

Biosecurity SOP applied to the Faculty of Veterinary Medicine of the University of Liège

Identification number:	SOP-FVM-01-REV1-2009
Version:	6 January 2010
Date of implementation:	6 January 2010
Responsible Administration:	Faculty of Veterinary Medicine of the University of Liège (FVM)
Responsible Services:	All services of the FVM
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Biosecurity Standard Operating Procedures (SOP) applied to the Faculty of Veterinary Medicine of the University of Liège (FVM)

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Used abbreviations in alphabetic order:

ARSIA: Regional Association for Animal Identification and Health (Association Régionale de Santé et d'Identification Animales)

BRC: British Retail Consortium

BRRPZE: Bird, Rabbit, Rodent, Poultry, Zoological and Exotic

CVU: Clinics of the Veterinary medicine Faculty

EU: European Union

FASFC: Federal Agency for the Safety of the Food Chain

FVM: Faculty of Veterinary Medicine of the University of Liège

HACCP: Hazard Analysis and Critical Control Points

ICU: Interne Care Unit

IFS: International Food Standard

ISO: International Organization for standardization

MRSA: Methicillin Resistant *Staphylococcus aureus*

MyULg: Intranet of the University of Liège

OIE: Office international des Epizooties

Oz: ounce (28.35 grammes)

Sanitel: Belgian Computer Animals and Herds Identification System

SAP: Systems, Applications, and Products in Data Processing

SOP: Standard Operating Policies and Procedures

SPMT: Service of Prevention and Occupational Medicine of the University of Liège

VRE: Vancomycin Resistant *Enterococci*

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 4) and for patients with special needs (animals considered to have an

increased risk of shedding contagious agents (class 3), young or naïve 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)	< 5.0	< 0.6
Canine	> 39.5°C	< 6.0	< 3.0
Caprine	> 40.5°C	< 4.0	<1.2
Equine	> 38,5°C	< 4.0	< 2.5
Feline	> 39.5°C	< 5.0	< 2.0
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 there number is limited. Examples of multiple drug resistant bacteria include some strains of *Salmonella enterica*, Methicillin Resistant *Staphylococcus aureus* and Vancomycin Resistant Enterococci.

Nosocomial Infection: A localized or systemic condition that results from 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, students, visiting veterinarians or scientists, visiting students, 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

<u>CLASS 1:</u> NORMAL HOUSING Infectious diseases caused by agents that have no likelihood of transmission to other animals and no potential for human infection.
<u>CLASS 2:</u> NORMAL HOUSING Infectious diseases caused by agents that have a low level of transmission and may include non-resistant bacterial infections.
<u>CLASS 3:</u> BARRIER NURSING PRECAUTIONS Subclass A: Resistant bacteria. Infections caused by bacteria with highly resistant antimicrobial 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.
<u>CLASS 4:</u> 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 jewelry 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 ☺

- The FVM maintains a dress code to promote professionalism and to assist with biosecurity efforts (for details see various hospital sections). This Biosecurity SOP discusses attire only from the perspective of Biosecurity and prevention and infection control.
 - Veterinarians and technicians in surgery : **Blue**
 - Veterinarians and assistants in consultation and hospitalisation: **Green**
 - Students: **white blouse** (and trousers) for small animal clinics, **green coverall** for large animal clinics
 - Students: **white lab coat** for the pathology and anatomy services
 - Isolation wards : **yellow lab coats** or **disposable apron**
- Dedicating attire specifically for use in the FVM is the first line of defence against taking animal and human pathogens to your home environment.
- All personnel and students working with patients or their environments are encouraged to wear 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 hospitalisation 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 must have attire available that is appropriate for different areas of the hospital.
- Specific requirements regarding attire to be worn in various hospital sections are listed under the corresponding hospital service.

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 needs to be removed, and the floor surface cleaned (and in small animals dried), immediately after defecation. If patients urinate inside (but not outside a building), the urine needs to be removed and the floor cleaned and dried.
- 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...) 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 percpipients 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 euthanasates 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.
- Immediately after preparation and use, the drug should be encoded in the SAP system of the FVM.
- 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 (small animals ☺ and large animals ●)

- 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 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. PROPER ORDER

1.3.1.2. GENERAL CLEANING AND DISINFECTION PROTOCOL ☺

- Appropriate attire should be worn whenever using disinfectants. Additional personal protective equipment (mask, face shields, goggles, impervious clothing, and boots) should be worn only when there is a probability of splash resulting in more than merely incidental contact.
- Remove all visible debris prior to disinfection. The presence of gross contamination will inactivate most disinfectants. If a hose is used to de-bulk material, care must be taken to minimize aerosolization and further spread of potentially infectious agents.
- Wash the affected areas with water and detergent or soap; scrubbing or mechanical disruption is always needed to break down films and residual debris that prevents or inhibits the disinfection process.
- Thoroughly rinse the cleaned area to remove any detergent residue as some disinfectants may be inactivated by detergents; therefore it is very important to rinse well after washing the area.
- Allow area to drain or dry as much as possible to prevent dilution of disinfectant solutions.
- Wet area thoroughly with disinfectant. Disinfectant should 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 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 page 15 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), Virkon, 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 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 page 15 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.
 - 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 Federal Public Service Public Health, Safety of the Food Chain and Environment (introduce keyword as “biocides”): <http://portal.health.fgov.be/>
- Several lists are interesting for the FVM:
 - use in veterinary hygiene (list number 3);
 - use in contact with foods (list number 4);
 - and use in Public Health (list number 2).

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% <i>Used for disinfection of items that contact skin or mucosal surfaces (e.g., muzzles, endotracheal tubes, etc)</i> Dilutions: 2 oz (60ml) of 2% solution per gallon of water = 0.06% solution Soak barrels: 1 gallon of 2% solution per 39 gallons of water = 0.05% solution. Contact time: at least 15 minutes. 3oz per gallon of water is used in equine anesthesia for soak barrels.	Rapidly Reduced	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • 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 <i>Used for skin decontamination and disinfection (e.g. surgical preparation).</i>	Rapidly Reduced	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • 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) <i>Used to disinfect materials that persone, students and patients closely contact (e.g. muzzels, instruments, hand sanitizing solutions, etc)</i>	Reduced	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • 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)* <i>Used for disinfection of clean surfaces, especially to augment the spectrum of activity of disinfectant.</i> Dilutions: • 1:64 = ¼ cup (2oz) per gallon of water. Appropriate for most applications in FVM • 1:32 dilution = 1/2 cup (4oz) per gallon of water • 1:10 dilution = 1 ½ cups per gallon of water. Limited use-very strong	Rapidly Reduced	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • 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 silver, and aluminum (not stainless steel). • Limited stability for stored solutions.
Quaternary Ammonium Compounds <i>Primary surface disinfectant used at the FVM (spot disinfection as well as general environmental disinfection)</i> <i>Dilution: 1/2oz (15ml) per gallon of water. = 1:256</i> <i>One plastic sample cup (faecal cup) = 4oz</i> <i>Contact time: at least 15 minute</i>	Moderate	• Mycoplasmas: Effective • Mycobacteria: Variable • Gm+ Bacteria: V. Effective • Gm- Bacteria: Effective • Pseudomonas: No Activity • Rickettsiae: Ltd. Activity • Env. Viruses: Effective • Chlamydiae: 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 (e.g. Tide with Bleach)
Oxidizing Agents: Hydrogen Peroxide. <i>Hydrogen peroxide is used in all disinfectant footbaths and for disinfectant misting (fogging) in the large animal hospital.</i> <i>Dilution: 1.3 oz powder per gallon of water (10 grams per liter of water) is a 1% solution</i> <i>Spray bottle: 5 mls powder (5 grams) added to 500 mls water. (1% solution)</i> <i>Contact time: At least 15 minutes</i>	Variable in class, Very good for peroxy mono-sulfate and accelerated hydrogen peroxide.	• Mycoplasmas: V. Effective • Mycobacteria: Effective • Gm+ Bacteria: Effective • Gm- Bacteria: Effective • Pseudomonas: Effective • Rickettsiae: Effective • Env. Viruses: Effective • Chlamydiae: 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 FVM can be very toxic (e.g. chlorine dioxide) • No harmful decomposition products. • Residual activity on surfaces. • Virkon solutions lose activity within a few days after mixing. • Poor lipid solubility. • Less active at low temperatures. • Corrosive to plain steel, iron, copper, brass, bronze, and vinyl, and rubber. • Add powder to water to aid in mixing. • Wear a mask and rubber gloves when preparing solution to avoid irritation.
Phenols <i>Used only for disinfection of instruments and necropsy areas that may be contaminated with prions (e.g., Chronic Wasting Disease, scrapie).</i>	Very Good	• Mycoplasmas: V. Effective • Mycobacteria: Variable • Gm+ Bacteria: V. Effective • Gm- Bacteria: V. Effective • Pseudomonas: V. Effective • Rickettsiae: Effective • Env. Viruses: Effective • Chlamydiae: 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, especially 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)

Most susceptible	Chemical Disinfectants									
	<i>Note : Removal of organic material must always precede the use of any disinfectant</i>									
	Acids (hydrochloric acid, acetic acid, citric acid)	Alcohols (ethyl alcohol, isopropyl alcohol)	Aldehydes (formaldehyde, paraformaldehyde, glutaraldehyde)	Alcalis (sodium or ammonium hydroxide, sodium carbonate)	Biguanides (chlorhexidin)	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. RMD)	+	N	+	+	N	N	N	+	N	N
Parvoviruses	N	N	+	N	N	+	N	N	N	-
Acid-fast bacteria	-	+	+	+	-	+	+	±	±	-
Bacterial spores	±	-	+	±	-	+	+	+ ^b	-	-
Coccidia	-	-	-	+ ^c	-	-	-	-	+ ^d	-
Prions	-	-	-	-	-	-	-	-	-	-

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

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

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

Legend: ? Information not found.

