected after use.

3.2.2. INPATIENTS

Routine Management of Inpatients

- The clinical staff will assign stalls.
- Any leads or halters that came with the animal should be sent home with the owner.
- A stall card must be prepared and placed on the stall immediately upon occupancy. Include:
  - Client/patient information
  - Clinical examination card
  - Status relative to known or suspected infection with contagious diseases
  - Feeding instructions
- Fresh water must be provided to each patient, except when restriction is ordered by the clinician.
- Feeding instructions should be discussed with the personnel and/or students.
- Personnel or the attending student will clean the stall in the morning and add fresh bedding as needed.
- No inpatient may be introduced in the Swine clinic.
- Healthy pig may be introduced in the Swine clinic with the permission of the person responsible for the Swine stationary.

- In Latvia as the herd status of infectious diseases is unknown, animals only from one farm are treated at same time in clinic.

3.2.3. STALL ASSIGNMENTS

- The place for patient bulls and cows are reserved in Large animal clinic in building S the ro of the room S 126 – large animal hospital. Small ruminants and calves less than 150 kg are placed in the individual boxes at room Nr. S126
- Patients with unknown infectious or suspected reportable animal disease in Latvia (class 3 and 4) must be housed in the isolation unit (building S room S110 and S111).

3.2.4. STALL CARDS, TREATMENT ORDERS, AND PATIENT CENSUS BOARD, FEED AND WATER

- Stall card **must** be posted when patients are admitted.
- Different diagnosis / diagnosis, clinicians and responsible student's names must be noted on the examination card.
- Patient information must also be recorded on the census board located in the room Nr. 132 and on the board in the hallway.
- Anticipated discharge date and time should also be noted on the census board when this becomes available.
- Treatment orders are posted on the board next to the animal.
- Stall-cards, treatment orders, and the patient census board contain confidential patient information. As such, visitors should never be allowed to read this information for animals that they do not own.
- All grain or other supplements (including that provided by clients) must be stored in plastic containers with tight fitting covers.
- Only minimal amounts of bedding, forage, and concentrate feeds are to be stored in the Food Animal Hospital and Stationary.

3.2.5. BEDDING

- Personnel, students and clinicians are responsible for bedding stalls and feeding patients as they arrive.
- Occupied stalls are cleaned and re-bedded with clean straw in the mornings and evenings by the personnel or students.
- If bedding is dirty, with manure, urine, it must be cleaned by anyone who notices it.

3.2.6. CLEANING PROTOCOLS: FACILITIES-FOOD ANIMAL HOSPITAL

- **Food Animal Trailer/Parking Area**
  - The trailer of the FVM is cleaned and disinfected after each animal.
  - The unloading court is cleaned once daily on regular workdays or every time it is dirty.

- **Food Animal Main Hospital Facility**
  - Monday through Sunday, the day crew picks stalls in the morning and in the evening and adds fresh bedding as needed.
  - The ruminants' crew feeds hay, concentrates and milk in the morning and in the evening unless otherwise specified on the stall card, and sweeps the hospital-ways after the morning and evening feeding.
  - Equipment wheels or sides soiled with feces must be cleaned and disinfected prior to entering or leaving the facility or moving to another area of the facility or moving to sine clinic

General Procedures for Cleaning a Vacated ruminant:

- Remove all bedding.
- Sweep floor to remove small chafe and debris.

- Rinse floor and walls with hose to remove gross debris, scrub soiled areas using detergent and a brush.
- Clean entire stall with water.
- Disinfect the stall with RBS.
- Allow to dry.
- Clean and disinfect adjacent aisle-way as above.
- Cleaning tools must be cleaned and disinfected as often as needed (minimum once a day).

Cleaning procedures for Any Vacated Food Animal Stall

- Must wear barrier clothing where provided at the stall, wear gloves and use footbath
- Remove all bedding into a dumpster marked for this aisle.
- Sweep to remove small chafe and debris (do not use vacuum in these areas).
- Use approved disinfectant (Table 5)
- Allow disinfectant to remain in contact for at least 10-15 minutes.
- Rinse floor and walls with hose to remove gross contamination, scrub the entire stall using tide with bleach (Javel 2%) and a brush.
- Applied RBS.
- Allow to dry.
- Cleaning tools must be cleaned and disinfected (including handles) prior to cleaning the next stall.
- Aisle-way must be hosed and disinfected daily.
- Occasionally, stalls in the Food Animal hospital will be cleaned and disinfected with a cleaner under high pressure (Karcher). However, it is not a routine procedure for these stalls.

Anual Routines

- The entire Food Animal Hospital is thoroughly cleaned, scrubbed and disinfected from top to bottom, including all equipment (bug-out).

General Cleaning for technical support.

- The tires of any tractor or forklift that enters the Food Animal Hospital must be scrubbed and disinfected with RBS prior to entering and leaving the facility.
- When the forklift is used to take animals to necropsy, it must be thoroughly cleaned and disinfected at the necropsy dock with a professional cleaner with high pressure (Karcher).
- Storage of feed (hay) and bedding should be minimized and the feed storage area will be cleaned weekly to avoid rodent infestation. Rodent traps will be maintained in these areas and in the main feed storage areas by the barn crew.

3.2.7.. DISCHARGE

- Prior to discharge, clients or their agents must be instructed about further treatment and care of the animal.
- The anticipated time and date of discharge should be noted on census the board.
- Personnel should be notified as soon as possible if patients will be discharged.
- Stalls used to house patients with known or suspected contagious agents should be marked with a sign (“Do Not Use, Special Cleaning Required”).

3.2.7.1. TACK

- Tack (e.g. halters, leads, blankets, etc.) owned by clients should not be left at FVM.
- All tack supplied by the FVM is disinfected between patients by soaking in chlorhexidine solution.

3.3. MANAGING PATIENTS WITH SUSPECTED CONTAGIOUS DISEASE

- Special precautions are required when managing patients known or suspected to be infected with contagious disease agents.

- Patients with elevated contagious disease risk will be managed as outpatients or isolated from the general hospital population (in function of the considered disease) and discharged as soon as possible.
- Biosecurity personnel should be notified as soon as possible when patients with elevated contagious disease risk are admitted or develop these problems while hospitalized.
- All calves and small ruminants with a history or clinical signs suggestive of contagious enteric, respiratory disease, BVD/mucosal disease will be examined and hospitalized in the room S126.
- Large ruminants with a history or clinical signs suggestive of contagious enteric, respiratory disease, or BVD/mucosal disease should be examined on the trailer. The clinician is responsible for determining the likely diagnosis and will decide whether the animal is admitted for inpatient hospitalization and/or treatment.
- Any three of the following clinical signs are suggestive of contagious enteric disease:
  - Diarrhea
  - Septic mucous membranes
  - Fever
  - Weight loss
  - Hypoproteinemia
- Any three of the following clinical signs are suggestive of contagious respiratory disease:
  - Tachypnea-dyspnea
  - Nasal discharge
  - Fever
  - Roaring
  - Cough
- Enhanced biosecurity precautions must be used with patients originating from herds with history of IBR or BVD infection, or those that show clinical signs suggestive of IBR (rhinotracheitis, pustular vulvovaginitis) or BVD infection (e.g. stunted growth, mucosal disease or acute BVD infection).
- Checking and/or testing for BVD infection status of these animals is encouraged, at the discretion of the attending clinician.
- Patients with contagious diseases that must be housed in the food animal facility should have their contagious disease condition written on the back of their stall card. Stalls on either side of the contagious animals should be left free if possible.
- When an animal suspected of having a contagious infection leaves the hospital, place a "Do Not Use, Special Cleaning Required" sign on the stall must be used.
- Animals suspected or known to present a reportable ruminants disease in Latvia, will be isolated in the horse isolation box (if possible).
- In all cases of suspicion of a reportable ruminant's disease in Latvia, the Food and Veterinary Service will be contacted immediately by responsible clinician.

3.4. CLASSIFICATION OF SUSPECTED/CONFIRMED CONTAGIOUS ANIMALS

3.4.1. GENERAL RULES (CLASS 1&2): see p. 8

3.4.2. SPECIAL PRECAUTIONS (CLASS 3 and 4)

3.4.2.1. MOVEMENT OF HIGH RISK PATIENTS

- Movements of high risk patients have to be restricted as much as possible and the closest exit must be used.
- Whenever possible, these patients will be examined and treated in their own box, rather than moving the patient to common exam and treatment areas.

- 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 fecal matter, immediately clean/disinfect contaminated areas.

3.4.2.2. REQUIRED DIAGNOSTIC TESTING IN PATIENTS WITH SUSPECTED INFECTIONS

- Appropriate samples must be sent to the Institute of Food Safety, Animal Health and Environment - "BIOR".
- If the patient requires diagnostics or other procedures (e.g., radiology, ultrasonography, surgery) which can only be performed in the main hospital facility, these procedures should be performed at the end of the day whenever it is possible.
- Biosecurity Personnel must be informed prior to moving any high risk patient for diagnostic or surgical procedures.
- The attending clinician is responsible for notifying appropriate FVM personnel of the suspected infectious agent.
- Instruments, equipment, and the environment should be thoroughly cleaned and disinfected after the procedure, regardless of where the procedure is conducted.
- Clinician must ensure that personnel assisting the procedures are informed of the known/suspected infectious agent.
- Clinician is also responsible for ensuring that the examination room 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 hospital.
- Whenever it is possible, surgery on these patients will be performed at the end of the day, (except emergencies).

3.4.3. 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 Ziplock 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.

SPECIAL GUIDELINES FOR MANAGING AND CARING FOR PATIENTS WITH SUSPECTED OR CONFIRMED CONTAGIOUS DISEASES

General:

- Before and after examining each patient, hands must be washed with soap and water and cleaned with alcohol-based hand sanitizer.
- Surfaces or equipment contaminated by feces, 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 all footbaths or footmats encountered.
- Environmental hygiene is the responsibility of **all** personnel working in the barrier nursing unit and Isolation Unit. Do not wait for a technician or other personnel to clean.
- Students assigned to the contagious case are responsible for routine cleaning. This includes cleaning and disinfecting counters, door handles, and door knobs, changing footbaths when needed, and emptying trash.

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 stalls.

3.4.4. MINIMIZING ENTRY INTO THE FOOD ANIMAL ISOLATION UNIT

General:

- Entry into these units should only occur when absolutely necessary.
- Personnel should not enter stalls unless contact with patients is required. Primary clinicians may at their discretion take students into a stall for teaching purposes, but this should be minimized as much as possible.
- All personnel entering stalls must use appropriate precautions.
- Only the clinicians, students and cleaning personnel responsible for patient care should enter isolation.
- When possible, it is optimal to have different people providing care for patients in these units (i.e., it is best if the same person is not caring for patients in the main hospital as well as those in isolation).
- 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 FVM.
- When caseload demands contact with infectious disease suspects, treat other patients before handling infectious class 3 or 4 cases.
- The appropriate clothing must be worn by anybody entering the class 3 and 4 units. Required barrier precautions will be posted on the board in hallway.

Class 3:

- Barrier precautions count for the whole unit and not just for the stall!!
  - Footbath before and after entering the unit (and stall if several ruminants are present in the unit);
  - Hand washing and disinfection before and after entering the unit;
  - Coverall and clean boots;
  - Gloves.
- Owners can visit their animals 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 ruminants outside the Food Animal Hospital (at the owner's home or in another herd).
- Owners are not allowed to visit other parts of the Food Animal Hospital.

Class 4 - isolation:

- Barrier precautions:
  - Footbath before and after entering the unit and the stall;
  - Hand washing and disinfection before and after entering the unit and the stall;
  - Coverall and clean boots;
  - Gloves.
- Clients are **not** permitted to enter the Food Animal Isolation.

3.4.5. EQUIPMENT AND MATERIALS

General:

- If possible, materials taken into the class 3 or Isolation/class 4 unit should not be taken back to the main hospital.
- If equipment or material that cannot be used or discarded at the isolation, it must be thoroughly disinfected before taken back to the main hospital.
- Any supplies taken into class 3 or Isolation (class 4) unit should be used for that patient.
- No equipment or supplies (bandages, syringes, disinfectant, etc.) should be taken to class 3 or

Isolation (class 4) unit without first checking 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.
- An individual stethoscope and thermometer are assigned for use with ***each*** high risk contagious patient (***class 3 and 4***). A box containing these FVM-owned instruments is stored in front of the patients' stalls during hospitalization and cleaned and disinfected after discharge.

3.4.6. PROCEDURES FOR PERSONNEL ENTERING AND EXITING THE FOOD ANIMAL CLASS3 OR ISOLATION UNIT CLASS 4

Class 3 and Class 4

- To enter the Class 3 and Class4 (isolation) unit:
  - Use the incoming disinfectant footbath or footmat while entering the barrier nursing unit.
  - Put on a clean scrub and gloves which will be provided at the income of the unit (coverall or over blouse)
  - All personnel are required to wear clean scrubs
  - Wash hands and use hand sanitizer before entering each stall in the unit
  - Personnel handling, examining or feeding different isolated patients should change coverall or over blouse and wash hands between patients.
- Exiting the Class 3 and Class4 (isolation) unit
  - Footbaths before the stall 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 and wash hands.
  - Use the clean hands to complete flow sheets and process samples.
  - Remove the coverall.
  - Use the footbath or footmat prior to exiting the unit.
  - Store the thermometer, stethoscope in a box that is hung on the stall door of each class 4 patient.
  - Remove gloves and re-glove. Use the clean gloves to complete flow sheets and process samples.
  - Remove used boots (wash, cleaned and disinfect them) and put on clean boots.

3.4.7. PROCEDURES FOR MOVING FOOD ANIMAL PATIENTS INTO THE FOOD ANIMAL BARRIER-NURSING UNIT OR ISOLATION UNIT

General:

- Stalls should be prepared for patients prior to moving them into a barrier nursed or isolation stall.
- Set up footbaths with right solution.
- Set up other barrier supplies dependent on its classification.
- One person dresses in appropriate isolation facility attire, sets up the Isolation stall, and receives the patient at the gate.
- It is critical to clean and disinfect surfaces from fecal material or bodily fluids that contaminate surfaces during the process of moving animals. Personnel will place a “DO NOT USE, Disinfection Required” sign on the stall in the main hospital.

Class 3 and 4:

- A bag with supplies at the entry of the unit is available in the Pharmacy
- When possible, patients to be housed in isolation at the time of admission should be transported directly to the Food Animal Isolation facility in the owners’ trailer/transport vehicle and unloaded in the driveway of the Isolation area.

3.4.8. CLEANING AND FEEDING IN THE FOOD ANIMAL HOSPITAL: CLASS 3 AND 4

- 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.
- Hospital stablemen 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 are changed daily, in the morning, by anyone who finds it dirty or empty.
- Students assigned to cases are responsible for routine cleaning in front of the stalls.
- Students are responsible for feeding Food Animal patients of class3 and 4.
- Do not enter the feed room with contaminated gloves, clothing or hands.
- Technical staff and clinicians are responsible for overseeing cleaning and disinfection, and stocking of the Isolation sas.

3.4.9. PROCEDURES FOR PATIENTS LEAVING THE FOOD ANIMAL HOPITAL: CLASS 3 OR CLASS 4 ISOLATION UNIT

General:

- 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).
- Food Animals housed in the Class 3 or 4 may not be walked.

Class 3 and Class 4

- Patients moving from Class 3 or 4 hold not be walked through the breezeway unless absolutely necessary (e.g., to enter surgical facilities). If it is absolutely necessary to move food animals 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 hospital on Isolation Patients should be scheduled for the end of the day.
- All surfaces and floors that are potentially contaminated must be promptly cleaned and disinfected in order to minimize the likelihood of nosocomial transmission.
- All diagnostic and therapeutic procedures are performed in the isolation unit.
- Leaving the facility, is only permitted when the diagnosis of a reportable ruminants disease in Latvia is invalidated. If such a disease is diagnosed, the animal could only leave the isolation facility after being euthanatized.

3.4.10. 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 FVM as this information is essential for appropriate management of disease risk for all FVM patients and personnel.
- 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.
- Appropriate barrier nursing precautions must be followed by all personnel at all times during

diagnostic or other procedures.

- The attending clinician 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).
- This information should be written on all forms.

3.4.11. USE OF ULTRASONOGRAPHY, RADIOGRAPHY, ENDOSCOPY OR ECG IN THE FOOD ANIMAL Class 3 or Class 4

- Considering the reason of their isolation, all these ancillary examinations are forbidden in the Food Animals isolation facility.

3.4.12. BREAKDOWN OF THE FOOD ANIMAL Class 3 or Class 4 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 clinician and student on the case are responsible for the unit to be fully cleaned and disinfected.
- Throw away **ALL** disposables, using yellow trash bans in Class 3 or 4 units.
- Clean and disinfect all medical equipment.
- After disinfection of the contaminated stall (class 3 or 4), an inspection and approval by a clinician must be performed before another ruminant is allowed to occupy the stall.