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 Director's office and are led by trained personnel.
- Visitors are never allowed to enter any isolation department.
- FVM personnel supervising visitors should inform them about zoonotic and nosocomial disease hazards that are associated with hospitalized animals.
- Visiting lay people should not be allowed to enter anaesthesia preparation areas, emergency rooms and surgery theatres.
 - Special arrangements can be made by contacting the FVM Director's Office or the Director of Biosecurity in order to allow visiting scientists or veterinarians to enter aforementioned 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 FVM ☺

- Clients are allowed unescorted access to FVM waiting rooms and adjacent restrooms, library, and the cafeteria. Clients must be escorted to other areas of the hospital by FVM personnel and 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.
- FVM 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 burnetii*). Temperature, relative humidity and ventilation play important roles in aerosol transmission of pathogens.

1.3.11.2. ORAL TRANSMISSION

- Oral transmission involves exposure to infectious agents by the gastrointestinal route. This also can occur inadvertently through inhalation of aerosolized material and subsequent swallowing of materials through the nasopharynx.
- Contaminated environmental objects include equipment such as food and water dishes, and any other items an animal could lick or chew. Feed and water contaminated with faeces or urine are frequently the cause of oral transmission of disease agents.
- In people, oral contact with contaminated hands is commonly part of the transmission cycle for oral-faecal agents, which exemplifies the need for excellent hand hygiene among personnel and students working around animals. Appropriate handling and segregation of patients with diarrhea will help control the spread of potentially infective organisms in faeces as will proper cleaning and disinfecting of food and water dishes.

1.3.11.3. 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: biosecurity-fmv@lists.ulg.ac.be
- 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 Hospital Director by the veterinarian with primary responsibility for the patient.
- The Hospital Director can provide to you or your physician the name of health care providers that are specifically knowledgeable with respect to zoonoses and occupational exposures of veterinary personnel and students.
- 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 Director of Biosecurity 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 hemodialysis.
- 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. This notification can be made in person or using the following link: biosecurity-fmv@lists.ulg.ac.be
- 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. BIOSECURITY E-MAIL LISTSERVS ☹

- The FVM uses electronic mail lists (Email Listservs) to facilitate communication regarding infectious disease hazards in the hospital.
- **Purpose:** To provide communication and improve awareness regarding patients with increased risks for contagious and/or zoonotic disease at the FVM.
- **People Sending Emails:** Open to anyone, **required when patients are admitted to isolation.**
- **People Receiving Emails:** Select personnel from the Biosecurity working group, cleaning personnel, technical staff, Small Animal Hospital, Large Animal Hospital, and Diagnostic Laboratory.

1.4.2. FLOOR LINES APPLIED TO THE FLOOR

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

1.4.3. SMALL ANIMAL, EQUINE AND FOOD 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 (☞ see page 8, **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.

1.4.4. PROTOCOL FOR FRONT DESK PERSONNEL ☺

- If a client call indicates an acute case of vomiting, diarrhea, ataxia, abortion, coughing or sneezing or another case where a contagious disease can be suspected:
 - The receptionist will schedule the appointment with the appropriate service **ONLY AFTER** approval by a clinician and if there is an isolation stall or cage available (see chapter 1.4.5. for exclusion criteria for entry and/or hospitalisation)
 - The presenting complaint will be indicated on the schedule as “acute diarrhea” “acute vomiting”, “acute coughing” or “acute sneezing”, etc.
 - “suspect d’être contagieux” 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 to 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.

1.4.5. PROTOCOL FOR STUDENTS ☺

- The arrival of possible infectious disease cases will be handled as follows:
 - The presenting complaint will be written on the schedule as “acute diarrhea” “acute vomiting”, “acute coughing” or “acute sneezing”, etc.
 - “suspect d’être contagieux” 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 to 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 FVM 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.

1.4.6. EXCLUSION CRITERIA FOR ENTRY AND/OR HOSPITALISATION ☺

- In case of official reportable diseases in Belgium (☞ 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 (not interns) 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.
- Tracibility of infected animals and animals in contact is of major importance for biosurveillance. In the equine, bovine and small animal hospital of the FVM the computer program SAP is being used to keep a complete databank of all incoming cases, the contact information of their owners and referring veterinarians and used medications.
- Clinicians, technical staff and students are expected to handle information about cases and possible infectious or contagious diseases with confidentiality. In the future, attention should be given to the purchase of a clinical program to optimize this tracability, and to create link for all other services to a computer based database to improve tracability.

1.5.1. REQUIRED DIAGNOSTIC TESTING IN SUSPECTED INFECTIONS ☹

- Diagnostic testing to detect certain infectious and/or zoonotic agents provides essential information for appropriate clinical management of infected patients. This testing provides direct benefit to the patient in addition to benefiting clients by allowing them to appropriately manage their other animals and protect their families. It also benefits the FVM as this information is essential for appropriate management of disease risk for all FVM patients, personnel and students.
- It is therefore highly suggested for all hospitalized patients to undergo diagnostic testing if infection with specific contagious or zoonotic agents is a reasonable consideration. This diagnostic testing is considered essential to case management in the FVM and therefore if clinical suspicion exists, yet the owner is reluctant to pay for testing, the animal will be designated class 4 and the ensuing financial repercussion will be billed to the client.
- It is the responsibility of the 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. This notification can be made in person or using the following list: biosecurity-fmv@lists.ulg.ac.be

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/eng/maladies/en_tech_cards.htm
 - 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/eng/normes/en_mmanual.htm?e1d10
 - Manual of Diagnostic Tests for Aquatic Animals:
http://www.oie.int/eng/normes/en_amanual.htm
 - Aquatic Animal Health Code:
http://www.oie.int/eng/normes/fcode/en_sommaire.htm

- In the FVM, a special attention should be devoted to:
 - Acute Diarrhea in Dogs and Cats (*Salmonella*, *Campylobacter*, Parvovirus, *Cryptosporidium*, *Giardia*)
 - Canine Distemper Virus
 - *Chlamydomphila psittici* (Avian)
 - The neurologic form of Equine Herpesvirus type 1
 - Influenza (Avian)
 - Leptospirosis
 - Rabies
 - *Streptococcus equi* subsp *equi*
 - *Salmonella* (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 page 8, 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. REPORTABLE ANIMAL DISEASES IN BELGIUM

- It is FVM policy to investigate and rule-out the potential for any diseases that are reportable to the FASFC. 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:
AFSCA - UPC of Liege
Dr Pierre Delcroix
Head of the sector - primary production
Tel.: 04/224.59.20; Fax: 04/224.59.21
GSM: + 32 478 87 62 13 (only out of hours in case of extreme emergency)

These reportable diseases in Belgium include the following (Royal Degree at 25 April 1988):

- Multiple species diseases
 - Anthrax
 - Blackleg
 - Rabies
- Equine diseases
 - Equine infectious anemia
 - Dourine
 - Sarcoptic and psoroptic mange
 - Epizootic lymphangitis
 - Equine enzootic meningo-encephalomyelitis (V.E.E. - E.E.E. - W.E.E.)
 - Contagious equine metritis
 - Glanders
 - Equine pest
 - Vesicular stomatitis
- Ruminant and camel diseases
 - Foot and mouth disease
 - Catarrhal fever (Blue Tongue)
 - Rinderpest
 - Pest of small ruminants (peste des petits ruminants)
 - Rift Valley fever
- Cattle diseases
 - Bovine brucellosis (*B. abortus*);
 - Lumpy skin disease
 - Sarcoptic and psoroptic mange
 - Enzootic bovine leukosis
 - Contagious bovine pleuropneumonia
 - Vesicular stomatitis
 - Trichomonosis and vibriosis
 - Clinical tuberculosis
 - Bovine spongiform encephalopathy (BSE)
- Sheep and goats diseases
 - Brucellosis (*B. abortus*, *B. melitensis* et *B. ovis*)
 - Sheep pox and goat pox
 - Sarcoptic, psoroptic and chorioptic mange
 - Ovine foot rot
 - Scrapie