- Biosecurity precautions will not be reduced for food animals with class 4 diseases.
- Biosecurity precautions of class 3 diseases can be reduced depending on the disease.
- Only the Biosecurity Workgroup can give permission to amend precautionary requirements or reduce rigor of biosecurity precautions for patients that have an increased risk of contagious disease.

3.4.13 MANAGEMENT OF PATIENTS INFECTED OR COLONIZED WITH RESISTANT BACTERIA

- This management could be considered only in the case of disposal of an operational laboratory for these analyses.

3.4.14. FOOD ANIMAL SURGERY AND ANESTHESIA

ATTIRE FOR THE "CLEAN" AREAS OF THE AGRICULTURAL ANIMAL SURGICAL FACILITY

- Refer to the FVM Clean surgical scrubs and head covers, are required for entry into designated "clean" areas of the surgical facility, including scrub rooms and surgical theatres.
- Shoe covers or special footwear dedicated for use in designated "clean" surgical areas are also required for all personnel.
- Blue surgical scrubs are to be worn ONLY in the FVM; scrubs are not to be worn out of the FVM building, even when traveling to and from the FVM.
- Outside of designated "clean" areas of the surgical facility, all personnel should wear the classical attire for the main hospital facilities or a protective gown.
- Personnel must also remove shoe covers when exiting "clean" surgical areas.

HYGIENE FOR PERIOPERATIVE MANAGEMENT OF AGRICULTURAL ANIMAL PATIENTS

- High standards of cleanliness and hygiene must be maintained throughout the ruminant's 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.
- Standards for personal, patient, and environmental hygiene in the surgical areas should be among the highest in the FVM.
- Hands must be washed and disinfected between all patients.
- Hands should also be washed after contact with 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 contact.
- Fecal material should be removed immediately in the surgical facility.
- Equipment such as endotracheal tubes will be cleaned and disinfected between uses with chlorhexidine.

POSTOPERATIVE ACTIVITIES

- Ruminants patients must be returned to their stabling area as soon as it is safe after surgery.
- Transport tables must be cleaned and disinfected with RBS solution (allowing 15 min contact time), then thoroughly rinsed with water between uses.
- Recovery stalls must be swept and mopped with disinfection solution between cases.

OTHER ROUTINE CLEANING AND DISINFECTION PROCEDURES

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

MANAGEMENT OF SURGICAL PATIENTS WITH CONTAGIOUS DISEASES

- Clinicians and students assigned to surgical cases are responsible for identifying and communicating when patients are known or suspected to have contagious disease.

3.5. AGRICULTURAL ANIMAL AMBULATORY

- Clean coveralls and rubber washable boots are required.
- A clean pair of coveralls is required for each farm to be visited; students must determine how many farms will be visited each day (seldom more than 2) and plan accordingly.
- Students are expected to bring a thermometer, stethoscope, penlight.
- On a given farm, boots are washed as needed after each farm.
- Examination gloves are recommended at all times. Gloves are required when working with adult cows with infectious diseases such as mastitis, pneumonia, or enteritis, and any calves. Change gloves when soiled. Hands will be thoroughly washed and disinfected when finished working with these patients.
- All instruments, including stomach tubes, mouth speculums, thermometer must be cleaned and disinfected after each use.
- Eating or drinking will be allowed at the discretion of the clinician in the ambulatory vehicles or in designated rooms on the farm.
- At the conclusion of the visit, boots will be scrubbed, rinsed clean, and disinfected. If water is unavailable, dirty boots and coveralls may be placed in plastic yelow bags and cleaned at the FVM. Boots and coveralls will be removed and stored on the floor of the truck or under the seat. Boots

and coveralls will not be stored in the vet box. Hands are washed.

- Clinicians are responsible for ensuring that trucks are washed and the floors and hand contact surfaces are disinfected at least once each week.
- For pig farms, overshoes and disposable coveralls will be systematically provided unless farm equipment (boots and coveralls) is available.
- Personnel and students have to state on the honor that they have not visited another pig farm for minimum 48 h without the strict application of rigorous sanitary measures. Before leaving the farm, dirty overshoes and disposable coveralls are trash.

3.6. DECEASED PATIENTS

- When a patient decease, it must be transported in the shortest possible time to the necropsy room with tractor.
- Outside the working hours, the students have to transport the container on a trolley. If the cadaver is too heavy (adult cow or bull for example), the transport will be postponed until the presence of right stuff. During this delay, the cadaver will stay in its box.
- As soon as possible, the patient corps will be stored in the refrigerated rooms of the necropsy room.

3.6.1 PATHOLOGY

- Unless otherwise specified, all deceased patients of the Food Animal Hospitalization facility must be necropsied in the shortest possible time.
- When the Pathology department is closed (holidays), necropsies have to be achieved by the staff of the Food Animal department as soon as possible.

3.7. VISITORS-CLIENTS IN THE FOOD ANIMAL HOSPITALIZATION FACILITY

- Visiting hours for the ruminants Hospital are 8:30 am to18:30 pm daily.
- All visitors must check in at the Small animal secretary prior to entering the Food Animal Hospital.
- All visitors must strictly adhere to Biosecurity Precautions for managing patients.
- Clients must adhere to requirements for appropriate clothing. Specifically, for safety, shorts and open toed shoes are not allowed to be worn in the food animal hospital. Coveralls are available for clients to wear if requested.
- A student, clinician should escort clients to their animal's stall.
- Clients must adhere to all barrier nursing requirements that apply to their animals.
- All visitors should be instructed to thoroughly wash their hands after leaving inpatient areas.
- Clients may visit their animals, but are not allowed to wander in the facility and specifically are not allowed to touch other patients or to read stall cards or treatment orders.
- Information about other patients is confidential, including diagnoses.
- The general public is not allowed to tour inpatient areas of the Food Animal Hospital.
- Special arrangements can be made to provide tours for visiting scientists by contacting Biosecurity Personnel.
- Owners or their designated agents may visit hospitalized inpatients; other interested parties are not allowed to visit inpatients without express permission of the owners.
- Clients are **never** allowed to visit animals housed in the ruminants' isolation facility.

3.7.1. CHILDREN IN THE FVM

- Children are strictly forbidden in the Food Animal Hospitalization facilities if they are not accompanied by a staff member.

3.7.2. PETS IN THE FVM

- Under all circumstances, pets are strictly forbidden in the Food Animal Hospitalization facilities.

3.8. REQUIREMENTS FOR EQUIPMENT AND SUPPLIES BEING BROUGHT INTO THE AREA

- Equipment from other areas of the hospital or ambulatory trucks must be thoroughly cleaned and disinfected before bringing into the Food Animal Hospital and after use, before returning it to another area.
- Items should be rinsed or soaked in a solution of chlorhexidine when appropriate.
- Alternatively, clean items may be taken to Central Supply for sterilization.
- Supplies for the Food Animal Hospital are stored in the Food Animal Storage room.

3.9. REQUIREMENTS FOR LUA TEACHING FARM "VECAUCE"

Footwear

- Washable boots are required for clinicians and students in farm. They are recommended to be heavy and sturdy to protect feet from crush injuries.
- Personnel and students wearing inappropriate boots will be asked to leave the service until they can return with proper boots.
- Personnel and students must be willing to disinfect footwear while working, which provides a good check regarding suitability (are you willing to fully immerse them in a footbath!?).
- Rubber boots should be cleaned and disinfected regularly, and whenever they become obviously soiled or contaminated.
- A special system is installed in *Veterinary block* to scrub, clean and disinfect the boots without using the hands.

Outerwear

- Clean coveralls are compulsory to be worn by clinicians and students.
- Clean coveralls must be worn in all patient care areas of the farm. Coveralls should be changed or cleaned daily or more frequently if they become noticeably contaminated.
- Students are responsible of the washing of their coveralls (60 to 90° C). Higher temperature as possible is recommended.

GENERAL RULES FOR ENTERING / EXITING FARM

- General entrance in the farm is at the end of the *Veterinary block* where changing rooms, closets and other facilities are.
- Clinicians, lecturers and students change their cloths and boots in rooms noted for them. After changing, they are allowed to enter class room on second floor (if there is lecture planned) and then they are allowed to enter examination unit/ veterinarian block.
- Clean exam gloves should be worn.
- Personnel and students are required to use all disinfectant footbaths and footmats that are encountered in farm. Personnel are expected to fully immerse footwear in footbaths. Footwear should be scrubbed with a brush to remove organic debris if necessary.
- When exiting the examination unit veterinarian block boots must be washed in *Veterinary block* using special system installed to scrub, clean and disinfect the boots without using the hands. Then person can move to changing room and exit the farm through doors at the end of farm.
- All rooms must be cleaned and disinfected after work.
- Farm veterinarians is responsible for local management rules
- All visitors must follow general guidelines given by farm veterinarian

Chapter 4. SMALL ANIMAL BIOSECURITY SOP

4. SMALL ANIMAL BIOSECURITY SOP

It is essential that all students, clinicians and staff be familiar with the basics of hygiene and personal protection. All persons working in the small animal hospital are responsible for maintaining cleanliness of the facility. Please review the infection control guidelines presented in the general section of the Biosecurity SOP.

4.1. GENERAL ATTIRE FOR THE SMALL ANIMAL HOSPITAL

- The FVM recommends the use of hospital dedicated attire for all personnel and students in order to decrease the risk of carrying infectious agents home where people or animals may be exposed.
- All 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 Hospital.
- Footwear: It is recommended that all personnel wear closed shoes at all times while working in the Small Animal Hospital. 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 to limit damage to footwear that will eventually occur after exposure to footbath solutions.
- Protective outer garments (smock, lab coat, etc) and shoes should be changed or cleaned and disinfected whenever they become soiled with faeces, urine, blood, nasal exudates or other bodily fluid. Thus it is a good idea to have an extra outer garment available for use.

4.2. PATIENT HYGIENE

- It is of major importance for basic hygiene and for reducing the infection pressure that the patients of the Small Animal Hospital are housed in a clean cage. Before a new animal enters the cage, faeces, blood, urine, all other organic material and soiled objects should be removed. Cleaning personnel clean the cages and the hallways every day. In the case a cage is dirty within working hours, a sign “please clean and disinfect” is suspended to the cage and cleaning personnel is alerted. If a cage needs to be utilized before cleaning personnel will have the time to clean it, or outside of working hours of cleaning personnel, students 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 and interns.
- If an animal is discharged, the cage should be cleaned as soon as possible.
- Animals with suspected or confirmed infectious disease (class 3 and 4): the cage should be broken-down and marked by the clinician: “Please make a special cleaning and disinfection”. Cleaning personnel will empty, clean and disinfect this cage as soon as possible, after break-down of the cage by the responsible clinician, nurse or student, and after cleaning off the non-contagious cages by cleaning personnel. 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. For regular cleaning cage should be marked by the clinician: “please clean up and disinfect”.
- Water buckets need to be regularly cleaned (as needed, or at least twice daily) during hospitalization of an animal, and should be 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.
- Feeding bowls need to be regularly cleaned (as needed, or at least twice daily) during hospitalization of an animal, and should be cleaned and disinfected in between use by different animals. Appetite should be noted on the daily-care-file and food should be discarded in the appropriate box.
- Animals should be kept as clean as possible, all excretions or secretions on the animal should be

removed as soon as spotted. Dirty animals should be washed accordingly, and all animals should be brushed regularly.

- The environment around the cage should be clean, tidy and neat. This means without medications or materials lying around, no bedding outside the cage, nor camping equipment from students. An effort is expected from all staff to arrange used material and not to leave it messing around.
- If animals defecate outside their cage (whether inside the building, or in the walking area), their faeces needs to be removed immediately after defecation. 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. FOOD AND BEVERAGES

- Food and beverages may only be stored and consumed outside of the hospital, in the veterinarian or student kitchens and in the students' dorm.
- In the veterinarian and student kitchens of the Small Animal Hospital a refrigerator and a microwave to store and heat food or beverage intended for human use are present. This refrigerator and microwave are not used for medical use, neither for storage of medication, samples or other medical equipment. No other form of storage of medication, samples or other medical equipment is allowed in the kitchen of the Small Animal Clinic.
- Food and beverages are specifically forbidden to be stored or consumed in patient care areas.
- Patients are not tolerated in any areas where food and beverages are allowed to be 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 will be disposed immediately.

4.4. GENERAL CLEANLINESS AND HYGIENE

4.4.1. PROPER CLEANING

- Maintaining hospital cleanliness and appropriate personal hygiene are responsibilities of ALL personnel and students working in the Small Animal Hospital.
- Hands must be washed or cleaned with an alcohol-based hand sanitizer prior to, and after handling each patient. Hands should also be washed or cleaned with an alcohol-based hand sanitizer when exiting the Animal hospitalization ward prior to working in other areas of the FVM (See hand washing protocol).
- Clean exam gloves should be worn when handling high-risk patients (i.e. infectious disease class 3 and 4 and immunocompromised patients) or when handling excretions, secretions, or wounds.
- 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 (class 3 and 4).

4.4.2. GENERAL DISINFECTION PROTOCOL

- Clean and disinfect all equipment between patients (muzzles, specula, forceps, etc) using 70% isopropyl alcohol or 0.5% chlorhexidine available in various areas. Clean equipment can be returned for sterilization when appropriate.
- Students are expected to carry some of their own equipment (e.g. scissors, thermometers, stethoscope, leash, penlight), and it is critical that these supplies are routinely cleaned and disinfected.
- If fleas or ticks are found on an animal, treat the animal with *Fipronil* spray from the pharmacy and bill to the client. Students and nurses can do treatment only with veterinarian permission.

- Appropriate attire should be worn whenever using disinfectants. Additional personal protective equipment (gloves, 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 inorganic and organic material 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 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 prevents or inhibits the disinfection process.
- Thoroughly rinse the cleaned area to remove any detergent residue. Note: 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 cage, including walls, doors, automatic water drinker and feeding bowl, thoroughly with disinfectant. The disinfectant should remain in contact with the surfaces ideally for 15 minutes, particularly if infectious agent is suspected.
- Remove excess disinfectant with water.
- The disinfectant should be rinsed off all surfaces prior to housing a patient in the cage.
- 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 (e.g. examination rooms) 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.

4.4.3. FOOTBATHS AND FOOTMATS

- Footbaths are maintained at the entrance to the Animal isolations wards and solutions are checked and replenish every morning by nurses. Dirty footbaths need to be changed immediately.
- Footbaths 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 (students, technical staff and clinicians).
- Footmats at the entrance to the surgery block clean area are changed every evening by cleaning personnel.
- Personnel and students working in the FVM are required to use footmats and footbaths appropriately whenever 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.

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. must be cleaned and sterilized or disinfected between uses on different patients.
- A list of cleaning responsibilities and manuals for different material in services can be consulted.
- Materials that are sterilized between usage (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 the cleaning service for sterilization.
- Surfaces or equipment contaminated by faeces, secretions, or blood must be cleaned and disinfected immediately by personnel and students in charge of the patient. This is especially important regarding patients known or suspected of shedding important infectious disease agents (class 3 and 4).

- **Class 3 and 4 animal boxes:**

  - All material used for a Class 3 or 4 patient will be hold in injection disease stationary. All these used items must be cleaned by the responsible personnel or student using a 0.5% chlorhexidine solution after each application, and after discharge of the patient.
  - Leashes dedicated for use with canine Class 3 or 4 patients will be assigned to a patient during the time of their hospitalization; leashes used with other patient populations must NOT be used when walking canine class 3 or 4 patients. These leashes are disinfected regularly by soaking in a 0.5% chlorhexidine solution.
  - After discharge and appropriate cleaning and disinfection, the box will be given to the responsible nurse (Class 3), or will be placed on the appropriate shelve in the transition room of the isolation ward (Class 4).
  - Prior to use with a new patient in the hospital, the box will be checked and cleaned and disinfected once more by the responsible nurse.

  • **Stethoscopes**:
  - Stethoscopes owned by personnel may be used on animals in the non-contagious areas, but must be regularly disinfected with alcohol or hand sanitizer solution (recommended at the beginning and the end of the day).
  - Immediate cleaning and disinfection is required when stethoscopes are visibly soiled or whenever a previously examined animal gets attributed to class 3 and 4.
  • **Thermometers**:
  - Glass thermometers are not to be used in the FVM 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 and/or chlorhexidine wipes. Plastic thermometer cases should be regularly soaked in disinfectant solution.
  - Probes from thermometers used in continuous temperature monitoring (for example during anesthesia) should be thoroughly disinfected between patients by wiping or washing to remove gross faecal material and soaking in 70% alcohol and/or chlorhexidine solutions.
  - Individual thermometers are assigned for use with each high risk contagious patient (class 3 and 4). These are stored in the above described boxes during hospitalization and cleaned and disinfected when visibly soiled, 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 70% isopropyl alcohol or 0.5% chlorhexidine available in various areas.
  - Personnel walking dogs and cats in cages are responsible for cleaning any faecal material from the ground. Paper containers and dustbins are available in many locations throughout the clinic and special dustbins 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, etc. should be stored in cubbyholes, the hangers at the dorm, or in the closet at the end of the central corridor in the hospitalization wing. Do not store extra clothing, backpacks, elsewhere.

4.4.5. WALKING AREA

- This area should be cleaned daily and directly after each defecation, and this is the responsibility of the personal and/or student walking the dog.

4.5. GUIDELINES 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, as long as they are not class 3 or 4.
- Patients in need of further exam with class 3 and 4 assignments either stay with the owner in the consultation room, or will be hospitalized in agreement with regulations pointed out in the specific chapters regarding class inpatient animals. 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 welcoming of other patients into this room.
- Outpatients should be taken into inpatient areas as little as possible.
- Attending personnel are responsible for cleaning outpatient cages. Specifically, students, nurses, and clinicians 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.
- If a bowl owned by the FVM is used for drinking or feeding, then personnel responsible for the case is responsible of cleaning and disinfection using appropriately diluted chlorhexidine after each use.

4.5.2. INPATIENTS

4.5.2.1. STALL ASSIGNMENTS

Cages for housing inpatients are assigned preferentially by the Nursing Staff or the responsible of the hospitalization area or otherwise the primary clinician.

- Client beds, blankets and leashes have to be returned to the owner (they get lost, soiled and may become contaminated).
- If the client insists on leaving a bed or blanket for the animal, he/she should be informed that this bed and/or blanket may not be returned.
- Locate a clean cage in the ward designated by the person listed above.
- Prepare a cage card with the client/patient information and clinician name.
- Suspected or confirmed infection status is to be written on the cage card immediately upon occupancy in case of class 3 and 4 animals.
- Place pertinent signs on cage with important information for animal care attendants, (i.e. “Lepto suspect” “Caution—Will Bite,” etc.).
- Diets containing raw meat or bones are not allowed to be fed or stored in any form at the FVM regardless of diets that are routinely fed in the home environment.
- Provide fresh water, unless otherwise indicated by clinician.
- Do not move animals from cage to cage—clean and disinfect the cage or run while it is being walked by a colleague or student and return the patient to the same cage or run.
- When the patient is discharged, place sign ‘please clean up and disinfect’ on the cage to indicate the animal is gone.
- To save a cage for returning day patients, place sign "Save cage" on the cage.

4.5.2.2. STALL CARDS, TREATMENT ORDERS, AND PATIENT CENSUS BOARD

- A stall card must be posted at the time that patients are hospitalized.
- The upper part of the stall card must list pertinent client and patient identification, names of students and clinicians assigned to the case.
- The stall card must list the admitting complaint or tentative diagnosis especially as they pertain to the infectious disease status (to allow cleaning personnel, nurses and students to better understand the infectious disease hazards and take associated precautions).
- The stall card must list all call orders that require immediate notification of the primary clinician.
- The stall card must list all scheduled treatments for the hospitalized patient.

- The stall card must be updated as patients' status can change during hospitalization.
- Patient information must also be recorded on the whiteboard in the hospitalization, including the name of the responsible student.
- Stall cards, treatment orders, and the patient whiteboard contain confidential patient information. As such, visitors are not supposed to have access to this information for animals that they do not own.

4.5.2.3. FEED AND WATER

- All food (including that provided by clients) must be stored in the food storage.
- If a new can is to be opened, the opening date is clearly stated on the outside of the can and a plastic cover is placed in order to seal it prior to placement in the refrigerator.
- All cans opened for more than two days should no longer be used.

4.5.2.4. BEDDING

- Students, nursing staff, 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, technical staff and veterinarians are responsible for noticing, cleaning and re-bedding.

4.5.2.5. DISCHARGE

- 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. Students, nursing staff, 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, paperwork, etc.).
- When the patient is discharged, the patient card should be placed in the office of the nurses, and a "to clean" sign should be posted on the cage. As soon as workload allows it, this cage should be cleaned by the responsible student. 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.

4.5.2.6. ITEMS FROM OWNERS

- Items owned by clients are not to be left with patients at the FVM.
- The FVM supplies all necessary material for patients.
- FVM owned material is disinfected between patients by soaking in chlorhexidine solution.
- If an owner insists of handing over their own material, and the clinician decides to allow this exceptionally, owners need to understand that a high likelihood exists that their material will not be returned.

4.6. CLEANING PROTOCOLS: SMALL ANIMAL FACILITIES

4.6.1. PARKING AREA

- The parking area and its surrounding grass areas will be checked at least monthly in order to remove all remaining excrements. Facilities should clean the area, including the concrete surfaces at least once yearly.

4.6.2. SMALL ANIMAL OUTPATIENT HOSPITALISATION AREA

- Outpatient cages must be cleaned between outpatients by attending personnel, and at least at the end of the day that the cage has been occupied.

4.6.3. SMALL ANIMAL HOSPITALISATION DEPARTMENT

- Monday through Friday the nurses will clean and disinfect all used cages at least twice daily, and more often if needed.
- On weekends and out of office hours, students/clinicians in charge of the case clean and disinfect all used cages after being vacated, in the morning, 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.

4.6.4. ROUTINE CAGE CLEANING

- For disinfectants (especially foam) to be effective, they must be used on CLEAN surfaces. In other words, prior to disinfection all macroscopic organic material should have been removed using a detergent, and the surface needs to be rinsed prior to application of the disinfectant. Biofilm formation occurs in areas of standing water, and where disinfectant is allowed to sit on dirty surfaces.
- General principles of cleaning: It is imperative to remember that with disinfectants, more does not mean better! Using the proper dilutions of disinfectants provides optimum disinfecting action. Overuse of disinfectants may encourage resistance in microorganisms and may contribute to the formation of biofilms.
- Use care when working in high-risk areas—avoid contamination of equipment or other areas.

Cleaning Procedures for any Vacated Canine Cage that hosted class 1 and 2 animals

- Use appropriate clothing (barrier clothing if required, in this case a sign will be posted on the cage).
- Remove all bedding.
- Put bottom surface straight up and clean with detergent in order to remove all macroscopic organic material.
- Sweep floor to remove all debris.
- Rinse floor and walls with hose to remove gross debris, scrub soiled areas using detergent and a brush.
- Rinse cage with water.
- Apply disinfectant
- Allow to dry.
- Disinfect adjacent aisle-way as above.
- Cleaning tools must be disinfected at the end of each day (including handles), and between corridors when required.
- Patients must not be allowed contact with the dumpsters at any time.

Cleaning procedures for Any Vacated Cage that hosted a Class 3 Animal

- Student, nurse or responsible clinician puts on barrier clothing, gloves and use footbath provided at the stall.
- Removes all bedding into the yellow container that is provided at the cage.
- Puts bottom surface straight up and clean with detergent in order to remove all macroscopic organic material.
- Sweeps floor to remove all debris.
- Cleaning personnel is contacted and will put on barrier clothing, gloves and use footbath provided at the stall.
- Rinse floor and walls to remove gross debris, scrub soiled areas using detergent and a brush.
- Rinse cage with water.
- Apply disinfectant

- Allow to dry.
- Cleaning tools must be disinfected at the end of each day (including handles).

Cleaning Procedures for Any Vacated Cage that hosted a Class 4 Animal

- Student, nurse or responsible clinician puts on barrier clothing, gloves and use footbath provided in the transition room.
- Removes all bedding into the yellow container that is provided in the isolation ward.
- Cleans bottom surface with detergent in order to remove all macroscopic organic material.
- Sweeps floor to remove all debris.
- Cleaning personnel is contacted and will put on barrier clothing, gloves and use footbath provided in the transition room.
- Rinse floor and walls to remove gross debris, scrub soiled areas using detergent and a brush.
- Rinse cage with water.
- Apply disinfectant
- Allow to dry.
- Cleaning tools must be disinfected at the end of each day (including handles).

Daily Routines

- All procedures performed by nurses and cleaning personnel need to be carried out by students if called for. In essence, dirty cages are cleaned, and animals are not switched to another cage, pending arrival of cleaning personnel.
- At working days' sinks and drains in the consultation rooms and hospitalization area should be cleaned and disinfected by cleaning personnel.

Monthly Routines

- Empty cages and corridors 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.
- Sweeper should be cleaned and maintained.

Semi-annual Routines

- All floors should be stripped, disinfected.
- The Isolation Area should be emptied and thoroughly cleaned, scrubbed, and disinfected top to bottom.
- Drains in Isolation should be scrubbed with detergent, rinsed, and then filled with dilute bleach. Do not fill a drain with any disinfectant without cleaning it first.

Annual Routines

- The entire Hospital should be thoroughly cleaned, scrubbed and disinfected from top to bottom, including all equipment by cleaning personnel.
- A schedule on how to perform this should be made up by cleaning personnel and work should be evaluated by the head of department.

4.7. 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. Conditions of special concern because of the potential for nosocomial transmission include patients with acute gastrointestinal disorders (e.g. diarrhea), acute respiratory tract infections, or infections with bacteria that are resistant to multiple antimicrobial drugs.
- 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 has been paged so they can be taken directly to an exam room or small animal isolation. Transport should preferably be on a gurney or in a cage to decrease hospital contamination. Large dogs to the isolator can go from outside.

- If the appointment is made and is coming in on the same day, the receptionist will phone the service to notify a possible infectious disease case will be presented.

- 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 hospital contamination.

- Every attempt should be made to reduce any direct contact with the patient and any other FVM patients.

- Animals should be transported to the appropriate exam / treatment / housing area by the shortest route possible to limit the potential for hospital contamination. Consider using a gurney when possible to limit the potential for hospital contamination.

• Treatment and diagnostic areas, hospital equipment, and personnel and students clothing should be 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:

- Close off exam room

- Place a sign “Please make special cleaning and disinfection” sign. If this sign is placed to the cage or at the entrance of examination, it means that nobody can use this cage or room, before special disinfection has been done.

- Notify responsible cleaning personnel of the suspected agent and do not use the room until cleaning personnel has removed the sign, or until other adequate cleaning/disinfection occurs.

• Biosecurity working group should be notified as soon as possible when patients with elevated contagious disease risk is admitted or develop these problems while hospitalized.

• Only Biosecurity working group or the Hospital Director can give permission to house patients with class 3 and 4 in locations other than Isolation Facility.

• When class 3 and 4 patients are housed in the intensive care unit:

- Barrier nursing precautions must be used
- Disinfectant footbaths or footmats must be placed
- Cages housing these patients should be marked with a tapeline
- Empty cages should be maintained on either side
- Using cages at the end of aisles is preferred

• 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 3 or 4).

• Hospitalized small animal patients with suspected infectious gastrointestinal disease should be considered possible sources of nosocomial or zoonotic infection and should not be walked in common eliminating areas - they should be allowed to eliminate in the Isolation ward - or when finished, in the special designated Isolation walking area. All waste material must be properly disposed and contaminated surfaces in the hospital must be appropriately cleaned, disinfected and dried as soon as possible.

• At discharge, personnel and students 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.

4.7.1. CLASSIFICATION OF SUSPECTED/CONFIRMED CONTAGIOUS ANIMALS

4.7.1.1. GENERAL RULES (CLASS 1, 2, 3 AND 4)

- For classification see general part of the biosecurity SOP.
- 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 dogs 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 ward, bearing in mind all barrier nursing reglementations can be authorized by the primary clinician.

4.7.1.2. SPECIAL PRECAUTIONS DURING HOSPITALISATION (CLASS 3 and 4)

4.7.1.2.1. MOVEMENT OF HIGH RISK PATIENTS

- Class 4 patients requiring isolation should ideally be transported directly to the Small Animal Isolation Facility.
- If patients are moved from the Main Small Animal Hospital to the Isolation facility, they should be moved by a route that minimizes exposure of other patients and contamination to the facility.
- FVM 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 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.

4.7.1.2.2. 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 FVM as this information is essential for appropriate management of disease risk for all FVM patients, personnel and students.
- It is therefore mandatory for all hospitalized patients to undergo diagnostic testing if infection with specific contagious or zoonotic agents is seriously considered. This diagnostic testing is considered essential to case management in the FVM and therefore is billed to the client.
- 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.
- Small animal clinic director should be notified as soon as possible that there is a reasonable index of suspicion that a hospitalized patient may be infected with one of the agents listed below.
- Small animal clinic director must also be consulted prior to moving class 3 and 4 patients for additional procedures, except when clinicians judge that this movement is immediately necessary for managing the critical health care needs.
- 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, scintigraphy, surgery) which

can only be performed in the main hospital facility, these procedures should be performed at the end of the day whenever possible.

- The senior attending clinician is responsible for notifying appropriate FVM personnel of the suspected infectious agent and methods that are prudent for containment (this includes cleaning and disinfection after procedures).
- This information should be written on all request forms.

  - 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.
  - Precautions should be taken for surgery on large animal patients with or suspected of having infections that could be contagious diseases (includes all animals in the Isolation Facility and animals in the main hospital).

4.7.1.2.3. BIOLOGICAL SPECIMENS FROM SUSPECTED OR CONFIRMED CONTAGIOUS PATIENTS

- Biological samples should be handled with the same barrier nursing care as the patient itself (gowns, gloves, masks, etc.).
- All biological specimens from class 3 and 4 animals should be stored in a sealed plastic bag, and the suspected infectious disease should be stated on the outside of the plastic bag.
- 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.

4.7.1.3. ISOLATION (CLASS 3 and 4)

- The Small Animal Isolation facility are the two areas used for the housing of most infectious disease cases.
- Animals not requiring intensive care should be housed in the cages in the Isolation ward.
- Patients with proven Parvovirosis, suspected rabies virus infection, clinical signs of rabies, suspected or confirmed infectious respiratory tract disease should always be housed in the Small Animal Isolation facility.
- Clients are never allowed to visit animals housed in small animal isolation, and should be discouraged from entering the critical care unit. With express permission from Biosecurity Personnel, exceptions to this visitation rule may be granted under extraordinary circumstances, such as when class 4 patients are to be euthanized. In this case the same level of biosecurity should be applied.

4.7.1.3.1. COMMUNICATION REQUIREMENTS FOR SMALL ANIMAL ISOLATION

- Responsible cleaning personnel must be notified when patients with contagious diseases are placed in isolation and when they are discharged or moved.
- Cages must be visibly labeled to identify 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.

4.7.1.3.2. GUIDELINES FOR MANAGING AND CARING FOR PATIENTS IN ISOLATION

- Strict attention to hygiene and use of barrier nursing precautions in isolation units is absolutely critical for appropriate containment of contagious disease agents.
- Use all footbaths encountered. Footbaths are changed and the plastic tub cleaned completely once a week by cleaning 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 or cleaned with alcohol-based hand sanitizer.
- Clean exam gloves must be worn at all times when working in the isolation ward.
- Special care must be taken toprevent 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 a 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 by personnel in charge of the patient.
- When possible, students assigned to infectious disease cases should not have contact with immune suppressed patients elsewhere in the FVM. 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.
- Isolated small animal patients should not be walked in common eliminating areas - they should be allowed to defecate and urinate in the Isolation ward- or when finished, in the special designated Isolation walking area. All waste material must be properly disposed and contaminated surfaces in the hospital must be appropriately cleaned and disinfected as soon as possible.
- Food and beverages are forbidden in Isolation because of the risk of exposure to zoonotic agents.

4.7.1.3.3. MINIMIZING ENTRY INTO THE ISOLATION UNIT

- Entry into the unit should only occur when absolutely necessary.
- Minimize the number of personnel and students handling cases in isolation. Only the student and staff members directly responsible for the patient should enter isolation. Clients are not permitted to visit patients in isolation.
- Whenever possible and appropriate, personnel and students should utilize the window or build in web cameras for general monitoring of patients' conditions in order to minimize foot traffic into the isolation facility.
- Only the clinicians, students, nurses and cleaning personnel responsible for patient care should enter isolation.
- When possible, students assigned to class 4 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 FVM. When caseload demands contact with infectious disease suspects, treat other patients before handling infectious cases.
- The appropriate barrier precautions (gloves, gown, mask, respirator, and/or plastic boots) must be worn. Required barrier precautions will be posted on the board outside.
- For Plague, Tularemia or Rabies, only the primary clinician, one student and one nurse if necessary should have contact with the patient.
- The primary clinician is responsible at all times, for ensuring that patients are receiving appropriate care. Students may be asked to assist with this effort (as can the Medicine Nurses between 8am and 7 pm on weekdays and between 8am and 7pm on holidays) but the ultimate responsibility for patient care lies with the primary clinician assigned to the case.
- Clients are not permitted to enter Isolation unless in the exceptional circumstance of euthanasia. In this case the level of biosecurity is applied.