- Pig diseases
 - Enzootic encephalomyelitis (Teschen Disease)
 - Foot and mouth disease
 - Swine vesicular disease
 - African swine fever
 - Classical swine fever
 - Trichinosis
 - Aujeszky's disease
 - Porcine brucellosis (*B. suis*)
 - Mysterious Reproductive System (M.R.S.)
 - Vesicular stomatitis
- Rodent diseases
 - Myxomatosis
 - Tularemia
 - Rabbit haemorrhagic disease
- Mink diseases:
 - Mink viral enteritis
- Avian diseases
 - Fowl cholera (pasteurellosis)
 - Avian infectious laryngotracheitis
 - Marek's disease
 - Avian influenzas
 - Newcastle disease
 - Psittacosis – ornithosis
- Bee diseases
 - Acarapisosis of honey bees
 - American foulbrood of honey bees
 - European foulbrood of honey bees
 - Varroosis of honey bees
 - Small hive beetle infestation (*Aethina tumida*)
 - *Tropilaelaps* infestation of honey bees
- Fish diseases
 - Infectious haematopoietic necrosis
 - Infectious salmon anaemia
 - Viral haemorrhagic septicaemia
- Mollusc diseases
 - Bonamiosis (*Bonamia Ostrea*)
 - Marteilirosis (*Marteilla refringens*)
- Cervid diseases
 - Epizootic haemorrhagic disease
- Zoonoses :
 - a) *Viral zoonoses:*
 - Zoonosis caused by Norovirus
 - Zoonosis caused by Hepatitis A virus
 - Zoonosis caused by Influenza viruses
 - Zoonosis caused by arthropod-borne virus
 - Rabies
 - B) *Bacterial zoonoses:*
 - Borreliosis (Lyme Disease)
 - Botulism
 - Brucellosis
 - Campylobacteriosis
 - Leptospirosis
 - Listeriosis

- Psittacosis
- Salmonellosis
- Tuberculosis
- Vibriosis
- Yersiniosis
- Verocytotoxin-producing *Escherichia coli* (VTEC)
- C) *Parasitic zoonoses*:
 - Anisakiasis
 - Cryptosporidiosis
 - Cysticercosis
 - Echinococcosis
 - Toxoplasmosis
 - Trichinellosis

1.5.6.1. REQUIRED SAMPLES AND DIAGNOSTIC TESTS

- For appropriate sampling and diagnostic techniques concerning reportable diseases consult:
 - Animal diseases data:
http://www.oie.int/eng/maladies/en_tech_cards.htm
 - Manual of Diagnostic Tests and Vaccines for Terrestrial Animals:
http://www.oie.int/eng/normes/en_mmanual.htm?e1d10
 - Manual of Diagnostic Tests for Aquatic Animals:
http://www.oie.int/eng/normes/en_amanual.htm
 - Aquatic Animal Health Code:
http://www.oie.int/eng/normes/fcode/en_sommaire.htm

1.5.6.2. RECOMMENDATIONS FOR DISEASE CONTROL AND ANIMAL TRADE

- For recommendations for disease control and trade consult:
 - Terrestrial Animal Health Code:
http://www.oie.int/eng/normes/mcode/en_sommaire.htm
 - Aquatic Animal Health Code:
http://www.oie.int/eng/normes/fcode/en_sommaire.htm

1.5.6.3. 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 prior to initiating these activities.
- Teaching and research animals may NOT be housed in patient housing areas of the FVM with the exception of extraordinary circumstances or medical reasons.

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:** coverall with boots with name card. If they do not wear correct attire they will be expelled from the clinic.
 - **Interns:** green blouse with name card. Light blue scrubs when working in the surgical theater.
 - **Clinicians:** green blouse with name card. Light blue scrubs when working in the surgical theater.
 - **Technical staff:** blouse with name card: when working in the surgical theater light blue, when working in the clinic green.
 - **Stablemen:** coverall
- 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 (are you willing to fully immerse them in a footbath!?) 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 or in the technicians' and clinicians offices.
- Students can eat in their bedrooms, 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 (Sterilium ®) 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

- **Hand soaps and disinfectants:**
 - **Dermasoft:** pink classic soap (Global net)
 - **Baktolin** wash basic pure : neutral hand soap (BODE)
 - **Sterilium** : alcohol based disinfection solution for hands (BODE)
- **Detergents and disinfectants for walls, floor, furniture, etc**
 - **Umonium master** : disinfectant for floor and furniture ; EN1040-EN1275-EN1276-EN1650-AFNOR-NFT72190 (HUCKERT'S International)
 - **RBS foglyam MD** : disinfectant for all surfaces AFNOR, tensio-active, formaldehyde, quaternary ammonium derivative; EN1040-1276/NFT72-190 (Chemical-products)
 - **JAVEL 15** : bleach, disinfectant for floor and furniture (Global Net)
 - **Vygor-cif-Mr Propre** : detergent (Global Net)
 - **STARNET-180** : multi usage detergent citron (Global Net)
 - **DETERNET -120** : classic multi usage detergent (Global Net)
 - **SUMANET** : alcohol based classic multi usage detergent (Global Net)
- **Detergents and disinfectants for (surgical) materials and equipment**
 - **Umonium instruments** : disinfection by bathing instruments and endoscopes for 15 min; EN1040-EN1275-EN1276-EN1650 et DE93:42CE ISO9002 EN46002; isopropyl alcohol + benzalkonium chloride (quaternary ammonium) + trydecyl ceteh alcohol (HUCKERT'S International)
 - **RBS 50** : disinfectant for cycle washing machine AFNOR 72-151 (Chemical-Products)
 - **Endosporine** : for cold sterilization by bathing, glutaraldehyde 2%; NF EN 1040-1275 and AFNOR NFT72-171/72-190/72-180/72-230 (labo Steridine)
 - **ECUTAN 5%** : disinfection for instruments and tubes, chlorhexidine 50g/l diluted at 10% (Ecuphar)

Table VI. Effectiveness of disinfectants on different viruses and bacteria (from *The Equine Hospital Manual*, 2008)

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

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

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

Rabies (not a nosocomial problem but an important zoonotic disease)*	Rhabdovirus of genus <i>Lyssavirus</i> . Few days to several years, most cases apparent after 1-3 months	Contact (saliva, CSF, neural tissue). Mucous membranes or compromised skin, bites, cuts, etc	Wide range of possible clinical signs. Progression of encephalic signs may be aggression (furious form, more common), or depression (paralytic, dumb form). Average survival from onset of clinical signs 5 days, maximum 10 days.	Early signs of malaise, fever, headache, pruritis at site of virus entry. Progressive anxiety, confusion, abnormal behaviour. Encephalitic or paralytic form can occur. Death usually in 2-10 days	No definitive antemortem test. Brain from suspect animal must be submitted to an approved laboratory for rabies testing	Lipid solvents (soap solutions, acetone), 2% bleach, 2% glutaraldehyde, 45%-75% ethanol, iodine-based or quaternary ammonium disinfectants. Inactivated by sunlight, limited environmental survival	Clearly label as rabies suspect. Strictly limit number of personnel involved in managing suspect animal. Record all in-contact personnel. Clearly label any laboratory specimens as rabies suspect. Full barrier precautions including gloves, boots, protective clothing, face shield. Promptly submit necropsy samples using approved methods
<i>Rhodococcus equi</i> infection	<i>Rhodococcus equi</i> , incubation period uncertain, often insidious onset	Environmental exposure (soil), aerosol, contact, rarely via wound contamination	Most often respiratory but other body systems can be involved. Most commonly fever, coughing, increased respiratory rate and effort, mucopurulent nasal discharge, pyogranulomatous pneumonia. Primarily foals 1-6 months old	Rare human infection, only in the severely immunocompromised, appears to be via environmental exposure. Slowly progressive granulomatous pneumonia	Culture of tracheobronchial aspirate or other samples. PCR can be valuable but best used in conjunction with culture. Radiographs useful	70% ethanol, 2% glutaraldehyde, phenolics, and formaldehyde	Shed in faeces, prompt removal of manure and good hygiene limits accumulation. Frequent hand washing. Uncertain infection risk but consider barrier precautions on affected foals (at least up to 72 hours after starting antimicrobial therapy) if susceptible foals housed in same area

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

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

* World Animal Health Organisation (OIE) listed diseases. Some of these diseases are reportable at the Belgian level in animals and/or humans.

† Agents that have been linked to nosocomial outbreaks of disease.