4.7.1.3.4. EQUIPMENT AND MATERIALS

- In general, any materials taken into the isolation unit should not be taken back to the main hospital.

- Surfaces or equipment contaminated by faeces, other secretions or blood must be cleaned and disinfected immediately by personnel and students in charge of the patient.
- Individual kits with thermometer, stethoscope, scissors, etc. are available in the cupboard – 1 kit per patient, which needs to be clearly labelled.
- Any supplies taken into Isolation should be used in isolation or discarded in the yellow dustbins in isolation.
- All equipment and material that has been used on one patient can only be used on that patient. (Do not use on multiple patients and don't return them into the stock).
- Medications used on isolation patients should be billed to client and sent home at discharge or else discarded. Do not return medications or intravenous fluids from Isolation to the Pharmacy.
- Intravenous fluids not assigned to a patient should be stored in the Isolation Closets.
- Samples obtained from isolation patients for laboratory testing should be immediately placed in a plastic sealed container and labelled.

4.7.1.3.5. PROCEDURES FOR PERSONNEL ENTERING AND EXITING ISOLATION AREAS

During weekdays from 8am to 7pm notify a nurse so that they can provide assistance.

- Leave clinic outerwear (i.e. smock) outside of the isolation ward.
- Enter transition room and remain behind redline until required barrier clothing is on (blue disposable gown, gloves, overshoes, bouffant cap, mask) before entering isolation.
- A different barrier gown must be used for each animal in isolation. After providing care, the isolation ward is cleaned and gloves are washed in the isolation room.
- Remove gown and other barrier clothing in the transition room and hang it on the wall, or discard if soiled or ripped.
- Disinfect your hands.
- To enter the small animal isolation:
    - Leave clinic smocks or coveralls outside the Isolation Unit and hang on the hangers provided at the entrance of the Isolation Area.
    - Everybody is required to use the disinfectant footbath as they enter the Isolation Area.
    - Use hand sanitizer before entering the transition room and before touching any other surfaces or objects.
    - Put on clean gowns, cap, (masks if necessary), overshoes and exam gloves.
    - Cleaning personnel is required to adhere to all these policies regarding attire in isolation.
    - Take all necessary supplies into the isolation when entering to minimize traffic.
    - Procedures involving highly contaminated sites should be performed last (e.g., rectal temperature, rectal palpation, manipulation of abscesses, etc.)
- Finalizing care for a patient in isolation:
    - Avoid dispersing organic (faecal) material throughout the room.
    - Appropriately dispose sharps in sharps container.
    - Clean and disinfect thermometer, stethoscope, and other material by wiping with 70% alcohol, and place all material in the patient dedicated box.
    - Remove gloves and re-glove. Use the clean gloves to complete flow sheets and process samples.
    - Leave for the transition room in order to change to prepare for caring for the next patient.
- Exiting the isolation room:
    - Clean examination table and all other contaminated surfaces and disinfect.
    - Remove gown and hang in transition room.
    - Once daily, clean door knobs with disinfectant.
    - Discard cap, gloves and overshoes in the transition room.
    - Place shoes in footbath before leaving the anteroom.
    - Wash hands thoroughly with soap and water or decontaminate with alcohol-based hand

sanitizer.

- Turn off water faucets with the paper towel used to dry hands.

4.7.1.3.6. PROCEDURES FOR MOVING SMALL ANIMAL PATIENTS INTO ISOLATION

- If the isolation ward has not been cleaned from previous use and responsible cleaning personnel cannot be contacted to disinfect and prepare the room (or ward), contaminated counters, equipment, and cages must be cleaned and disinfected by a student, nurse or house officer before the new patient is admitted.
- Soiled laundry and garbage from the previous patient must disposed in the appropriate yellow dustbins.
- Cleaning personnel can also be consulted to clarify questions about the cleaning status of rooms or about procedures.
- Place a clean, clear yellow dustbin
- Stock transition room if not already done, contact nurse when supply is lacking.
- Set up footbaths. See general section of the biosecurity sop for directions on making a footbath.
- When possible, patients to be housed in isolation at the time of admission should be transported directly to the Small Animal Isolation facility in the owner's means of transport, or a gurney or in a cage, rather than being carried or walked.
- All personnel handling the patient must use appropriate attire and barrier nursing precautions.
- Patients hospitalized in the inpatient areas of the facility that are to be moved to the isolation facility should be walked on a path that exposes them to the least number of other animals.
- Record the animals name and the suspected infectious agent on the marker board on the whiteboard.
- Use Small Animal Isolation checklists (located on the window, visible from outside of the isolation ward) as a reminder for required activities and to document those procedures that have been completed as required.
- The primary clinician caring for the patient is responsible for ensuring that people are appropriately notified about admission of patients to the Small Animal Isolation facility:
  - Responsible cleaning personnel must be notified immediately when an animal is placed in isolation. It is critical that this notification includes 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 should be prepared to perform all physical examinations and treatments themselves. If necessary, the primary clinician may assign additional students and staff to help.
- Leave all equipment and supplies in the main hospital, other than medications, records, and the patient dedicated box.
- It is critical to clean and disinfect surfaces if fecal material or bodily fluids that contaminates surfaces during the process of moving animals.
- If the patient came from the main hospital, personnel will place a sign "Do Not Use, Special Cleaning Required" sign on the cage in the main hospital and note suspect or known agent on the cage.
- Personnel responsible for the case will ensure that the cage has been "broken down", empty fluid bags have been discarded, (etc.) and all equipment has been placed in a labeled bag so that this equipment can be properly disinfected.

4.7.1.3.7. CLEANING AND FEEDING IN SMALL ANIMAL ISOLATION

- All personnel are responsible for assisting with cleaning and maintenance of the Isolation Facility! Everyone should help clean when it is noticed that something needs to be done.
- Disposable materials are placed in yellow dustbin.
- Food and water do not leave the isolation room, all unconsumed water must be discarded in the sink and all unconsumed food should be thrown away in the yellow dustbins.
- Cleaning personnel will clean cages once daily, in the evening.
- Footbaths are checked every day and if it is necessary then complements the disinfect fluid.

- 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 footbaths as needed, under supervision of the technical support team.
- Students are responsible for feeding patients housed in isolation.
- Nursing staff are responsible for overseeing cleaning and disinfection, and stocking of the Isolation Area.

4.7.1.3.8. PROCEDURES FOR PATIENTS LEAVING ISOLATION

(For discharge, diagnostic procedures or walking)

- The discharge status of the patient should be alert to nurses to disinfect the room.
- Whenever possible try to discharge isolation patients prior to 6:00 pm Monday through Friday, so that medicine nurses can help with the breakdown of the room.
- From 8:30 am to 7:00 pm Monday through Friday contact a medicine nurse to enlist their help in breaking down the room and to assure it is done properly.
- 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, etc. 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.
- Diagnostic and therapeutic procedures that must be performed in the main hospital 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.
- 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.

4.7.1.3.9. BREAKDOWN OF THE ISOLATION AREA PRIOR TO DISINFECTION

- Contact cleaning personnel, upon discharge and breakdown so that they can clean and disinfect the ward before another patient is admitted.
- The primary clinician, nurses and student on the case are responsible for the following breakdown procedures of the room so that Animal Care can fully clean and disinfect the room. The room will not be disinfected unless cleaning personnel is notified of the specific agent that was known or suspected to be associated with the case.
    - Throw away ALL disposables, using sharps containers for the disposable sharps.
    - For Plague, Tularemia or Rabies cases (known or suspected) seal the sharps container and place it in the trash bags.
    - Seal all yellow dustbins and leave in isolation to be removed by cleaning personnel.
    - Clean all counters with disinfectant (see general biosecurity SOP for instructions regarding appropriate disinfection procedures).
    - Disinfect all bowls.
    - Disinfectant all medical equipment, and put them on the appropriate shelve in the transition room.
- If another patient is being admitted before Animal Care is able to disinfect the ward, the ward must be disinfected by the student, primary clinician, (or medicine nurse if they are available).

4.7.1.3.10. 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 FVM as this information is essential for appropriate management of disease risk for all FVM patients and personnel.
- It is therefore mandatory 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 is billed to the client.
- 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.

4.7.1.3.11. BIOLOGICAL SPECIMENS FROM SUSPECTED/CONFIRMED CONTAGIOUS PATIENTS

- Biological samples should be handled with the same barrier nursing care as the patient itself (gowns, gloves, masks, etc.).
- All biological specimens from class 3 and 4 animals should be stored in a sealed plastic bag, and the suspected infectious disease should be stated on the outside of the plastic bag.
- 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.

4.7.1.3.12. REDUCING BIOSECURITY PRECAUTIONS FOR A PATIENT HOUSED IN ISOLATION

- Only Biosecurity working group or the FVM Director can give permission to amend precautionary requirements or reduce rigor of biosecurity precautions for patients that have an increased risk of contagious disease.
- 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.

4.7.1.3.13. MOVEMENT OF HIGH RISK PATIENTS

- Class 4 patients requiring isolation should be transported directly to the Small Animal Isolator. Dogs are transported from outside and cats in the cage. They should be moved by a route that minimizes exposure of other patients and contamination to the facility.
- FVM 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 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.

4.7.1.3.14. USE OF ULTRASONOGRAPHY, RADIOGRAPHY, OR EKG IN CLASS 4 PATIENTS

- Personnel must wear appropriate clothing and barrier precautions when handling class 4 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 (0.5 % chlorhexidine or 70% alcohol), paying particular attention to cleaning and disinfecting the clips and wires that have touched the patient.
- After performing endoscopy, the technician will clean and disinfect the endoscope, light source, etc. according to the recommended procedure attached to the endoscope.
- All radiography equipment and supplies must be cleaned and disinfected after the examination is performed.
- Cassettes should be placed inside plastic bags prior to use.

4.7.1.3.15. SURGERY/ANESTHESIA IN SMALL ANIMAL ISOLATION PATIENTS

- Personnel from must wear appropriate clothing and barrier precautions when handling class 4 patients exiting from isolation.
- Clean any gross contamination from all material prior to disinfection.
- After surgery, personnel must clean and disinfect all material and place them in a sealed plastic bag identifying the suspected or confirmed infectious agent prior to deposing 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 or 4 patients should be postponed until the end of the day if possible.
- A sign should be left for cleaning personnel indicating suspected or confirmed infectious agent and the advised disinfection protocol.

4.7.2. REDUCING BIOSECURITY PRECAUTIONS FOR A CLASS 3 OR CLASS 4 PATIENT

- Only Biosecurity Working Group or the Hospital Director 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 FVM Veterinary Clinic Director or superior can give permission to move patients from Isolation to other areas in the hospital.
- 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.

4.7.3. DISEASE DIFFERENTIALS FOR WHICH TESTING IS MANDATORY IN SMALL ANIMAL PATIENTS

- Testing of appropriate samples is mandatory if the following disease or condition is a reasonable differential. 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/animal-diseases/**
  - Terrestrial Animal Health Code: **http://www.oie.int/eng/normes/mcode/en_sommaire.htm**
  - Manual of Diagnostic Tests and Vaccines for Terrestrial Animals: **http://www.oie.int/manual-of-diagnostic-tests-and-vaccines-for-terrestrial-animals/**
- Special attention must be devoted to the following animal diseases:
  - Acute Diarrhea in Dogs and Cats (*Salmonella*, *Campylobacter*, Parvovirus, *Cryptosporidium*, *Giardia*)
    - Canine Distemper Virus
    - Influenza (canine)
    - Leptospirosis
    - Parvovirus
    - Rabies

4.7.4. MANAGEMENT OF PATIENTS WITH DISEASES/CONDITIONS KNOWN/SUSPECTED CONTAGIOUS

- **Gastrointestinal Infection:** Gastrointestinal agents of greatest concern to patients as contagious nosocomial hazards in the FVM include Parvovirosis for unvaccinated and naive animals; Panleukopenia, and *Salmonella*.
- **Respiratory Infection:** Respiratory agents of greatest concern as contagious nosocomial hazards in the FVM include Influenza, Canine Distemper, *Aspergillosis, Feline infectious rhinotracheitis complex.*
- **Neurologic Disease:** Infectious agents associated with neurologic disease that are of greatest concern as contagious nosocomial hazards in the FVM include rabies virus and Canine Distemper Virus.

4.7.5. 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 FVM personnel, students, clients, and to other patients. As such, they are managed with increased biosecurity precautions intended to discourage dissemination in the FVM (class 3 and 4).

4.8. SMALL ANIMAL SURGERY AND ANESTHESIA

4.8.1. ATTIRE FOR THE "CLEAN" AREAS OF THE SMALL ANIMAL SURGICAL FACILITY

(Refer to the FVM Dress Code)

- Clean surgical scrubs, head covers, overshoes, and masks are required for entry into designated "clean" areas of the surgical facility, including scrub rooms and surgical theatres, marked by the red lines.
- Outside of designated "clean" areas of the surgical facility, all personnel should wear some type of clean outer garment over scrubs (e.g., white coat, smock, or coveralls). Personnel must also remove shoe covers when exiting "clean" surgical areas (personnel wearing dedicated surgical footwear should put on shoe covers prior to exiting designated "clean" areas).
- All personnel, including cleaning and maintenance personnel, are required to adhere to all relevant policies regarding attire in surgery facilities.

For class 3 and class 4 dogs and cats:

- The set of outerwear dedicated to the patient in the hospitalization wing should be worn during the animals' transport to the clean area.
- A dedicated set of outerwear, different from the set dedicated to the patient in the hospitalization wing, should be worn in the "clean" areas of the small animal surgical facility.
- After the procedure, this final set can join the animal to its cage when still in good condition.

4.8.2. HYGIENE FOR PERIOPERATIVE MANAGEMENT OF SMALL ANIMAL 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 in surgery.
- Nonessential personnel are prohibited at all times.
- Movement of anesthesia students, staff, and faculty between the anesthesia preparation area, surgery theatre and the Animal Hospital will be kept to a minimum.

For class 3 and class 4 dogs and cats:

- As far as possible, clipping and surgical preparation should be performed in the cage of the animal or on the examination table in the isolation department. 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 yellow dustbins, and all surfaces should be immediately cleaned, disinfected and dried.

4.8.3. GUIDELINES FOR PERIOPERATIVE MANAGEMENT OF SMALL ANIMAL 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 FVM.

- 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 prep area or other areas of the surgical facility. If needed the floor should be hosed between patients and disinfected.
- Equipment will be cleaned and disinfected between applications using appropriately diluted chlorhexidine.
- Routine (e.g., daily) environmental cleaning and disinfection should be carried out in a rigorous manner following prescribed protocols.

For class 3 and class 4 dogs and cats:

- The animal should be pre-medicated in its cage.
- Transport to anesthesia prep should occur just prior to induction. A gurney or transport cage should be used to minimize hospital contamination.
- A remote induction and prep table should be used.
- 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.

4.8.4. ANESTHESIA INDUCTION AREA

- All known or suspected contagious diseases should be clearly noted on the anesthetic 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.
- Unless decided otherwise by the primary clinician, surgical patients will be delivered to the anesthesia prep area one hour prior to scheduled procedures (i.e., scheduled table time), and placed in the anesthesia recovery and preparation area until the time of induction.
- Prepare the IV 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, and returned to the cleaning department.
- Patients shall recover from anesthesia in their own cage whenever possible (own cage for class 3, in the isolation stationary for class 4), class 1 and 2 class dogs can also recover in recovery cages, their own cages or intensive therapy stationary.
- Patient transport tables must be cleaned and disinfected (allowing 15 min contact time), then thoroughly rinsed with water between uses.
- Recovery cages must be swept and mopped by students or technicians between cases.
- The oxygen insufflation hose used in recovery must be, and sprayed with 0,5% chlorhexidine solution (allowing 15 min contact time). The distal end of the tubing must be cleaned of debris with soap and water, soaked in chlorhexidine solution (allowing 15 min contact time), and rinsed

between cases.

- Anesthesia machines must be cleaned and disinfected between cases:
  - Valves and domes will be cleaned with water and dried.
  - 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.
  - Piece adapters will be cleaned with soap and water, soaked in chlorhexidine solution (allowing 15 min contact time) and rinsed after each use.

4.8.5. OTHER ROUTINE CLEANING AND DISINFECTION PROCEDURES

- The surgery theatre must be immediately cleaned and disinfected.
- All contaminated areas must be cleaned and disinfected immediately following the procedure.
- All contaminated instruments and equipment must be cleaned and disinfected, and placed in a yellow plastic bag marked with 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.
  - Soak ET tubes in a large barrel of 0,5 % 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 anesthesia induction area.
  - Any ET tube laid on the ground will require disinfection before use.