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, interns 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 (vygor-cif-Mr Propre®, STARNET-180®, DETERNET -120® or SUMANET®); 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: RBS 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 (Javel, dilution 2%) or RBS foglyam MD®. 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 (e.g. Virkon misting), 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 RBS foglyam MD® or Ummonium 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 or ummonium 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 (chiroptes, psoroptes, sarcoptes, lice, etc) the brush should be treated with an anti-parasitic (Sarnacuran®) 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 be 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 the intern or clinician: “to be disinfected”. If the infectious agent is known or suspected, effectivity of the disinfectant should be checked and if necessary the protocol adapted:
 - See the general cleaning and disinfection protocol (page 13)
 - Standard protocol: detergent - bleach 2% (Javel)
 - Foals with *Rhodococcus equi*: detergent – RBS foglyam MD®
 - Horses with parasitic skin disease: detergent – Sarnacuran® - bleach
 - Foal with diarrhea suspect from rotavirus: detergent – Ummonium Master® - bleach
- 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 (see general cleaning and disinfection protocol 2.4.2.)
- Sinks in aisle-ways, in the general treatment area and in the examination rooms should be cleaned and disinfected with RBS foglyam MD® or dilute bleach (2%) 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 Large Animal 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 one of the exam rooms, 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 one of the exam rooms, 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:

The surgery aisle:

- The stalls in front of the recovery boxes: convenient surgery with short stay and classified in class 1 or 2 (for example arthroscopy)
- The unit of stalls at the back: post-surgical horses with middle term or long-term stay classified in class 1 or 2 and/or healthy horses (for example for reproduction follow-up)
- The unit of stalls at the middle: other problems than surgical, classified in class 1 or 2 (for example ophthalmology, neonates/foals, endocrinology, etc)
- The padded box: neurologic diseases and/or horses having difficulties in getting up classified in class 1 or 2.
- An aisle will be defined for use for colic patients. ☹
- In exceptional cases the units of the surgery aisle can be closed and used for class 3 diseases, for example during an influenza outbreak in the surgery aisle.

The medicine aisle:

- The box at the right and again at the right: foals and their mares when admitted for intensive neonatal care.
- The other boxes:
 - Other medicine cases: class 1 or 2 respiratory, digestive, dermatologic cases, etc
 - Known or suspected contagious or zoonotic infections of class 3 (and exceptionally class 4; with the same barrier precautions as a class 4 in the isolation unit). The class 3 cases should always be placed in a separate unit from those with class 1 or 2.
- The Isolation Unit: known or suspected contagious or zoonotic infections of class 4.

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 caddy (alcohol, isobutadine, 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 feed, 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 (see general procedure for cleaning and disinfection protocol (section 2.2.4.)
- Information about what forage and/or concentrates to be fed and the frequency should be written clearly on the stall card.
- See section patient hygiene (section 2.2.2) for cleaning of the automatic drinkers, buckets and feeding bowls.

2.3.2.5. BEDDING ☺

- Students, interns 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.
- See chapter patient hygiene (section 2.2.2) for information about cleaning and disinfecting 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. See paragraph 2.3.7.3 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).

2.3.2.7. 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 hallways of the Equine Hospital, the courtyard, the little meadows around the Equine Hospital and the manege. 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 little 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 LARGE ANIMAL 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 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.

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. diarrhea), 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, interns or students are encouraged to conduct initial physical examinations on these patients outside at the trailer in order to evaluate the contagious disease risk. (cfr receiving patients)
- Personnel should consider implementing barrier nursing precautions when handling these patients until evaluations suggest that the risk of contagious disease transmission is negligible.
- The Biosecurity working group 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 Biosecurity working group 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 biocontainment practices with the patient.
 - Barrier nursing precautions must be used at all times.
 - Disinfectant footbaths or footmats 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 Biosecurity working group ASAP so that they 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 antimicrobial 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.

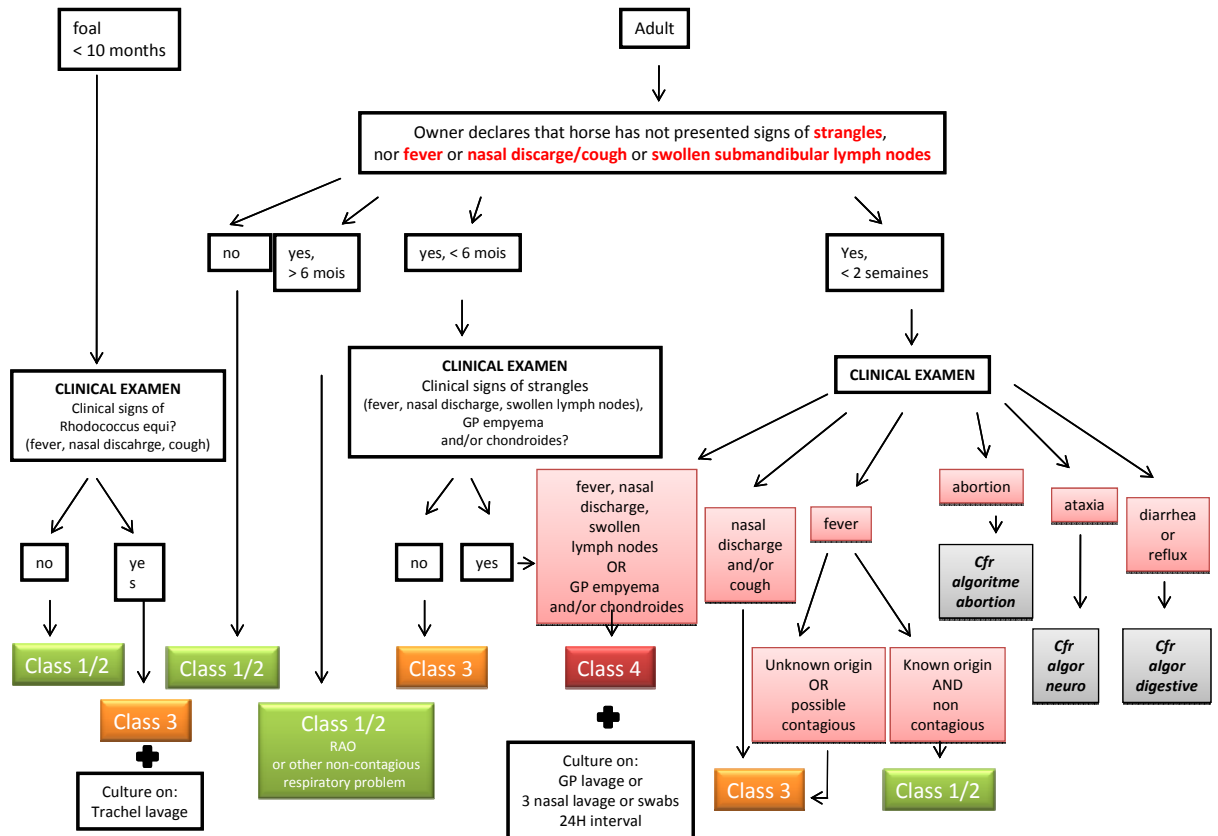
- The stalls used for this purpose are separated from other patients by closing the unit. If possible, the boxes of the medicine aisle will be used for this purpose, but under certain circumstances the stalls of the surgery aisle can also be used (for example if multiple horses develop fever and respiratory problems during their hospitalization).
- In the Equine Hospital, the following conditions/patients are included:
 - Fever and/or leucopenia of unknown origin
 - Viral respiratory diseases: cough, nasal discharge (< 2 weeks), possibly accompanied with fever.
 - *Rhodococcus equi* : foals under the age of 10 months with respiratory problems and fever
 - Diarrhea without fever and/or leucopenia
 - Non-surgical digestive problem with hemorrhagic reflux OR non-hemorrhagic reflux with fever and/or leucopenia. In this case the reflux should not be performed by aspirating by mouth.
 - MRSA or other multi-resistant bacterial infections
 - Contagious dermatologic infections : dermatophytosis, dermatophytosis congolensis, chorioptes, lice and other parasites

CLASS 4: ISOLATION - red

- Infectious diseases caused by agents that are considered to have a high level of transmission and/or are extremely serious human pathogens.
- Patients with class 4 infectious diseases are housed in the Isolation Unit. Exceptionally, when the Isolation Unit is occupied, they can be housed in the medicine aisle; however, the barrier precautions will remain the same as in the Isolation Unit.
- In the Equine Hospital, the following conditions/patients are included:
 - Strangles: swollen submandibular lymphnodes, nasal discharge, cough, fever OR suspicion of guttural pouch empyema and/or chondroids in the guttural pouches.
 - Acute diarrhea 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*), brucellosis, anthrax, *Mycobacterium bovis* & *tuberculosis*, etc.....

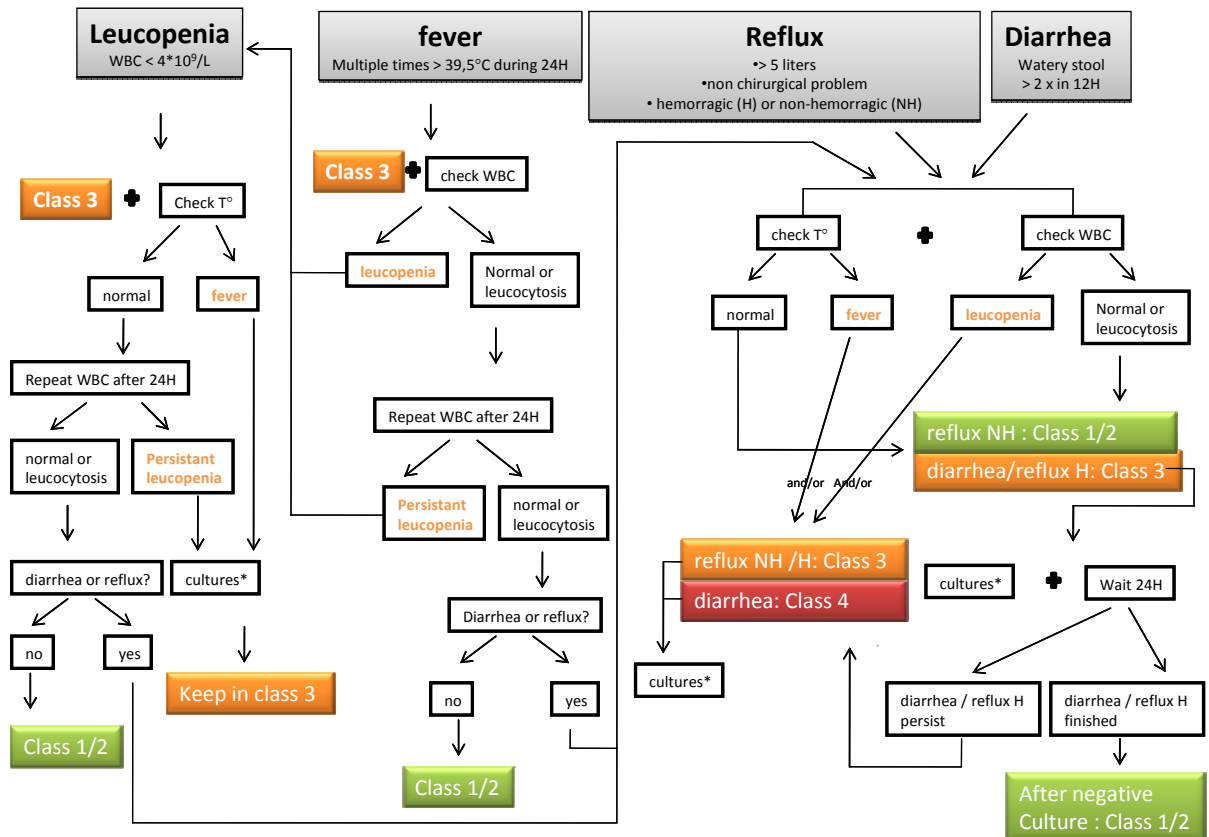
- Horses that have been in contact with a horse suffering from a suspected or confirmed contagious disease are considered contagious until proven otherwise or until the incubation time has passed without the horse developing clinical signs. Attention for diseases where the clinical signs of the disease can be subclinical and where the horse still can transmit the disease.
- A table containing incubation times, transmission modes, clinical signs, diagnostic tests and disinfectants to be used for each contagious disease is included at page 34 (Table VI).
- The following algorithms / decisional trees are also included and are available in the Clinicians Office:

Algorithme 1: Decision isolation fever or respiratory signs

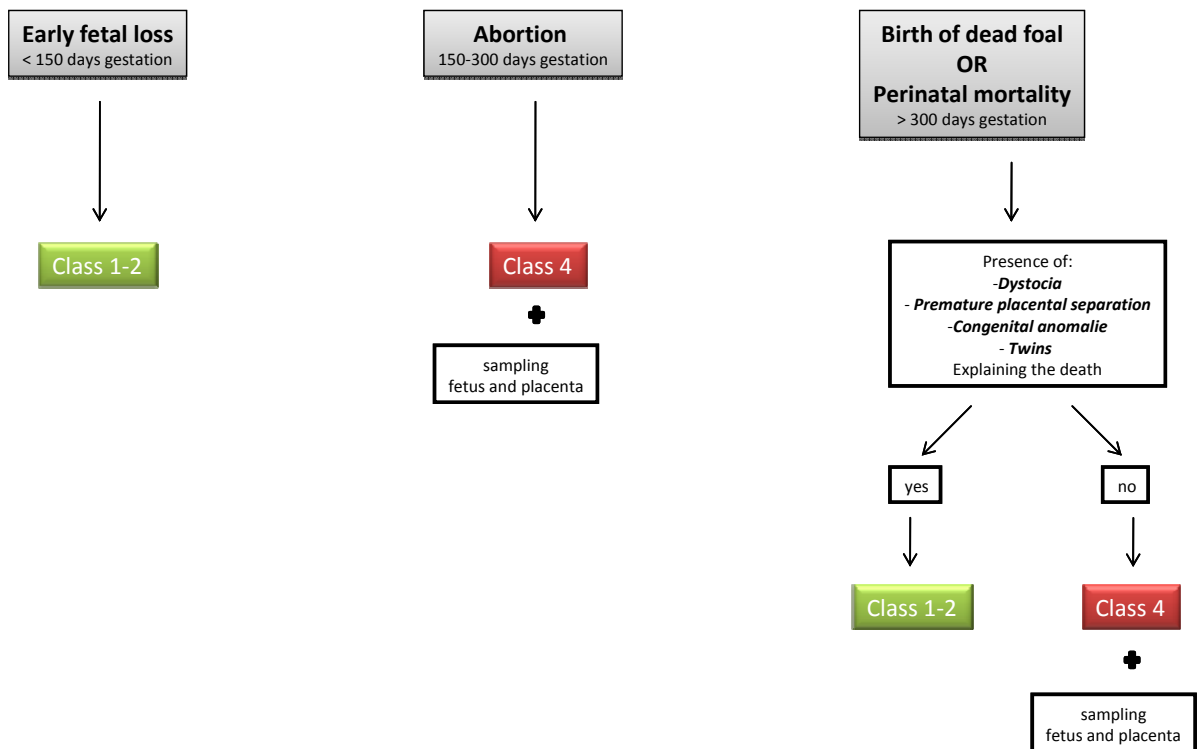


* Culture fecal matter or reflux=
3 samples for salmonella culture
1 sample for clostridial toxins and culture

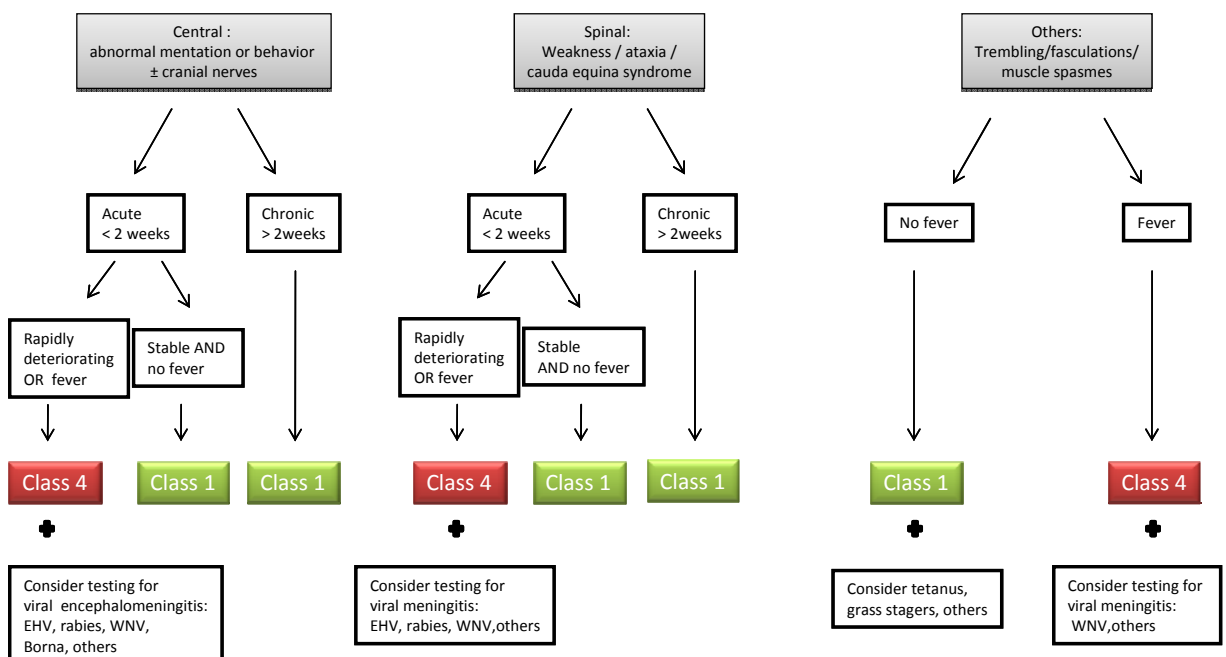
Algorithme 2: Decision isolation digestive



Algorithme 3: Decision isolation abortion



Algorithme 4: Decision isolation neurology



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 Belgium.
- 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 (not interns) are allowed to take the decision to refuse an animal.
- The refusal criteria for horses are the following:
 - Suspicion of viral respiratory diseases (cough, nasal discharge, fever for < 2 weeks) without the horse's life being in danger.
 - Suspicion of strangles (swollen submandibular lymphnodes, nasal discharge, cough, fever OR suspicion of guttural pouch empyema and/or chondroids in the guttural pouches) without the horse's life being in danger or without surgical necessity.
 - Suspicion of the neurological form of 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 Biosecurity working group 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 using the biosecurity-fmv@lists.ulg.ac.be, 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.
- In order to optimize identification, horses allocated to class 3 will have an orange tape around their halter.