4.8.6. MANAGEMENT OF SURGICAL PATIENTS WITH CONTAGIOUS DISEASES

- It is the primary clinician's responsibility to notify anesthesia and small animal surgery about impending surgery on animals with potential infectious diseases (particularly respiratory, gastrointestinal, and multiple-antibiotic resistant bacterial infections).
- An operating room with minimal cross traffic should be selected.
- 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 and students assigned to surgical cases are responsible for identifying and communicating when 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, and returned to the cleaning department.
- Clinicians and students assigned to these cases are responsible for ensuring that induction and recovery areas have been appropriately identified as being potentially contaminated with contagious pathogens, as well as ensuring that they have been appropriately decontaminated prior to use with other patients.
- If the Small Animal Hospital or the individual patient’s risk status for transmission of contagious diseases is elevated, bathing with an antibacterial body wash (e.g., chlorhexidine soap) may be required, at the discretion of the surgeon or Biosecurity Personnel.

4.9. SMALL ANIMAL INTENSIVE CARE UNIT BIOSECURITY

4.9.1. GENERAL MANAGEMENT CONSIDERATIONS FOR SMALL ANIMAL ICU

- Because of the intensive nature of nursing care provided in ICU, it is critical to strictly adhere to barrier nursing and hand hygiene protocols.
- Stethoscopes and thermometers should be cleaned and disinfected frequently to minimize the risk of nosocomial transmission of infectious agents.
- Minimize the number of personnel and students handling cases whenever possible.
- When possible, students assigned to infectious disease cases should not have contact with immune

suppressed patients elsewhere in the FVM. 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 or 4 infectious disease will be placed in cages as far from other patients as caseload will allow.
- An "isolation area" around the animal's housing area will be identified with tape placed on the floor in front of the cage.
- A footbath will be placed within the perimeter for use by anyone entering the isolation area.
- Disposable barrier gowns, 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 small animal patients 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.
- If taken outside, patients with confirmed or suspected infectious diseases should only be taken to the area designated for class 3 and 4 patients. All waste material must be properly disposed and contaminated surfaces in the hospital must be appropriately cleaned and disinfected as soon as possible.

4.9.2. GENERAL CONSIDERATIONS FOR HOUSING INFECTIOUS/ZOONOTIC PATIENTS IN ICU

- Patients with known gastrointestinal or respiratory tract disease should be identified upon admission and brought to the attention of attending nurses and clinicians in ICU.
- Patients with proven parvovirosis, suspected rabies virus infection, clinical signs of rabies, suspected or confirmed feline plague, suspected or confirmed canine distemper, suspected or confirmed tularemia, feline upper respiratory disease complex, or canine infectious tracheobronchitis (kennel cough) including canine influenza should be housed in the isolator.
- In general, these decisions will be based upon the clinical condition, necessary treatment, suspected disease agent, method of transmission, likelihood of persistent shedding or infection, likelihood of exposure to other contagious agents while housed in isolation, etc.

4.9.3. CLEANING, DISINFECTION AND WASTE

- Immediately clean and disinfect any hospital equipment, gurneys, and examination tables after contact with infectious disease suspects, and follow general guidelines for hygiene/cleanliness.
- 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 handling infectious disease patients.
- A separate mop and mop bucket will be provided for infectious patients.
- After handling the infectious disease patient remove the barrier nursing gown and hang it within the taped area for class 3 animals or in the transition room of the isolation area for class 4 animals; or discard if soiled. Remove and discard gloves, use the footbath and wash hands.
- Yellow dustbins should be used to collect all disposables and laundry coming in contact with infectious disease suspects.

4.9.4. ADDITIONAL DISEASE SPECIFIC INFORMATION

- It is strongly encouraged for all hospitalized patients to undergo diagnostic testing if infection with specific contagious or zoonotic agents is a reasonable consideration. Disease for which testing is strongly encouraged include Canine Distemper Virus, Canine Influenza Virus, Cryptosporidium, Giardia, Leptospirosis, Parvovirus, Rabies (See Small Animal General SOP for details). This diagnostic testing is considered essential to case management in the FVM and therefore, patients will have to be designated to category 4 if the owner refuses these tests to be performed. The financial repercussions that category 4 designation has will be billed to the client. For more information on diagnostic testing see website of the OIE:

Manual of Diagnostic Tests and Vaccines for Terrestrial Animals:

- **Feline Leukemia Virus (class 2)**

  - Feline patients with suspected or confirmed FeLV infection will be housed 1 cage away from other cats if possible. Signs should be placed on the cage identifying the suspected pathogen.
  - Students and nurses assigned to the case should not handle other sick felines within ICU.
  - Ideally other feline cases should be handled before handling the FeLV case in case caseload does not allow segregation of cases.

- **Feline Panleukopenia (class 4)**

  - Feline patients with suspected or confirmed feline panleukopenia will be housed in the isolation ward 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.
  - Students and nurses assigned to the case should not handle other sick felines within ICU. When caseload does not permit segregation of cases, other feline cases should be handled before handling the FeLV or panleukopenia case.

- **Canine parvovirus (class 4)**

  - 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. Signs should be placed identifying the patient as a "parvo suspect".
  - A diarrhea screening test is strongly recommended to evaluate the cases for possible viral pathogens, parasites, and faecal culture. When the disease is confirmed, the signage should be write at the patient stationary card.
  - When possible, students and nurses assigned to care for parvovirus patients will not have contact with other at-risk dogs (under 1.5 years).

- **Leptospirosis (class 3)**- Patients identified as suspected or confirmed Leptospirosis (Class 3) cases should be segregated and isolated within ICU as described in the general housing rules above.
- **Patients Carrying Bacteria Resistant to Important Antimicrobial Drugs (class 3)**

4.10. BREAKING TRANSMISSION CYCLES

Biosecurity personnel should be notified ASAP 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.ICU 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.

- Visiting hours for the Small Animal Hospital are from 15:00 to 18:00 daily. All visitors must check

in at the Reception desk and wait in the waiting room to be escorted to their animal.
- All visitors must strictly adhere to Biosecurity Precautions for managing patients.
- All visitors should be instructed to thoroughly wash their hands after leaving inpatient areas.
- The general public is not allowed to tour inpatient areas of the Small Animal Hospital. Special arrangements can be made to provide tours for visiting scientists by contacting Biosecurity Personnel.

4.10.1. CLIENTS IN THE FVM

- Clients must adhere to requirements for appropriate clothing. Coveralls are available for clients to wear if requested.
- A student, clinician, or nurse 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 or enter the cage.
- Clients may visit their animals, but are not allowed to wander in the facility and specifically are not allowed to touch other patients or read other animals' treatment cards or treatment orders. Information about other patients is confidential, including diagnoses, and should not be divulged.
- Owners or their designated agents may visit hospitalized inpatients; other interested parties are not allowed to visit inpatients without express permission of the owners.
- Clients are never allowed to visit animals housed in isolation. With express permission from Biosecurity Personnel, exceptions to this visitation rule may be granted under extraordinary circumstances, such as when patients are to be euthanized.

4.10.2. CHILDREN IN THE FVM

- Children are under no circumstances allowed to be left unattended in the hospital. In order to avoid accidents and to maximally avoid infectious risks, children should always be supervised by an adult.

4.10.3. PETS IN THE FVM

- Pets are under no circumstances allowed to visit other hospitalized pets.

4.11. DECEASED PATIENTS

4.11.1. 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, nurse or responsible veterinarian.
- Students, nursing staff, 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).

4.11.2. 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 or cremation services.

4.11.3. REFERRAL FOR

4.11.3.1. PATHOLOGY

- The cadavers are stored in the refrigerator. During clinical rotation practice cadaver should be taken to the Autopsy Department as soon as possible.

Chapter 5. BIRD, RABBIT, RODENT, POULTRY, ZOOLOGICAL AND EXOTIC SOP

5. BIRD, RABBIT, RODENT, POULTRY, ZOOLOGICAL AND EXOTIC BIOSECURITY SOP

5.1. GENERAL CLEANLINESS AND HYGIENE:

- Maintaining hospital cleanliness and appropriate personal hygiene are responsibilities of ALL personnel working in the FVM.
- Hands must be washed or cleaned with an alcohol-based hand sanitizer prior to, and after examining each patient.
- Clean exam gloves should be worn when handling high-risk patients (i.e. infectious disease suspected), protection glasses should be worn when handling parrots suspected of Chlamydiosis or when performing necropsies of hare.
- Surfaces or equipment contaminated by faeces, secretions, or blood must be cleaned and disinfected immediately by personnel in charge of the patient. This is especially important regarding patients known or suspected of shedding important infectious disease agents.
- Clean and disinfect all equipment including between patients (muzzles, specula, forceps, etc.) using 70% alcohol or 0.5% chlorhexidine available in various areas. Clean equipment is sterilized every day in the oven or the sterilizer. Students are expected to carry some of their own equipment (e.g. scissors, clipper blades, thermometers, leash, stethoscope, percussion hammer, penlight and haemostat), and it is critical that these supplies are routinely cleaned and disinfected.

5.2. GENERAL ATTIRE FOR THE BIRD, RABBIT, RODENT, POULTRY, ZOOLOGICAL AND EXOTIC MEDICINE HOSPITAL

- The FVM promotes the use of hospital dedicated attire in order to decrease the risk of spreading infectious agents.
- 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 hospital.
- This attire should be appropriate to the job at hand (dedicated white blouses for necropsy and light green or blue blouses for examinations or small surgery). A name card should be present on both types of clothes.
- Footwear: it is recommended that all personnel wear sturdy boots or shoes at all times while working in the clinic. This type of footwear is easier to clean and disinfect compared to footwear constructed of porous materials.
- Personnel must be willing to disinfect footwear while working, which provides a good check regarding suitability. Water-impervious footwear is strongly recommended to limit damage to footwear that will eventually occur after exposure to footbath solutions.
- Students going on exploitation visits should wear their civilian clothes with which they have had no previous contact with birds, rodents or rabbits within six days prior to the visit. They must strictly conform to all the staff’s instructions.

5.3. GENERAL CLEANLINESS AND HYGIENE

- Maintaining hospital cleanliness and appropriate personal hygiene are responsibilities of ALL personnel working in the veterinary clinic.
- Gloves and appropriate attire should be worn whenever using disinfectants. Gloves worn for regular patient examination (exam gloves) or gloves worn during routine cleaning operations (rubber cleaning gloves) provide adequate protection when using disinfectants.
- Remove all gross contamination prior to disinfection. Wash the material 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. Allow area to drain or dry as much as possible to prevent dilution of disinfectant solutions.
- This disinfectant should remain in contact with surfaces for 15 minutes, particularly if infectious

agent is suspected. Remove excess disinfectant with water. 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.

5.3.1. PROPER CLEANING

5.3.1.1.1. PROCEDURE

- Once cleaned the instruments are sterilized daily in an autoclave. Furthermore, a weekly disinfection is also performed. The consultation tables are cleaned with water and alcohol between each patient.

5.3.2. GENERAL DISINFECTION PROTOCOL Follow general guidelines.

5.3.3. DISINFECTANTS

- In case of suspicion of new castle disease (NCD) or avian influenza (AI), all materiel will be disinfected by a disinfectant agreed for control of NCD and/or AI.

5.3.4. FOOTBATHS AND FOOTMATS

- Footmats solutions are changed by personnel whenever they are judged to contain excessive amounts of dirt but they should be changed at least once a week. Footmats should be moistened by anyone that notices they are dry; this is the responsibility of ALL people working in this area. Personnel are required to use footmats appropriately whenever they are encountered.

5.3.5. DISINFECTION PROTOCOL FOR INSTRUMENTS AND EQUIPMENT

- All instruments, equipment or other objects must be cleaned and disinfected or sterilized between uses on different patients. Materials must be cleaned with soap and water and disinfected with a 0.5% chlorhexidine solution after use on patients. Materials for necropsy are sterilized every day. First they are cleaned and disinfected with Dettol and after rinsing they are sterilized either in the oven or in the sterilizer according to the materials to be treated.

5.3.6. FOOD AND BEVERAGES

- Food and beverages are strictly forbidden within the hospital. Students can easily access the FVM cafeteria. It is allowed to eat and drink in the kitchen and in technicians' and clinicians' offices.

5.4. GUIDELINES FOR RECEIVING AND MANAGING PATIENTS

5.4.1. OUTPATIENTS

Consultations

- It is of major importance that the individual booking the appointment reduces as much as possible the risk of introduction into the clinic of animals infected by certain serious infectious diseases. If this procedure has not been respected or if the animal is already present in the clinic, the consultation can be performed following the recommendations hereafter:
    - It is strictly forbidden to enter a room where a consultation is already taking place.
    - It is strictly forbidden to make a patient enter a consultation room before cleaning and disinfection of the tables and equipment has been performed by a member of staff.
- Fill the client and consultation sheets in (before manipulation of the animal) including date, details of the owner and of the referring veterinarian if necessary. A complete physical and clinical description of the animal(s) is essential. For exotic animals the genus and species must be recorded. If a serious infectious and/or contagious condition is suspected, a member of staff must be

immediately informed and the latter must take adequate decisions. Report to the specialized member of staff who will determine the genus and species, when a reptile is presented for consultation. Introduction of venomous reptiles into the clinic is strictly forbidden. These patients will not be taken in charge even in the absence of students. Companion birds must never, whatever the pretext, be taken out of their cage in the absence of a member of staff. For other animals, if the physical state and/or its level of stress or dangerousness permit it, a complete general clinical examination must be performed. If the previous conditions are not fulfilled a member of staff must be called for the manipulation and examinations.

5.4.2. INPATIENTS

5.4.2.1. STALL ASSIGNMENTS

- Cages for housing inpatients are assigned by the staff. Personnel should check with the Staff on day or night duty to find out where to put newly admitted inpatients prior to putting the animal into cages.

5.4.2.2. PATIENT RECORDS AND MEDICATIONS

- All the clinical data and medication administered during hospitalization must be recorded on specific standardized sheets (register).

5.4.2.3. FEED AND WATER

- Only minimal amounts of bedding, forage, and concentrate feeds are to be stored in the Hospital in order to decrease the likelihood of contamination.

5.4.2.4. BEDDING

- The students and/or nurses are responsible for the inpatients are expected to maintain the cages in a perfect state of cleanliness on a daily basis. The cages are washed and disinfected. In all cases contaminated matter whether it comes from a certified infectious case or not, are to be disposed of in the yellow bins intended for biological waste.
- The students and nurses must change gloves and wash their hands between upkeep procedures of different animals. It is strictly forbidden to share matter and equipment between cages. At the end of hospitalization, the cages will be washed and disinfected following standard procedures before introduction of new patients.

5.4.2.5. DISCHARGE

- 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. Cages used to house 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 a white tape marker placed on the stall door until full disinfection has been done.

5.5. MANAGING PATIENTS WITH SUSPECTED CONTAGIOUS DISEASE

- Suspected respiratory, feather, neurological or gastrointestinal tract infectious disease cases should be triaged in the parking lot before admission when possible.
- Personnel accessories (mobile phones...) must not enter consultation and/or necropsy rooms or animal holdings. Exclusively a pen, overcoat and name badge are allowed. If necessary these items must be treated chemical or thermal processing depending on the infection diagnosed, despite the possibility of negative consequences on these items. The clinic can’t be held responsible for the following damage:

- It is forbidden to take anything out of the consultation or necropsy room without formal approval from a member of staff.
- Waste must be disposed of following the recommendations of FVM: all contaminated waste must be put into the special yellow bins.
- It is strictly forbidden to take feathers, beaks, skulls or any other element of the animals presented at consultations or necropsy away.
- NCD/ HPAI (high mortality rate and/or major neurological disorders and /or other alarming clinical signs) require the assistance of a member of staff who will take adequate measures; nothing must be taken out of the room, soles of shoes must be disinfected, clothes washed and no contact with other birds is allowed during a period of 6 days.
- RHD: avoid contact with animals susceptible to infection until soles of shoes have been disinfected and clothes washed.
- Chlamydophilosis: this disease is very frequent in psittaciformes. Consultations and examination of these animals must be performed with gloves and protection glasses except if a formal proof that the animal is not infected is available. A mask must be worn in cases of serious suspicion of chlamydophilosis. If a flu-like syndrome develops one to three weeks' post-examination of birds suspected of infection the student must consult his doctor (GP) and inform him of the possibility of psittacosis - In other doubtful cases: report to a member of staff who will take adequate decisions.

5.5.1. MOVEMENT OF HIGH RISK PATIENTS

• Movement of animals suspected of NCD, of highly pathogenic avian influenza or of RHD is strictly forbidden. The rooms in which such patients have been introduced must be closed until complete cleaning and disinfection.

5.5.2. DIAGNOSTIC AND SURGICAL PROCEDURES ON HIGH RISK PATIENTS

• Except for taking the samples legally required and euthanasia, any other intervention on animals with NCD or HPAI is strictly forbidden

5.5.3. REQUIRED DIAGNOSTIC TESTING IN PATIENTS WITH SUSPECTED INFECTIONS

- Any suspicion of infectious disease must be reported to the referring veterinarian or to the owner of the animal. The veterinarian or owner will be informed of the necessity of taking samples to confirm or reject the suspicion.

5.5.4. BIOLOGICAL SPECIMENS FROM SUSPECTED OR CONFIRMED CONTAGIOUS PATIENTS

- Samples from animals suspected of HPAI or NCD will be processed following the legal recommendations. Samples from animals suspected of infectious disease must be wrapped in such a way as to prevent any form of contamination even in case of rupture of the primary wrapping (container, disinfected plastic bags.).

5.5.5. REDUCING BIOSECURITY PRECAUTIONS FOR A PATIENT

- Any adaptation of the biosecurity measures will be done according to the specific context and will have to be approved by a clinician belonging to staff.

5.5.6. 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 FVM personnel, students, clients, and to other patients. As such, they are managed with increased biosecurity precautions intended to discourage dissemination in the FVM.
- Administration of antibiotic treatment to such patients in the absence of a control antibiogram is forbidden. These analyses are performed at the expense of the owner. Administration of quinolones of third generation or of antibiotics intended for human use is forbidden in the absence of a control antibiogram.

5.6. ISOLATION FOR EXOTIC ANIMAL PATIENTS

- Use heated isolation cages when possible,
- When a diagnosis of infectious disease is clearly established it must be indicated directly on the animal's cage with a specific sheet.
- The presence of visitors is strictly forbidden in proximity of animals in isolation
- The equipment used for these animals must be kept in a nominative plastic bag situated near the cage. It can never be used for another animal until appropriate cleaning and disinfection (oven or autoclave).
- It is strictly forbidden to enter hospitalization/isolation areas without wearing the overalls situated in the entrance lobby of these respective areas. It is strictly forbidden to wear the latter overalls outside of these areas.
- A sink is available in the entrance lobby. Washing and disinfection of hands is compulsory at the entrance and exit of the hospitalization/isolation areas.
- At the end of a period of hospitalization/isolation the animals are returned to their owners in the travel cage they arrived in. Beforehand the travel cage must be cleaned and disinfected by the students responsible for the case.

5.6.1. USE OF ULTRASONOGRAPHY, RADIOGRAPHY OR EKG

Echography, radiology or ECG examinations on animals suspected of infectious disease must be limited to cases in immediate danger of death.

5.6.2. SURGERY/ANAESTHESIA IN ISOLATION PATIENTS

- Specimens obtained from high risk patients should be correctly labeled with appropriate identification, then placed in a plastic 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.

5.7. SURGERY AND ANAESTHESIA - according to the information described in the chapter 4.

5.8. EXOTIC/ZOOLOGICAL AMBULATORY

- Students going on visits to aviculture holdings, rabbit holdings or rehabilitation centers should wear their civilian clothes with which they have had no previous contact with birds, rodents or rabbits within six days prior to the visit.
- The same standard of hygiene and work quality (hand washing...) as in the clinic (see specific chapters) must be applied.

Chapter 6. FOOD SCIENCE BIOSECURITY SOP

6. BIOSAFETY PROCEDURES TO FOLLOW DURING THE PRACTICAL TRAINING IN FOOD HYGIENE

The aim of the present documents is to give the detailed descriptions on safety during the practical exercises in food hygiene study courses to:

a) Avoid the possibility for students, faculty personnel and food plant personnel to be infected with infectious diseases/ foodborne infection
b) To protect animal against exposure of animal infection agents and zoonoses, which potential carriers are students and faculty personnel
c) Avoid physical chemical and microbiological contamination of raw material and end product with environmental and pathogenic microorganisms

Document regulating the biological safety during the practical exercise in food hygiene study courses, which are held under supervision of faculty teacher, and during the professional practice under supervision of FVS inspectors and official veterinarians, as well as applicable to other lessons, when the visit of food processing plant are expected. During the laboratory testing of food, the general guidelines on work safety in microbiological laboratory are relevant. Information of possible agents of infectious diseases with which work performers could be infected during the meat inspection and food testing, are summarized in Table 6.1. and 6.2.

6.1. Target group

Students who perform practical training under supervision of the teacher in food hygiene study courses
Visits of the follow food plant are planned during the food hygiene and inspection study course: slaughterhouse (pig, cattle and poultry), meat, milk and fish processing plant.
Description of content of the training
Slaughterhouse visits are planned to develop the day one skills regarding the animal welfare, ante-mortem lairage and evaluation, post-mortem inspection, sampling and decision making regarding the ante-mortem and most-mortem inspection results.
Visit to food processing plants are planned for students to get overview on food processing plant functions and responsibilities for production of food safe to consumers, as well as to be involved in practical maintenance of food processing and processing hygiene, including plant hygienic management. Professional practical training in food hygiene is intended for further development of practical skills, for development of comprehensive understanding of food chain, hazards regarding the food chain, decision regarding the food chain and official control procedures. During the professional training, the inspections of catering services, slaughterhouses, food processing and distribution plants, warehouses, shops, farmer production and animal stables are expected. At the slaughterhouse, understanding and skills for performance of official control regarding lairage, welfare, ante-mortem inspection, post-mortem evaluation, sampling, evaluation of results, decision making and registration of the results need to be improved.

6.2. General requirements for visits to food processing plants

- Before the visit, teacher give the detailed instruction taking into account the aspects of plant and the tasks to be addressed. At the enterprise, the representative of the plant gives the specific instructions for visit of plant
- During the training, students need to follow the hygienic guidelines. Some plants are certified according to the ISO and other quality systems, therefore the specific and more strict hygiene requirements may be set for participants
- Students should strictly follow the personal hygiene. Participation in training in dirty cloths, without single use visitor cloths set, jewelry wearing, including watches, earrings, rings, piercings, ornamental nails is prohibited. Use of mobile devices during the training is now allowed. In case, the student violated the rules, the participation in training could be suspended.
- Students should wear single-use shoes cover, coat and hat . Single-use gloves should be used if the practical examination of raw material or end products should be done.
- Personal hygiene and cleanliness of working tools should be checked during the training. In case of necessity, the gloves and should covers should be changed.

- During the training, students should't perform the manipulation with production without the authorized person accept. All manipulations in the slaughterhouse, must be done under supervision of teacher and/or official veterinarian. It is prohibited to damage meat and offal by intension or to subjected the slaughter products to contamination.
- Student's agreement to follow the instruction during the visit is confirmed with the signature in Instruction journal of the Institute of Food and Environmental Hygiene, and on-site at each plant journal of registration of visitors.
- Students to not attend the animal stables, including the waste collection establishments, 48 h before the visit to the food processing plant.
- Visit is planned in direction from clean to dirty area of the establishment.

6.3. Student's health condition before the visit of food processing plant

- Students get acquainted with possible health hazards related to violation of hygienic rules in work with food
- Certificate from physician on appropriate health status to work with foodstuff is required for the professional practical training.
- In case the following symptoms are observed before the practical training – vomiting, diarrhea, icterus, fever, soar throat, skin lesions, exudative otitis, conjunctivitis, rhinitis, students are not allowed to participate in training. The visit of the family doctor is necessary for set of the diagnosis and further treatment.
- If the health problems occurred during the visit, the teacher immediately must be informed.

6.4. Before the training

- Before the training and entering the processing area, the hands must be properly washed and disinfected. Additional hands washing and disinfection could be required during the training in accordance to the hygienic practice of the enterprise.
- The following order must be applied for putting of the single use cloths: hat – coat – food covers.
- Drying of hands performed with paper towels, which must be thrown to a litter bit after the usage.
- Gloves and other working cloths after the usage must be discarded to the container for non-infected material.
- Hands washing and disinfection according to the general guidelines must be done.
- If the students had skin lesions or hand baggage, the gloves must be worn during the visit.
- Specific requirements for visiting of the certain food processing plants
- Visits to food processing plants arranged in direction from clean to dirty area. Participation and visit of students are allowed only under the supervision of representative of the enterprise and teacher. During the professional practice in food hygiene, the student's visits are directly supervised by FVS inspector and official veterinarian.
- Training at the slaughterhouse
- During the training, students attend poultry, pig and cattle slaughterhouse and perform specific tasks, which are attributed to inspection procedures and decision making regarding the lairage, ante-mortem evaluation, welfare evaluation, post-mortem evaluation of organs and tissues.
- Confidence policy must be followed during evaluation of food chain information, usage of the website of Agricultural Data Centre of Republic of Latvia for registration of inspection results.
- After arrival to the slaughterhouse, single use working cloths must be used, hands should be washed and gloves must be wore. Personal belongings should be left at specifically for this purpose designated place.
- Training is held in both clean and dirty area. Lairage is evaluated as a part of the dirty area, therefore the additional ante-mortem stress for animal should be reduced as much as possible.
- Hands and working tools must be washed after each pluck set and carcass examination to avoid cross-contamination between the products. Knives should be washed and placed into sterilization device.
- In case of injury, the work must be stopped and teacher must be informed.

- Work of slaughter line must be monitored.
- During the practical training, is prohibited to contaminate products, impair the sensory characteristics and microbiological quality with intention.
- Procedures with plucks and carcasses must be performed only under supervision of teacher and/or official veterinarian.

6.5. Training

6.5.1. Training in the meat processing plant

- Instruction of the quality manager must be strictly followed.
- During the training, is prohibited to touch production without wearing the protective gloves and impair the quality of the product by intention.
- There are four producing areas in the plant, therefore the additional hand washing and disinfection for moving between the areas are required.

6.5.2. Training in the meat processing plant

- Instruction are given by the plant representative must be followed
- General guidelines for food processing plant visits should be followed.

6.5.3. Training in the fish processing plants

- Instruction are given by the plant representative must be followed
- General guidelines for food processing plant visits should be followed.

6.5.4. Professional practical training

- General guidelines for food processing plant visits should be followed
- Confidentiality policy regarding inspection and inspection results must be followed
- Additional instruction will be given before the start of the training

Table 6.1.

INFECTIOUS AND ZOONOTIC DISEASES COULD BE TRANSMITTED DURINGTHE INSPECTION PROCEDURES AT THE SLAUGHETHOUSE (Fehlhaber, 2014)

Microorganisms	**Transmission**		
	Contact	**Air**	**Orally**
Bacterial			
Bacillus anthracis	**x**	x	x
Brucella	**x**	x	x
Campylobacter			**x**
Chlamydia psittaci	x	**x**	x
Clostridium tetani	**x**		
Coxiella burnetii	x	**x**	x
Erysipelothrix rhusiopathiae	**x**		
Escherichia coli (STEC)			x
Leptospira	**x**	x	x
Listeria monocytogenes			x
Mycobacterium bovis	x	**x**	x
Salmonella			x
Staphylococcus aureus	**x**	x	
Streptococcus (S. suis)	**x**	x	x
Yersinia	x		**x**
Viral			
Avian influenza		x	
Foot and Mouth Disease	**x**		x
Hepatitis E			x

Newcastle disease		**x**	
Rabies	**x**	x	
Rotavirus			x
Norovirus			x
Pox virus	**x**		
Vesucular stomatitis virus	**x**	x	
Parasites			
Cryptosporidium			**x**
Fungi			
Trichophyton verrucosum	**x**		
Prions		x	**x**

Table 6.2.

ZOONOTIC DISEASES COULD BE TRANSMITTED WITH MEAT

Agent	**Animal species**	**Occupational disease**
bacterial		
Bacillus anthracis	ruminants	yes
Bacillus cereus	Pigs, ruminants, poultry	no
Campylobacter jejuni/ coli	Pigs, ruminants, poultry	yes
Clostridium botulinum	Pigs, ruminants, poultry	no
Clostridium perfringens	Pigs, ruminants, poultry	no
Listeria monocytogenes	Pigs, ruminants, poultry	yes
Mycobacterium avium	Pigs, poutlry	yes
Salmonella spp.	Pigs, ruminants, poultry	yes
Staphylococcus aureus	Pigs, ruminants, poultry	yes
Escherichia coli (STEC)	ruminants	yes
Yersinia enterocolitica	pigs	yes
Viruses		
Hepatitis E	pigs	yes
Parasites		
Sarcocystis suihominis	pigs	no
Taenia saginata	cows	no
Taenia solium	pigs	no
Toxoplasma gondii	Pigs, cows, sheep/goats	yes
Trichinella spp.	pigs	no
Prions		
BSE/TSE	Cows, sheeps/goats	no

Chapter 7.** EXPERIMENTAL FARM SOP**

Chapter 8. ANATOMY DEPARTMENT SOP

8. ANATOMY DEPARTMENT SOP

8.1. GENERAL ATTIRE FOR THE ANATOMY DEPARTMENT

- **Origin of the animals**
  - **Animal dealers:** sound ponies and ruminants. A clinical examination is carried out by the veterinarian in charge of the euthanasia.
  - **Animal husbandry:** sound rabbits and poultries. A clinical examination is carried out by the veterinarian in charge of the euthanasia.
  - **Cointe SPA:** Dogs and cats for anatomy practical are coming from the FVM Small Animal hospital who are euthanized because of non-infectious disease.
- **Necropsy room:** parts of cadavers: limbs, trunks, heads from horses, ruminants, dogs, pigs. The technicians of the anatomy department only take pieces that are certified sound.
- The animals coming from animal slaughter house or animal husbandry are euthanized at the place of animal husbandry, slaughter house. The animals coming from the SPA or the necropsy room are dead when they arrive at the anatomy department.
- Divisions within the anatomy department: one part of the department is directly concerned by biosecurity measures (risk zone/ dirty zone): it includes three dissection rooms, the refrigerator, the deep freeze refrigerator, the maceration room. The other part is not at risk (clean zone) and comprises the osteology room, the workroom, the reserve room, the offices and the museum. The passages to the entrance hall are considered as transit zones.
- The back entrance hall is reserved for students going to dissections rooms and to meet the staff. The front entrance hall is reserved for the students going to their offices or laboratories.
- Dissections are organized by weeks. Students come with their own rubber boots, latex gloves, muffs and caps. They will receive an apron and the dissection case at the beginning of the practical.
- Students must wear an apron and rubber boots as soon as they enter the dissection room and must take them off as soon as they leave the risk zone and place them into the wardrobe after each dissection. Rubber boots and dissection instruments have to be washed thoroughly and disinfected at the end of each dissection before the students take them back home. Used scalpel blades and dirty latex gloves, muffs must be placed in yellow boxes (materials at risk).
- Hair must be collected under the helmet and nails cut for risk reduction of infection.
- At the end of the week, the aprons will be collected by the technical staff of the anatomy department and placed in a yellow box to be destroyed.
- The members of the staff must wear an apron and rubber boots as soon as they enter the risk zone. The rubber boots are stored in a cupboard placed in the entrance hall.
- Photographing and filming is not allowed into the anatomy department.
- The information at the anatomy department must be disclosed.

8.2. GENERAL CLEANLINESS AND HYGIENE

8.2.1. GENERAL DISINFECTION PROTOCOL

- It is obligatory to wash and disinfect hands before leaving the risk zone (the procedure for washing and disinfection will be illustrated by a poster). The use of latex gloves during the dissection is mandatory but this doesn't remove the obligation to wash and disinfect the hands before leaving the risk zone.
- 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 in a separate yellow box, washed and disinfected their hands, instruments and rubber boots. All the contaminated cadavers will be placed by the staff into a special collecting dustbin of the autopsy room. Instruments, rubber boots and special shoes of the staff as well as tables and dissection rooms will be washed thoroughly and

disinfected.

8.2.2. FOOTBATH

- Students must wear rubber boots as soon as they enter de dissection room and these must be taken of as soon as they leave the risk zone and place them into wardrobe after each dissection.
- Rubber boots have to be scrubbed and disinfected at the end of each dissection before the students take them back home.

8.2.3. DISINFECTION PROTOCOL FOR INSTRUMENTS AND EQUIPMENT

- Dissection instruments used by the students have to be washed thoroughly and disinfected at the end of each dissection.
- Used scalpel blades and dirty latex gloves must be placed in yellow boxes.
- Dissection instruments used by the staff have to be washed every day and disinfected at the end of each dissection.
- Dissection rooms will be washed with the disinfection material at the end of each dissection week. Every day, dissection rooms will be swept, rinsed with water (garden hose) and scraped.
- Dissection tables will be washed everyday with industrial detergents and disinfected at the end of each dissection week.
- For disinfection material see table 5.