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 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. Avoid contaminating anterooms with straw or manure, and assist with general cleanup 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, nurses 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 barrier nursed). If it is necessary to work on patients in multiple housing areas, personnel should take optimal precautions when moving between areas and handling patients with different infectious disease risks. When possible, students assigned to class 3 or 4 patients should not have contact with immune suppressed patients (leucopenic patients, young or very old animals, animals receiving immunosuppressive drugs, etc...) elsewhere in the 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 (see for details paragraph 2.5.9): 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 manege 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 or in a manege). As for owners of all horses, they are not allowed to visit other parts of the Equine Hospital.

Class 4 - isolation:

- Barrier precautions (see for details paragraph 2.5.9):
 - 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, door knobs should be cleaned with disinfectant.
- ~~While entering class 3 or 4 stall~~ Take all necessary supplies into the stall once into the stall when entering to minimize traffic in and out the stall.
 - 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.).
- ~~While exiting class 3 or 4 stall~~ Avoid dragging 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 footmat while entering the barrier nursing unit.
 - Put on a clean scrub which will be provided at the entrance 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 footmat 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.
 - Change: hang clinic smocks or coveralls in the sas of the Isolation Area and put on disposable coveralls.
 - Change normal street shoes by yellow 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 footmat 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 footmats with RBS or Ammonium solution.
- Set up other barrier supplies dependant on its classification (see section 2.4.1).
- 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 diarrhea, blood or other excretions/secretions.
- Footbaths and footmats are changed daily, in the morning, by stablemen.
- Additional cleaning should be done throughout the day by all personnel and students.
- Students and interns assigned to cases are responsible for routine cleaning in front of the stalls, and changing footbaths and footmats as needed during the day.
- Students and interns 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 (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.
- 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 theater.
- Exiting the horse:
 - Personnel must brush the horse, clean the horse from feces, body secretions/excretions and pick hooves in the stall prior to exiting the isolation unit.
 - Just prior to exiting stall, wipe the horse's coat from head to tail with a cloth drenched in chlorhexidine solution and scrub hooves using 0.5% chlorhexidine solution 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 theater 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 (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.
- After use, the recovery box and surgical theater are considered contaminated area and should be thoroughly cleaned and disinfected. Under no circumstances will another horse undergo a surgical intervention before thorough cleaning and disinfection.

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 Biosecurity working group 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 diarrhea, one person is needed to lead the animal, and another person must follow with a trash bag to catch any faecal matter, immediately clean/disinfect contaminated areas.
- The 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*, personell will clean and disinfect the endoscope, light source, etc. with alcohol wipes before leaving the unit. Once back in the endoscopy room, the material will be cleaned and disinfected again according to the recommended procedure.
- 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 footmatras.
- Only the necessary material should be brought in the infectious unit. Alcohol and gel for ultrasound exams should be kept in the infectious unit.
- 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 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.
- 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, intern 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 in the Colic Aisle). Biosecurity precautions of class 3 diseases can be reduced depending on the disease.
- Only the Biosecurity working group can give permission to amend precautionary requirements or reduce rigor of biosecurity precautions for patients that have an increased risk of contagious disease.

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 periparturient period. If foals or their dams have signs of contagious disease or are from farms experiencing outbreaks of contagious diseases they must be housed in the barrier-nursing units or isolation unit and all protocols followed. For those that do not have signs of contagious disease or are from farms with no known contagious disease outbreaks, they can be housed in the main equine hospital with the following protocols applied:
 - Barrier nursing precautions are required when handling foals or when entering their stalls.
 - 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 footmats 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 ☺

2.7.1. ATTIRE FOR THE “CLEAN” AREAS OF THE EQUINE SURGICAL FACILITY (Refer to the FVM Dress Code)

- Clean surgical light blue 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.

2.7.2. 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 anesthesia students, staff, and faculty between the anesthesia preparation area and the Equine Hospital will be kept to a minimum.
- Personnel must wear clean exam gloves before placing IV catheters.

2.7.3. 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 anesthesia prep area or other areas of the surgical facility.
- If needed the floor should be hosed between patients and disinfected with appropriately diluted RBS.
- 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.

2.7.4. ANESTHESIA INDUCTION AREA

Activities conducted prior to entering the anesthesia induction area:

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

- Do not clip the surgery site of patients prior to the day that procedures are scheduled. This predisposes to colonization of incisional sites with potentially pathogenic bacteria.
- Patients should be thoroughly brushed or bathed prior to entering the anesthesia 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 anesthesia 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 anesthesia 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 anesthesia induction area:

- Equine 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 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. Clean exam gloves must be worn for this procedure.

2.7.5. 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 RBS 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.
- Anesthesia 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.

2.7.6. 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 anesthesia 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 anesthesia 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 anesthetic 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.

2.7.7. 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 removed all organic material from the floor
 - The floor is cleaned / mopped with RBS 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 RBS solution.
 - Rinse solution and leave to dry.
 - Clean wheels of carts and stands prior to entry in the surgical theatre.
 - All bins should be removed from theatre (no used yellow bins should remain in the theatre over night).
 - Doors should be kept closed at all times.
- **Once a week**
 - In empty.
 - Scrub walls till body level.
 - Clean & disinfect drains in theatre and hall.
 - Clean table piston.
 - Remove dust from tablets and lights.

2.7.8. 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. (See paragraph 2.4.12)
- 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. CONSULTATION AT THE RACETRACK OF GHLIN ☺

The staff of the department CEMESPO (centre medicine sportive) regularly performs consultations at the race track of Ghlin. It is of major importance considering biosecurity that activities at the racetrack are separated from those at the Equine Hospital, preventing exchange of contagious agents between horses of those two sites and between individual horses at the racetrack.

The following biosecurity precautions should be applied before during and after these consultations:

Preparation for consultation at Ghlin:

- A registration of horses is available.
- Any horse suspected at beforehand to suffer from any class 3 or class 4 contagious diseases should be prohibited to come to the racetrack.
- Clinicians, technical staff and students wear clean and specific coveralls provided by the CEMESPO and should not wear attire already worn at the FVM. They all wear clean boots that should be disinfected at departure from the FVM.
- Only equipment and material necessary for the consultations will be taken to the race track. If possible material and equipment used for the consultations at the racetrack and used for the clinic should be completely separated (for example a separate box for needles, syringes for use at the racetrack and for at the clinic). All equipment and material used for the consultations at the racetrack and in the clinic as well (double-use) should be cleaned and disinfected before departure and before returning.

During consultation:

- Any horse arriving at the racetrack and at primary examination suspected to suffer from any class 3 or class 4 contagious diseases should leave immediately the racetrack trying to prevent any contact with other horses.
- In between patients hands should be washed (with water and soap or with hand sanitizer available on site).
- In between patients the endoscope, nasogastric tubes, heart rate meters should be cleaned and disinfected.

After consultation:

- Equipment and materials assigned for use at the racetrack will be arranged and clearly marked for use at the racetrack only.
- All double-use equipment and materials should be cleaned and disinfected.
- Clothing should be discarded, cleaned and not worn in the FVM. Boots should be disinfected at departure from the racetrack.

The same precautions will be implicated for all other activities of the CEMESPO outside the Equine Hospital.

2.9. EQUINE COLIC ☹

- Because of documented increased risk of shedding *Salmonella*, colic patients will be hospitalized in the future separately from other patients and are managed using more stringent biosecurity precautions. All colic patients are hospitalized in the Colic Aisle, unless they meet criteria for hospitalization in the Barrier-nursing Units (class 3) or Isolation Unit (class 4).

2.9.1. 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 Unit
- 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.

2.9.2. GUIDELINES FOR MANAGING EQUINE COLIC PATIENTS

2.9.2.1. CASE DEFINITION

- All pre-operative and/or post-operative colic cases and acute and chronic/recurrent medical colic cases will be stalled in the colic aisle.
- *Salmonella*-positive and those suspected of being infected with *Salmonella* must be housed in the Isolation Facility. Diarrhea cases will be housed in a barrier-nursing unit (class 3; without fever or leucopenia, not hemorrhagic) or isolation unit (class 4; with fever or leucopenia; or hemorrhagic) (cfr algorithm 2).

2.9.2.2. 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.

2.9.2.3. 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.

2.9.3. COLIC AISLE 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.

2.10. DECEASED PATIENTS ☹

2.10.1. 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).

2.10.2. 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.
- 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 with help of the Forklift (Manitou) and an impermeable transport bac as soon as possible:
 - If possible, euthanize the horse at the Autopsy Department
 - During week days and working hours: immediate transport of the cadaver to the Autopsy Department
 - During evenings or weekends: the following morning, including Saturday morning, or Monday morning. In the mean time, the cadavers will be stored in the cadaver local or the cadavers can be brought to the Autopsy Department with use of the cadaver car.
- Deceased horses with a class 3 or 4 disease should stay in their stall until the Forklift (Manitou) is able to bring the cadaver directly to the Autopsy Department.
- After transport of a cadaver, the Forklift (Manitou) should be thoroughly cleaned and disinfected in the Autopsy Department.