8.2.4. DETERGENTS AND DISINFECTANTS APPROVED FOR USE IN THE ANATOMY DEPARTMENT

8.2.4.1. DETERGENTS AND DISINFECTANTS

- **For the tables and the floor:**
  - See table 5.
- **Hand soaps and disinfectants:**
  - See table 5
- Students are demanded to be immunized against tetanus. If a student has cut himself during dissection, he must immediately stop the dissection, call a member of the staff and wash his hands. The wound is inspected and disinfected with dermic isobetadine.
- If the wound is deep, the student is brought to the hospital for a suture. If the wound is superficial, it is protected from further contamination by a dressing.
- If a student appears not to be immunized against tetanus, he must go to the hospital and receive proper wound-care, an anti-tetanus serum and a tetanus vaccine.
- **Instrument disinfection:**
  - See table 5.

8.2.5. FOOD AND BEVERAGES

- It is strictly forbidden to drink or eat within the anatomy department apart from the secretary and offices.

8.2.6. GUIDELINES FOR CHOOSING AND RECEIVING CADAVERS

- Only sound animals are bought by the anatomy department. Pieces coming from the autopsy room are taken only if they have been certified sound by the pathologist responsible for the necropsy.
- Cadaver receiving and recycling journal is filled in by the laboratory worker.

8.2.7. DECEASED PATIENTS

BREAKDOWN OF PATIENT ENVIRONMENT AND STORAGE OF PATIENT CORPS

- Cadavers are stored within the refrigerator or the deep freezer before their use.
- They are stored in the refrigerator during the dissection week and eliminated directly at the end of the dissection week in the collecting dustbin of the autopsy room.
- Refrigerator and deep freezer are regularly cleaned and disinfected.
- If longer storage is required, the cadavers are fixed in 70% ethylene.

8.2.8. BREAKING TRANSMISSION CYCLES

VISITORS IN THE FVM

- Visitors are only allowed to walk along the corridors and the clean zone.
- Photographing and filming is not allowed into the anatomy department.

CHILDREN IN THE FVM

- Children visiting the anatomy department (osteology museum) are only allowed to walk along the corridors and the clean zone under supervision of an anatomy department staff member.
- Children are not allowed to visit the necropsy room.

PETS IN THE FVM

- Neither the staff, nor students are allowed to come to the Anatomy Department with their pets.
- Access of all animals other than used for anatomy purposes is strictly forbidden.

Chapter 9. LABORATORY BIOSECURITY SOP

9. FVM LABORATORY BIOSECURITY SOP

9.1. NECROPSY AREA BIOSECURITY SOP

9.1.1. INTRODUCTION

- Infection risks are common in the necropsy suite. Students and Faculty personnel expect protection from hazardous infections in their working practice.
- The aim is to reduce the risk as far as possible within the resources available whilst teaching the students and maintaining a service to clinicians, practitioners and owners.
- If a significant human infection risk and significant animal disease transmission risk is encountered, then next step is to report this information to Food and Veterinary Service, which will ensure the execution protocols.
- The emphasis here is on risk assessment, establishment of protocols for dealing with anticipated circumstances, and raising the level of universal precautions.

9.1.2. ISSUES

- The issues addressed in these guidelines include:
  - The classification and stratification of the hazardous infections that may be encountered
  - The development of standard protocols to minimize the risk of infection from all cadavers
- There are other, non-infectious, risks to students and Faculty personnel in the necropsy suite. These include electrical safety, manual handing of knifes, blades, scissors and power bone saw, and chemical substances hazardous to health. These are regulated in standard university protocols and are not considered in these guidelines.

9.1.3. ACQUISITION OF INFECTION

- Infections in the necropsy hall 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 necropsies are rabies virus, *Mycobacterium* spp, and prions, *Salmonella*, *Clostridium.*

9.1.4. CLASSIFICATION OF PATHOGENS

- The World Health Organization (**www.who.int**) categorized human and animal infectious agents into four risk group categories.
- For students and Faculty personnel, the significant risk groups are the third and fourth group pathogens.

9.1.5. RISK GROUP 1

- A microorganism that is unlikely to cause human or animal disease. Includes *E.coli*, soil microorganisms and non-pathogenic microorganisms.

9.1.6. RISK GROUP 2

- A pathogen that can cause human or animal disease but is unlikely to be a serious hazard to laboratory workers, the community, livestock or the environment. Laboratory exposures may cause serious infection, but effective treatment and preventive measures are available and the risk of spread of infection is limited. Includes viruses and bacteria, which are slightly pathogenic, or which are not particularly infectious.
- The most likely route of transmission of these biological agents in the post-mortem room is by hand to mouth. Good hygiene procedures, including proper hand washing, should prevent their

transmission.

- Inoculation is also possible, but reduced to a minimum by standard modern universal precautions.
- Regarding necropsies on animals with granulomatous lesions, with the low risk of inhaled infection during the procedure, wearing a mask appropriate for a tuberculosis/tularemia necropsy provides sufficient protection and additional antibiotic prophylaxis can be considered on a case-by-case basis.

9.1.7. RISK GROUP 3

- A pathogen that usually causes serious human or animal disease but does not ordinarily spread from one infected individual to another. Effective treatment and preventive measures are available. Includes tuberculosis, SARS, anthrax and typhoid fever.
- The necropsies and sampling procedures are not allowed for these Risk Group patients.

9.1.8. RISK GROUP 4

- A pathogen that usually causes serious human or animal disease and that can be readily transmitted from one individual to another, directly or indirectly. Effective treatment and preventive measures are not usually available. Includes Marburg, Ebola and pox.
- The necropsies and sampling procedures are not allowed for these Risk Group patients.

9.1.9. STANDARD PROCEDURES FOR ALL NECROPSIES

- Students and Faculty personnel are required to wear the following:
  - Gown that completely covers the arms, chest and legs;
  - Lab-coat/scrub top/coverall;
  - Apron;
  - Latex or nitrile gloves;
  - Rubber boots;
  - Facemask to protect mouth and nose from direct splash contamination and eye protection whenever a power bone saw is used.
- Apart from hand and respiratory protection, for which there are higher levels of protection, these standards reduce the risk of infection from cadavers with any of Risk Group 2 infections to an acceptable level, even when they are not known prior to the necropsy.
- Faculty pathologists are aware of the fact that they have the duty to minimize risk to those who are involved in handling a cadaver during and after autopsy.
- Six distinct areas for necropsy suite were clearly demarcated in the Comparative pathology laboratory. These six distinct areas are the following a:
  - Changing rooms;
  - Entry and exit path with disinfection footbath;
  - Hall;
  - Working area;
  - Sample cutting area;
  - Cadaver storage area/cold room.
- The only authorized circuit is painted on the floor, with successively:
  - Entry in the changing room where students put their personal affairs in locker, put a gown, clean lab-coat/scrub top/coverall, put on changing shoes and take rubber boots in plastic bag:
  - Entry in the necropsy hall via the entry path, where in the necropsy hall anteroom students from plastic bag get out boots and place them in “necropsy room clothes only” zone, take off changing shoes and put on rubber boots;
  - Entry in the working area, where disposable gloves, cap and arm sleeves, aprons and disinfected dissection equipment are available;
  - Exit first via the relatively clean area, where students are requested to wash their apron and boots, to trash their gloves, caps and arm sleeves and to wash and disinfect their hands;

- Passage in the disinfection footbath and the necropsy hall anteroom, where students take off rubber boots, place them in plastic bag and put on changing shoes;
- Return in the changing room where students put their gown off, wash and disinfect their hands and get their personal affairs back.

- If in necropsy hall is planned other study course/institution teaching lesson, then these guidelines are instructed by necropsy hall technician or pathologist.
- Basic guidelines/procedures are summarized in appropriate protocols, which are placed in the necropsy hall.

9.1.10. WATERPROOF TRANSPORTATION CONTAINER

- The transportation of cadavers in the FVM is achieved via a waterproof transportation container.
- The cadavers must be put down in the cold room of the necropsy hall.
- The cadaver is further stored in the cold room by the technician responsible of the necropsy hall.
- The containers are then washed and disinfected with the high pressure washer (Kärcher).
- The same procedure must be applied to the container and tires of the truck used by the FVM to collect cadavers originating from outside the FVM.

9.2. DIAGNOSTIC IMAGING BIOSECURITY SOP

9.2.1. GENERAL GUIDELINES

- Radiological procedures or examinations should not be performed on animals with suspected infectious diseases unless required, and when possible should be scheduled at the end of the day.
- It is the primary clinician's responsibility to notify the Imaging Section personnel and to state procedures to be used to prevent spread of infectious disease for animals with potential infectious diseases (particularly respiratory, gastrointestinal, and multiple-antibiotic resistant bacterial infections).
- If required before the end of the day, the examination room and equipment in Diagnostic Imaging must be cleaned and disinfected directly after the examination or the examination must be done in the patient housing section with particular precaution.
- Ensuring that personnel and students involved in diagnostic imaging of patients with increased contagious disease risks is ultimately the responsibility of the clinicians responsible for patient care. Hazards should be clearly marked on the request form for radiographic, ultrasound or CT consultation.
- It is the responsibility of the primary clinician to indicate barrier clothing (gowns, gloves) and procedures to be followed (including efficient disinfecting agent).
- The facility and equipment must be cleaned and disinfected as soon as possible. Radiology staff will supervise or perform cleaning and disinfection of radiology equipment.
- 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. The ultrasound pillow used for small animal patients should be placed in plastic bag and covered by an under sheet which should be thrown in yellow waste container.
- Paper towels used to dry animals and to clean the equipment, gloves, disposable outerwear, urine and faeces should be thrown in yellow waste container. This container is sealed just after the cleaning.
- The ultrasound machine should be manipulated by the person realizing the ultrasound exam with her/his clean left hand or by a different operator not handling the patient. For ultrasound exams undertaken in the large animal infectious unit, 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. Only the

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

- 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 radiology exams, the cassette should be placed in a plastic bag which should be retrieved by a person with clean hands before processing.
- Wash hands between cases regardless of infectious status of the patient.
- Personnel and student should wear disposable outerwear and gloves to handle the patient.
- All individuals contacting the animal must wash hands carefully when the procedure is complete.
- Following imaging evaluation of cases with known or suspected infectious disease, the radiograph examination room should be closed and disinfected as soon as possible by the Imaging Section technicians. Paper towels used to dry animals and to clean the equipment, gloves, disposable outerwear, urine and faeces should be thrown in yellow waste container. This container is sealed just after the cleaning.
- The number of people involved in imaging examinations should be limited as much as possible.
- All personnel and students working with radiology must wear radiation lead protection and personnel must wear badges.

9.2.2. LARGE ANIMAL PATIENTS

- The portable radiograph machine should be used when possible on large animals with known or suspected infectious diseases.
- Transport small ruminants to the Imaging Section on gurneys or in carts when possible.
- Radiology personnel and students entering the Large Animal Hospital should follow the clothing protocol appropriate for the area.

9.2.3. SMALL ANIMAL CASES

- If a contagious disease is known or suspected, the patient should remain in its housing area until ready to image.
- A gurney or transport cage should be used to minimize hospital contamination.

9.2.4. IMAGING ROOMS AND EQUIPMENT

- Spray or mop floor with disinfectant after a known or suspected infectious disease case.
- Lead aprons/gloves should be sprayed with disinfectant after use on a known or suspected infectious disease case.
- Clean and disinfect lead ropes/head ropes weekly.

Clean and disinfect all equipment daily.

9.3. BIOSAFETY FOR THE MICROBIOLOGY AND PARASITOLOGY STUDY LABORATORY of FVM

The ***Rules of Biosafety*** emphasizes the use of good microbiological work practices, appropriate containment equipment, proper facility design, operation and maintenance to minimize the risk of students and laboratory stuffs injury or illness and the environment safety.

This manual identifies known and potential hazards, and specifies practices and procedures to eliminate or minimize such hazards.

Laboratory with Biosafety Level 2 (BSL-2) is suitable for work involving agents that pose moderate hazards to personnel and the environment.

It differs from BSL-1 in that:

a) laboratory personnel have specific training in handling pathogenic agents and are supervised by scientists competent in handling infectious agents and associated procedures;
b) access to the laboratory is restricted when work is being conducted; and

c) all procedures in which infectious aerosols or splashes may be created are conducted in BSCs or other physical containment equipment.

The following standard and special practices, safety equipment, and facility requirements apply to BSL-2. Characteristic of BSL-2 is shown in Table.

Table 9.3.1.

Relation of risk groups to biosafety levels, practices and equipment

RISK GROUP	BIOSAFETY LEVEL	LABORATORY TYPE	LABORATORY PRACTICES	SAFETY EQUIPMENT
1	Basic – Biosafety Level 1	Basic teaching, research	GMT	None; open bench work
2	Basic – Biosafety Level 2	Primary health services; diagnostic services, research	GMT plus protective clothing, biohazard sign	Open bench plus BSC for potential aerosols

9.3.1. Access

2. Only authorized persons should be allowed to enter the laboratory areas.
3. Laboratory doors should be kept closed.
4. Children should not be authorized or allowed to enter in laboratory working areas.
5. No animals should be admitted in the laboratory working areas.

9.3.2. Personal protection

9.3.2.1. Laboratory coveralls, gowns or uniforms must be worn at all times for work in the laboratory.

9.3.2.2. Protective clothing must be removed and left in the laboratory before leaving for non-laboratory areas.

9.3.2.3. Laundering services should be provided at / near the laboratory area.

9.3.2.4. Personnel must not launder laboratory clothing at home.

9.3.2.5. Nails must be clean and short.

9.3.2.6. Appropriate gloves must be worn for all procedures that may involve direct or accidental contact with potentially infectious materials. After use, gloves should be removed aseptically and hands must then be washed as described in section 1.2. Gloves used in laboratory works should not be worn outside the laboratory areas.

9.3.2.7. Wearing shorts or other clothing that exposes the lower legs is generally considered unsuitable in laboratories because it increases the potential for skin contamination.

9.3.2.8. Students and personnel must wash their hands after handling infectious materials and before they leave the laboratory working areas as described in section 1.2.

9.3.2.9. Safety glasses, face shields (visors) or other protective devices must be worn when it is necessary. Goggles, safety spectacles or face shields should not be worn outside the laboratory areas.

9.3.2.10. Respiratory protection may be used when carrying out hazard procedures (e.g. cleaning up a spill of infectious material) or in time of preparing of microbiological media. Respirators should not be worn outside the laboratory areas.

9.3.2.11. It is prohibited to wear protective laboratory clothing outside the laboratory, e.g., in canteens, coffee rooms, offices, libraries, staff rooms and toilets.

9.3.2.12. Eating, drinking, smoking is prohibited in the laboratory working areas.

9.3.2.13. Storing human foods or drinks anywhere in the laboratory working areas is prohibited.

9.3.2.14. Protective laboratory clothing that has been used in the laboratory must not be stored in the same lockers or cupboards as street clothing.

9.3.3. Procedures

9.3.3.1. Pipetting by mouth must be strictly forbidden.

9.3.3.2. Materials must not be placed in the mouth. Labels must not be licked.

9.3.3.3. All technical procedures should be performed in a way that minimizes the formation of aerosols and droplets.
9.3.3.4. The use of hypodermic needles and syringes in lab works should be limited.
9.3.3.5. All spills, accidents and overt or potential exposures to infectious materials must be reported to the supervisor of laboratory works.
9.3.3.6. A written procedure for the clean-up of all spills must be developed and followed (see section 9.3.10.11.).
9.3.3.7. Contaminated liquids must be decontaminated (chemically or physically) before discharge to the sanitary sewer. An effluent treatment system may be required, depending on the risk assessment for the agent(s) being handled (see section 9.3.10.).
9.3.3.8. Written documents that are expected to be removed from the laboratory need to be protected from contamination while in the laboratory.

9.3.4. Laboratory working areas

9.3.4.1. The laboratory should be kept neat, clean and free of materials that are not pertinent to the work.
9.3.4.2. Work surfaces must be decontaminated after any spill of potentially dangerous material and at the end of each laboratory, scientific work (see section 9.3.10.11.).
9.3.4.3. All contaminated materials, specimens and cultures must be decontaminated before disposal or cleaning for reuse (for decontamination procedures see section 9.3.10.).
9.3.4.4. When windows can be opened, they should be fitted with arthropod-proof screens.

9.3.5. Biosafety management

9.3.5.1. It is the responsibility of the director of institute to ensure the development and adoption of a biosafety manual and instructions.
9.3.5.2. The supervisor of laboratory works should ensure that regular training in laboratory safety is provided.
9.3.5.3. Personnel should be advised of special hazards, and required to read the safety manual and follow standard practices and procedures. The director of institute should make sure that all personnel understand these. A copy of the manual should be available in the laboratory.
9.3.5.4. Appropriate medical evaluation, surveillance and treatment should be provided for all personnel in case of need, and adequate medical records should be maintained.