2.10.3. REFERRAL FOR

2.10.3.1. PATHOLOGY ☺

- The Forklift (Manitou) brings the horse to the Autopsy Department where the horse's cadaver 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).
 - OR in the cadaver resembling bac 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.

2.10.3.2. CREMATION ☺

- If the owner desires a cremation service for his/her horse:
 - The following service should be informed: Crémanima Respet at Sombrefte. Tel: 071/888845
 - The client can chose between individual cremation (1950 euro) or group cremation (950 euro).
 - This firm is authorized to transport cadavers. (200 euro + 1,5 euro/km) No other ways of transport are accepted.
 - While waiting for the transport, the cadaver should be stored in the cadaver local.
 - Cremation is not possible for class 4 horses since cadavers are not allowed to leave the faculty and should be taken to the autopsy Department as soon as possible.

2.11. BREAKING TRANSMISSION CYCLES

2.11.1. 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 14H00 to 18H30 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 Large Animal Reception desk prior to entering the Equine Hospital. A student, clinician, or equine nurse 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 neighbors, not the manege 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 or in a manege). 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.

2.12. RISK COMMUNICATION ☺

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

Chapter 3.

AGRICULTURAL ANIMAL BIOSECURITY SOP

3. AGRICULTURAL ANIMAL BIOSECURITY SOP

3.1. GENERAL ATTIRE FOR THE FOOD ANIMAL HOSPITAL

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 each stall to scrub, clean and disinfect the boots without using the hands. ☹
- Stablemen 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 clinical department of food animals.
- Students are responsible of the washing of their coveralls (60 to 90° C). ☹ Higher temperature as possible is recommended.
- Surgical Attire:
 - Clean blue surgical scrubs, cap, mask and over-boots are required for surgical procedures.
 - Easily disinfected water-impervious gown is needed for laparotomy on standing cattle.
 - Clean coveralls must be worn over scrubs when handling pre- and post-operative patients.

3.2. GENERAL CLEANLINESS AND HYGIENE

- Persons entering the Ruminants Hospital should use the principal entrance looking into the court of the building B42 and not use the walkthrough from the equine treadmill. The walkthrough between Ruminants and Equine parts should be used only in exceptional circumstances.
- Persons entering the Swine clinic should use the only entrance available looking into the court of the building B42, after compulsory use of the biosecurity sas and footbath.
- Hands must be washed or cleaned with an alcohol-based hand sanitizer prior to, and after examining each patient (see page 8 for the hand washing protocol in the Chapter 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 faeces, 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 footmats 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, and thermometers must be sterilized or disinfected before use on any patient.
- Instruments and equipment such as buckets, stomach tubes, fluid pumps, funnels, and mouth speculums must be cleaned and disinfected with 0.5% chlorhexidine after use on the patient. When applicable, return equipment for complete sterilization.
- Equipment wheels or sides soiled with faeces must be cleaned and disinfected prior to entering or leaving the facility or moving to another area of the facility.
- The rounds room should be kept clean including table, counter tops and floors.
- Rectal thermometer, stethoscope, haemostats, and scissors must be cleaned and disinfected between patients using 70% isopropyl alcohol or 0.5% chlorhexidine available in various areas.

3.2.1. PROPER CLEANING

- It is of major importance for basic hygiene and for reducing the infection pressure that the patients of the Ruminants Hospital are housed in a **proper stall**.
- Before a new patient enters the stall, faeces or dirty bedding should be removed.
- Stablemen clean the stalls and the hallways twice a day. In the case a stall is dirty outside working hours of stablemen, students and interns should remove faeces and wet bedding.
- In the case of neonates, patient hygiene is of extreme importance and thus as soon as a pile of faeces or wet bedding is present this should be removed from the stall by students and interns.

3.2.1.1. PROCEDURE

- **When a ruminant is discharged**, the stall should be cleaned as soon as possible.
 - If it concerns a ruminant with a contagious disease, the box should be marked by the intern or clinician: “to be disinfected”. The stablemen should empty, clean and disinfect this box as soon as possible but after cleaning the non-contagious stalls (see disinfection protocol). The stall is considered contagious area until disinfected and thus no new case should enter before it has been cleaned and disinfected.
 - Boxes used by ruminants with non-contagious disease are regularly emptied, cleaned and disinfected in between use by different animals. The stall should be cleaned in between use by different ruminants, but the frequency of disinfection is dependent on the case turnover; this is not necessary after each animal, but as frequent as possible.
- **Water buckets or automatic drinkers** need to be proper and regularly cleaned, and 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 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 **defecate outside their stall** (whether inside or outside a building), their faeces needs to be removed immediately after defecation. If patients **urinate** inside (but not outside a building), the urine needs to be removed and the floor cleaned and dried.

3.2.2. GENERAL DISINFECTION PROTOCOL

- 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. 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 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 manger, 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: RBS 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 manger, thoroughly with RBS FOGLYAM M and appropriate dilution. This disinfectant should remain in contact with surfaces for 15 minutes, particularly if infectious agent is suspected.
- Remove excess disinfectant with water.
- The disinfectant RBS should be rinsed off all surfaces prior to housing a patient in a box or stall.
- After disinfecting, remove the protective attire and wash your hands.
- All multiple use areas (*e.g.*, stocks and 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.
- The disinfectant used in the Swine clinic is CID 20, as well in the footbaths as for disinfection of the stalls.

3.2.3. FOOTBATHS AND FOOTMATS

- Footbaths and footmats solutions are changed every morning by interns or stablemen.
- Footbaths and footmats should be changed whenever they are judged to contain excessive amounts of bedding or dirt.
- Footbaths and footmats 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, interns and clinicians).
- Personnel are required to use footbaths or footmats appropriately whenever they are encountered. Footbaths require full immersion of feet, and therefore water impervious footwear must be worn wherever footbaths are employed.

3.2.4. 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 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 for sterilization.
- **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 (at the beginning and at the end of the day is recommended). Immediate cleaning and disinfection is required when stethoscopes are visibly soiled or after examination of a patient with a suspect infectious disease (class 3 or 4).
 - 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, but this should not be routine for all exams and stethoscopes must be thoroughly cleaned and disinfected after each use.
- **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.
 - Multi-use thermometers should never be used on patients that have a high risk of enteric disease caused by contagious pathogens (e.g., BVD or salmonellosis).
 - Immediate cleaning and disinfection is required when thermometers are visibly soiled or after examination of a patient with a suspect low risk contagious disease (class 3).
 - Individual thermometers 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.
- Other instruments and equipment owned by personnel (e.g., haemostats, 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 faecal material from the ground. Shovels and forks are available in many locations throughout the barn.
- The rounds rooms, records rooms, and the different offices must be kept clean and neat at all times, including table tops, counter tops, and floors. Backpacks, etc. should be stored in the lockers with padlock in lecture theatre B ("*amphi B*"). Do not store extra clothing, backpacks, etc. in the breezeway or the staging area.

3.2.5. SUMMARY OF DETERGENTS AND DISINFECTANTS APPROVED FOR USE IN THE FVM

- Bleach
- RBS FOGLYAM MD (Chemical-Products S.A., Brussels, Belgium): see card of security data.
- DERMASOFT (Nerdon Zeepziederij, Izegem, Belgium): see card of security and health.
- CID 2: see card of security data.

3.2.6. FOOD AND BEVERAGES

- No food or beverage is permitted in the Food Animal Hospital except in the students' bedroom (room 0.35c) in the clinic.
- Technical staff may also use their office in the clinic, room 0.37. No food or beverage is 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.

3.3. GUIDELINES FOR RECEIVING AND MANAGING AGRICULTURAL ANIMAL PATIENTS

3.3.1. OUTPATIENTS

Outpatient Receiving

- Food animals without signs of reportable diseases should be unloaded into the court of the building B42.
- Trailers should not block the access between the Food Animal Hospital and the road.
- Trailers can be parked temporarily in the court or along the access to the Hospital.
- Outpatients should never be fed but may be watered using a bucket owned by the FVM. If a bucket owned by the FVM is used, then personnel responsible for the case should clean and disinfect it using appropriately diluted chlorhexidine before and after each use.

3.3.2. 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
 - Student and clinician names
 - 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 clinical staff. The feeding of all patients is the responsibility of the student in charge of the case unless otherwise indicated.
- Hospital staff or the attending student will clean the stall in the morning and add fresh bedding as needed.
- Put the stall-card at the entry of the stall to indicate the animal is gone after it has been discharged from the hospital.
- No inpatient may be introduced in the Swine clinic. In case of arrival of a diseased animal, it must return without delay in its farming or be directly euthanatized in the vehicle for necropsy.
- No healthy pig may be introduced in the Swine clinic without the permission of the person responsible for the Swine clinic.