9.3.6. Laboratory design and facilities

In microbiological laboratory special attention should be paid to conditions that are known to pose safety problems. These include:

- Formation of aerosols
- Work with large volumes and/or high concentrations of microorganisms
- Overcrowding and too much equipment
- Infestation with arthropods
- Unauthorized entrance
- Workflow: use of specific samples and reagents.

9.3.6.1. Design features

- Ample space must be provided for the safe conduct of laboratory work and for cleaning and maintenance.
- Walls, ceilings and floors should be smooth, easy to clean, impermeable to liquids and resistant to the chemicals and disinfectants normally used in the laboratory. Floors should be slip-resistant.
- Bench tops should be impervious to water and resistant to disinfectants, acids, alkalis, organic solvents and moderate heat.
- Illumination should be adequate for all activities. Undesirable reflections and glare should be avoided.
- Laboratory furniture should be sturdy. Open spaces between and under benches, cabinets and equipment should be accessible for cleaning.

- Storage space must be adequate to hold supplies for immediate use and thus prevent clutter on bench tops and in aisles. Additional long-term storage space, conveniently located outside the laboratory working areas, should also be provided.
- Space and facilities should be provided for the safe handling and storage of solvents.
- Facilities for storing outer garments and personal items should be provided outside the laboratory working areas.
- Facilities for eating and drinking and for rest should be provided outside the laboratory working areas.
- Hand-washing basins, with running water if possible, should be provided in each laboratory room, preferably near the exit door.
- Doors should have vision panels, appropriate fire ratings, and preferably be self-closing.
- At Biosafety Level 2, an autoclave or other means of decontamination should be available in appropriate proximity to the laboratory.
- Safety systems should cover fire, electrical emergencies, emergency shower or fire blanket and eyewash facilities.
- A dependable supply of good quality water is essential. There should be no crossconnections between sources of laboratory and drinking-water supplies. An antibackflow device should be fitted to protect the public water system.
- There should be a reliable and adequate electricity supply and emergency lighting to permit safe exit.
- There should be a reliable and adequate supply of gas. Good maintenance of the installation is mandatory.

9.3.6.2. Laboratory equipment

The use of safety equipment will help to reduce risks when dealing with biosafety hazards. This section deals with basic principles related to equipment.

The supervisor of laboratory works should ensure that adequate equipment is provided and that it is used properly. Equipment should be selected to take account of certain general principles, i.e. it should be:

a) Designed to prevent or limit contact between the operator and the infectious material;
b) Constructed of materials that are impermeable to liquids, resistant to corrosion and meet structural requirements
c) All laboratory apparatus and equipment should be kept clean and in good working condition.

9.3.6.3. Use of biological safety cabinets

1. The cabinet must not be used unless it is working properly.
2. Apparatus and materials in the cabinet must be kept to a minimum. Air circulation at the rear plenum must not be blocked.
3. Burners must not be used in the cabinet. The heat produced will distort the airflow and may damage the filters. An electric microincinerator is permissible, but sterile disposable transfer loops are better.
4. All work must be carried out in the middle or rear part of the working surface and be visible through the viewing panel.
5. Air grills must not be blocked with notes, pipettes or other materials, as this will disrupt the airflow causing potential contamination of the material and exposure of the operator.
6. The surface of the biological safety cabinet should be wiped using an appropriate disinfectant after work is completed (see section 9.3.10.13.).
7. Paperwork should never be placed inside biological safety cabinets.

9.3.6.4. Use of refrigerators and freezers

- Refrigerators and deep-freezers should be defrosted and cleaned periodically (see section 9.3.10.14.) and any ampoules, tubes, etc. that have broken during storage must be removed and decontaminated (see section 9.3.10.). Face protection and heavy duty rubber gloves should be worn during cleaning. After cleaning, the inner surfaces of the cabinet should be disinfected (see section 9.3.10.13.).
- All containers stored in refrigerators, etc. should be clearly labelled with the name of the contents and the date stored. Unlabelled and obsolete materials should be autoclaved and discarded ((see section 9.3.10.).
- Flammable solutions must not be stored in a refrigerator unless it is explosion proof. Notices to this effect should be placed on refrigerator doors.

9.3.6.5. Essential biosafety equipment

- A pipetting aid must always be used. Pipetting by mouth must be prohibited.

a) All pipettes should have cotton plugs to reduce contamination of pipetting devices.
b) Contaminated pipettes should be completely submerged in a suitable disinfectant contained in an unbreakable container. They should be left in the disinfectant for the appropriate length of time before disposal (see section 9.3.10.).
c) A discard container for pipettes should be placed within the biological safety cabinet, not outside it.
    - To avoid dispersion of infectious material dropped from a pipette, an absorbent material should be placed on the working surface; this should be disposed of as infectious waste after use ((see section 9.3.10.).
    - Screw-capped tubes and bottles.
    - Autoclaves or other appropriate means to decontaminate infectious materials.
    - **Glass** and **"sharps"**
    - Plastics should replace glass wherever possible.
    - Any article that is chipped or cracked should be discarded (see section 9.3.10.1.).
    - Hypodermic needles must not be used as pipets.

9.3.7. Storage of chemicals

Only amounts of chemicals necessary for daily use should be stored in the laboratory. Bulk stocks should be kept in other (specially designated) room. *Chemicals should not be stored in alphabetical order.*

9.3.8. Emergency services: whom to contact

The telephone numbers and addresses of the following should be prominently displayed in the facility:

1. The institution or laboratory itself (the address and location may not be known in detail by the caller or the services called)
2. Fire services
3. Hospitals/ambulance services/medical staff.
4. Police
5. Responsible technician
6.Water, gas and electricity services.

9.3.9. Emergency equipment

The following emergency equipment must be available:

1. First-aid kit, including universal and special antidotes
2. Appropriate fire extinguishers, fire blankets.

9.3.10. Procedure for decontamination of biohazardous waste

Biohazardous waste material and sharps containers generated within research and teaching facilities are required to be decontaminated in laboratory autoclaves and disposed of using the appropriate waste streams.

The procedures help autoclave users ensure safe and effective processing of biohazardous wastes.

9.3.10.1. Select appropriate containers or bags for collecting materials to be autoclaved.

- Ensure material is safe for autoclaving.
- NEVER AUTOCLAVE FLAMMABLE, REACTIVE, CORROSIVE, TOXIC, or RADIOACTIVE MATERIALS.

  For biohazardous dry solid materials (Petri dishes, disposable inoculating loops, disposable Pasteur pipettes, cotton inoculating swabs, gloves, shoe covers, and any other solid materials potentially contaminated with biohazardous material)

- Dry solid materials collect in polypropylene AUTOCLAVE bags with symbol ☣.
- Disposable inoculating loops, disposable Pasteur pipettes, cotton inoculating swabs must be packed in double polypropylene AUTOCLAVE bags that may protect bags from puncture.
- Ensure that bags are free of sharp objects that may puncture bags. Autoclave bags are tear resistant, but can be punctured or burst in the autoclave.
- Fill bags only 2/3 full.
- Ensure adequate steam penetration by creating an opening of at least 2-3cm in the bag's closed top.

For biohazardous sharps (glass microscope slides)

- Collect in commercially available Sharps containers with lids or closures. Containers must not be tightly sealed shut AND MUST NOT BE OVERFILLED.

For biohazardous liquids (animal body fluids, liquid growth media)

- Never autoclave plastic materials of uncertain heat stability. Collect liquid in glassware or plastic ware that is suitable for autoclaving.
- Glassware must be inspected for cracks prior to autoclaving.
- Do not fill containers more than 2/3 full.
- Make sure that caps are loose or use vented closures.
- Never put sealed containers in an autoclave. They can explode.
- Tube racks can be used for hold test tubes.

9.3.10.2. Place clear autoclave bag or other container in a SECONDARY container labelled with a biohazard symbol/sticker.

- Make sure your plastic secondary container is suitable for autoclaving. Polyethylene cannot be autoclaved.
- Polypropylene, polycarbonate or stainless steel pans are typically used for secondary containment.
- Select a container with the lowest sides possible for the autoclave. This will promote penetration of steam and will collect any leakage or overflow of liquids.
- Make sure pan contains the entire volume of waste—no spilling over sides.
- Leave space between items/bags to allow steam circulation.
- Safely transport the material to the autoclave.

9.3.10.3. Place a Chemical Indicator (CI) in the waste load to check operating parameters.

- If a challenge test pack containing the CI is used, place it with the waste.
- If CI with no pack is used, place it WITHIN the load of waste in a position where it will encounter the greatest challenge to steam penetration.
- Avoid direct exposure to waste by using CIs with extenders, or make one yourself by straightening and trimming a coat hanger, and attach the CI to one end with autoclave tape. Place carefully to avoid puncture of bags.
- Not every container of waste per load must receive a CI. Place CI in the container which occupies the most challenged position in the load (i.e., if running 3 bags, put CI in centre bag).

9.3.10.4. Load the autoclave.

- Review the Standard Operating Procedures (SOP) for the autoclave unit. Training must be provided for any new autoclave operators.
- Check the drain screen at the bottom of the chamber before loading the autoclave. Clean when blocked.
- Place a piece of autoclave tape (Class I Chemical Indicator) on the outside of the container or bag. Black stripes appearing on the tape give a visual verification that the material has been processed.
- If an autoclave is available, place the load + its secondary container in the autoclave chamber for processing.
    - DO NOT OVERFILL THE CHAMBER!
    - Load should not touch chamber walls

- DOOR should be clear of obstructions before closing

- Whenever possible, autoclave the load immediately after preparation. Do not leave unprocessed items in the autoclave overnight.
- If the autoclave is in use, store waste, in a secondary container, in a designated holding area, and decontaminate at the earliest possible time.

9.3.10.5. Choose an appropriate cycle (Table 1.).

Table 9.3.2.

Autoclave cycles

Cycle type	**Typical Parameters**	**Recommended for:**	**Not recommended for**
Liquids	Sterilize temp = 121º c Sterilize Time = 30-60 min. Cool time =40 min. Run time = 70-100 min.	• type I borosilicate glass containers with Vented closures; 2/3 full only • liquid media • non-flammable liquids • aqueous solutions • liquid bio-waste	Dry items That don't require a slow exhaust
Solids / gravity	Sterilize temp = 121º c Sterilize Time = 30 to 40 min. Dry time =0 to 30 min. Run time =45 to 80 min.	• glassware: -type I borosilicate - empty & inverted - no tight or impermeable closures • dry hard items, either unwrapped or in porous Wrap • metal items with porous parts • other porous materials	Liquids or Media that require a slow exhaust
Pre-vacuum	Sterilize temp = 121º c Sterilize Time = 30 to 45 min. Cool time = 2 to 5 min. run time 40 to 55 min.	• glassware that must be sterilized upright &/or Can trap air • wrapped dry items that can trap air • pipette tip boxes • sharps decontamination (in collection containers) •biohazard waste decontamination (in autoclave bags; can be wet & dry tubes, Plates, etc.)	Liquids or Media, lighter weight plastic Containers or dry items which will Collapse in a vacuum

- For both DRY and LIQUID biohazardous waste materials, cycle times must be set for a minimum of 30 minutes 121^0C, 15 psi.
- Larger volumes of liquids and larger loads of solids require longer sterilization times.
- Liquids must be autoclaved with slow exhaust.

9.3.10.6. Unloading Autoclave.

- Do not override autoclave's built-in safety control features under any circumstances. If a problem occurs, contact the responsible technician.
- Wear personal protection equipment - lab coat, eye protection (when removing load), closed-toe shoes, heat-resistant (PPE) gloves to remove items, especially hot glassware
- Ensure cycle has completed and both temperature and pressure have returned to a safe range.
- Open the door cautiously. Stand behind the door or beside the unit and slowly crack it open no more than ½". Allow all steam to escape by waiting at least 10 minutes before unloading the material. CAUTION: Material will still be HOT!

- Let liquids stand 10–20 minutes after the autoclave is opened. Superheated liquids can boil over and damage the autoclave and cause personal injury.
- Allow autoclaved materials to cool to room temperature before transporting. Never transport superheated materials.

9.3.10.7. Fill out the autoclave use log.

Record your name, date, time, cycle to be run, etc. The results of the load verification results must also be recorded on this log.

9.3.10.8. Verify operating parameters by checking for colour change on Chemical Indicator strip.

9.3.10.9. Properly dispose of materials that have been successfully decontaminated as verified by Chemical Indicator strip.

- Biohazardous materials that are autoclaved should be discarded as non-contaminated laboratory waste and placed in the regular trash.
- Decontaminated biohazardous liquids may be poured down the drain.
- Decontaminated glass slides and others glassware may be washed for use repeatedly.
- If hazardous chemical waste is present in decontaminated liquids according to safety sheet or Regulation (EC) No 1272/2008, it must be labelled and brought to Room No. E107A for collection by a licensed disposal company.
- Loads that do not pass verification must autoclave again and shown to be successfully decontaminated by CI verification before disposal.
- Causes of all CI verification failures must be determined and corrected, or reported to the responsible technician who will initiate corrective action.

9.10.10.10. Keep autoclaves in good repair with preventive maintenance.

- If there is a problem with autoclave's performance, contact the responsible technician for assistance.

9.3.10.11. Spill clean-up procedure

In the event of a spill of infectious or potentially infectious material, the following spill clean-up procedure should be used:

a) Wear gloves and protective clothing, including safety goggles.
b) Cover the spill with cloth or paper towels to contain it.
c) Pour a 70% ethanol solution over the paper towels and the immediately surrounding area.
d) Apply disinfectant concentrically beginning at the outer margin of the spill area, working toward the centre. Allow 10 minutes contact time.
e) Place the paper towels and gloves into a biohazard container and autoclave these materials to sterilize them.
f) The contaminated area should then be swabbed with disinfectant (70% ethanol solution).
g) Dispose of any contaminated clothing properly.
h) Wash your hands with a disinfectant - 70% ethanol solution 15 sec.
i) If there is broken glass or other sharps involved, these fragments should be handled with forceps. If use a dustpan or a piece of stiff cardboard to collect the material and deposit it into a puncture-resistant biohazard container and they should be autoclaved.
j) If laboratory forms or other printed or written matter are contaminated, the information should be copied onto another form and the original discarded into the biohazard container.

Each laboratory must be equipped with a biological spill kit.

9.3.10.12. Working areas decontamination procedure at the end of each work period.

Wear gloves and protective clothing, including safety goggles.

a) Release working areas surface from objects.
b) Pour a 70% ethanol solution over the working areas.
c) Allow 60 sec. contact time.
d) Decontaminated area should be cleaned with the paper towels.

e) Place the paper towels and gloves into a biohazard container and autoclave these materials to sterilize them.
f) Wash your hands with a disinfectant - 70% ethanol solution 15 sec.

9.3.10.13. Cleaning and Disinfection procedures upon completion of the work BSC:
a) Allow the cabinet to run for 5 minutes with no activity.
b) Close or cover open containers before removing them from the cabinet.
c) Surface-decontaminate and remove equipment and materials from the cabinet.
d) Using a suitable non-corrosive disinfectant (70% ethanol), disinfect interior surfaces of cabinet.
e) Periodically (once in three months) remove the work surface and disinfect the area beneath it (including the catch pan) with disinfectant (70% ethanol).
f) Allow the cabinet to run for 10 minutes.
g) Turn off the blower and turn on the UV lamp (15 minutes)

9.3.10.14. Cleaning and Disinfection procedures of refrigerator:
a) Refrigerators clean as necessary but not less frequently than once every three months.
b) Wear gloves and protective clothing, including safety goggles.
c) Release refrigerator from objects.
d) Spray a 70% ethanol solution on the inner surface.
e) Allow 10 min. contact time.
f) Disinfected surfaces should be cleaned with the paper towels.
g) Place the paper towels and gloves into a biohazard container and autoclave these materials to sterilize them.
h) Then rinse inner surface with water and mop dry.
i) Wash your hands with a disinfectant - 70% ethanol solution min. 15 sec.

9.3.10.15. Cleaning and Disinfection procedures of floor:
a) Periodically (five times a week) clean the floor.
b) Periodically (once a week – at Fridays) disinfect the floor with floor disinfectant 0,5% concentration (**see in table 5**) with damp mop.
c) Leave for 15 minutes, then rinse with water and mop dry.

9.3.10.16. Washing and Disinfection procedures of clothes:
1. Clothes wash as necessary but not less frequently than once a month.
2. Wash clothes from each room separately from other clothes.
3. Put dirty clothes into a bag and bring it to the washing machine in corpus D.
4. At a 70ºC temperature hold for a minimum of 10 minutes within the wash cycle with *washing powder with disinfectant* (see table 5).