3.3.2.1. STALL ASSIGNMENTS

- Individual boxes at the entry of the Hospital (rooms 0.48a, b, c and d) are reserved to bulls and down cows. Small ruminants and calves less than 150 kg are placed in the individual boxes at the back of the hospital (rooms 0.41, 0.42 and 0.43).
- Patients with known or suspected contagious or zoonotic infections (class 3) occupy the 4 boxes located in the equine part of the clinic in the bounds of possibility.
- Patients with known or suspected reportable animal disease in Belgium (class 4) must be housed in the isolation unit (building B41).

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

- A stall card **must** be posted at the time that patients are admitted.
- The front of the stall card must list pertinent client and patient identification, names of students and clinicians assigned to the case. The type of forage and concentrate feeds to be fed should also be listed.
- The back of the stall card must list the admitting complaint or tentative diagnosis especially as they pertain to the infectious disease status (this allows the cleaning crew to better understand the infectious disease hazards and the associated precautions that should be associated with patients).
- The diagnoses on the back of the stall card pertaining to the infectious disease status must be updated as patients' status change during hospitalization.
- Patient information must also be recorded on the census board located in the room 0.17. Anticipated discharge date and time should also be noted on the census board when this becomes available.
- Treatment orders are posted at the stall doors.
- 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.

3.3.2.3. FEED AND WATER

- 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 in order to decrease the likelihood of contamination and to decrease the availability of food and hiding places for wildlife.

3.3.2.4. BEDDING

- Students, nursing staff, and clinicians are responsible for bedding stalls and feeding for patients as they arrive.
- Occupied stalls are cleaned and re-bedded with clean straw in the mornings and evenings by the 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.
- Only minimal amounts of bedding and forage are to be stored in the Food Animal Hospital in order to decrease the likelihood of contamination and to decrease suitable habitat for rodents and birds.

3.3.2.5. CLEANING PROTOCOLS: FACILITIES-FOOD ANIMAL

- **Food Animal Trailer/Parking Area**
 - The trailer of the FVM is cleaned and disinfected after each transport.
 - The unloading court is cleaned once daily on regular workdays and everytime faeces, urine or straw strewn the soil.
 - The breezeway is cleaned (*e.g.*, swept and hosed) twice weekly and disinfected weekly by the cleaning crew.
- **Food Animal Examination Areas**
 - Areas soiled by faeces, discharges, urine, or blood must be cleaned and disinfected by attending personnel immediately.
 - Cleanliness is ultimately the responsibility of the clinicians on the service.
- **Food Animal Main Hospital Facility**
 - Monday through Saturday, the day crew picks stalls in the morning and in the evening and adds fresh bedding as needed.
 - On Sundays and public holidays, another crew picks stalls in the morning 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 feeding.
 - All grains/concentrates are to be stored in plastic garbage cans with lids.
 - Equipment wheels or sides soiled with faeces must be cleaned and disinfected prior to entering or leaving the facility or moving to another area of the facility.

3.3.2.6. ROUTINE STALL CLEANING

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.
- For disinfectants (especially foam) 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).

General Procedures for Cleaning a Vacated ruminant:

- Remove all bedding into a dumpster.
- 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 daily (including handles).

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 (☞ see the Chapter 1, page 15).
- 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.

Cleaning procedures for Occupied Stalls in the Main Hospital

- Use appropriate clothing (barrier clothing where required).
- Use appropriate dumpster for the area—care should be taken to avoid dropping manure/straw outside the dumpster.
- Patients must not be allowed contact with the dumpsters at any time.
- Clean and disinfect cleaning tools between stalls when required.
- Dumpsters used in the Food Animal facility should not be moved into the Equine facility or vice versa.

Weekly Routines

- Food Animal feed room floors should be cleaned (i.e. sweep, rinse, scrub/mop using detergent [Tide], then rinse again).
- Sinks in aisle-ways and in the general treatment area should be cleaned and disinfected with dilute disinfectant (RBS or dilute bleach Javel 2%) by technicians or barn crew.
- Empty stalls should be hosed with water if not used within one month in order to remove accumulating dust.

Monthly Routines

- Areas that are not used on a daily basis (i.e. tops of walls, areas not used often—scales, wash rack, etc.) should be hosed on a monthly basis in order to prevent accumulation of dust.
- Sweeper should be cleaned and maintained.

Semi-annual Routines

- All floors should be stripped, cleaned and disinfected with RBS.

- Calf boxes should be thoroughly cleaned, scrubbed, and disinfected top to bottom.
- Drains in Calf Isolation and Large Animal Isolation should be scrubbed with detergent (Tide)—brush will be provided—rinsed, then filled with dilute bleach (Javel 2%)—Do not fill a drain with any disinfectant without cleaning it first.

Annual Routines

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

General Cleaning

- The tires of any tractor or forklift (Manitou) that enters the Food Animal Hospital must be scrubbed and disinfected with RBS prior to entering and leaving the facility.
- When the forklift (Manitou) 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.

3.3.2.7. 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 census the board.
- Stablemen should be notified as soon as possible if patients will be discharged shortly after this time so that unnecessary effort is not expended cleaning these stalls.
- When patient is discharged, the stall card should be tossed into the stall to indicate that the animal is no longer hospitalized.
- Stalls 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. Also, Biosecurity personnel and the supervisor for the Cleaning and Maintenance crew should be notified of the stall number and patient ID.
- 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, paperwork, etc).

3.3.2.8. TACK

- Tack (e.g. halters, leads, blankets, etc.) owned by clients is not to be left with patients at the FVM.
- The FVM supplies halters and leads for patients. FVM owned tack is stored at the patients’ stalls when not in use. All tack supplied by the FVM is disinfected between patients by soaking in chlorhexidine solution.

3.3.2.9. SALMONELLA SURVEILLANCE IN RUMINANTS PATIENTS ●

- At this moment, the hospital has never been confronted with nosocomial salmonellosis.

3.3.2.9.1. SALMONELLA SURVEILLANCE IN THE LARGE ANIMAL HOSPITAL

- In case of culture-positive for *Salmonella* on animals, stalls that housed animals 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.

3.3.2.9.2. 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.

3.4. 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. diarrhea), acute respiratory tract infections, Bovine Viral Diarrhea Virus, or infections with bacteria that are resistant to multiple antimicrobial drugs.
- 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.
- When patients with elevated contagious disease risk status are housed in the main inpatient areas, effort must be made to use appropriate barrier nursing and biocontainment practices with the patient.
 - Barrier nursing precautions must be used at all times.
 - Stalls in the main housing area used for these patients should be cordoned off with barricades.
 - Adjacent stalls should be kept empty if possible.
 - Using stalls in the equine corridor of the clinic.
 - The suspected or confirmed disease status must be relayed to the biosecurity personnel ASAP so that they can assist in communication and evaluating if appropriate precautions are being taken to house the animal.
- 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 Calf unit as deemed appropriate by the clinician on duty.
- 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). 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. Cones with chains will be placed around the stall to identify the contagious nature of the animal and to reduce traffic in the area. Stalls on either side of the contagious animals should be left open 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. Also label the stall with the suspected or confirmed pathogen on a note or white tape label.
- Animals suspected or known to present a reportable ruminants disease in Belgium (see section 1.5.6.) will be isolated in the ruminants isolation facility (building B41) if this disease is contagious by direct transmission (i.e. not BSE, babesiosis or enzootic bovine leukosis for example).
- In all cases of suspicion of a reportable ruminants disease in Belgium, the UPC of Liege will be immediately contacted (see 1.6.6. p. 23).

3.4.1. CLASSIFICATION OF SUSPECTED/CONFIRMED CONTAGIOUS ANIMALS

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

3.4.1.2. SPECIAL PRECAUTIONS (CLASS 3)

3.4.1.2.1. MOVEMENT OF HIGH RISK PATIENTS

- Movements of high risk patients have to be restricted as much as possible.
- When the animal is hospitalized in the boxes of the equine corridor, it will preferentially come in or out by the exit located between the ruminants and the equine corridors.
- All ejections have to be cleaned directly after their emission.
- 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 faecal matter, immediately clean/disinfect contaminated areas.

3.4.1.2.2. REQUIRED DIAGNOSTIC TESTING IN PATIENTS WITH SUSPECTED INFECTIONS

- Appropriate samples have to be sent as soon as possible to the ARSIA or CERVA laboratory.
- Appropriate barrier nursing precautions must be followed by all personnel at all times during diagnostic or other procedures.
- If the patient requires diagnostics or other procedures (e.g., radiology, ultrasonography, surgery) which can only be performed in the main hospital facility, these procedures should be performed at the end of the day whenever possible.
- Biosecurity Personnel must be consulted prior to moving any high risk patient for diagnostic or surgical procedures, except when clinicians judge that this movement is immediately necessary for managing the ruminant’s critical health care needs.
- The 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.

- The senior clinician must ensure that all services assisting with procedures are informed of the known/suspected agent, and appropriate barrier clothing precautions.
- 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.
- Whenever possible, surgery on these patients will be performed at the end of the day, when surgery on all other elective patients has been completed (emergencies excepted).

3.4.1.2.3. 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 or Whirlpak 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.

3.4.1.3. SPECIAL 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 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. Avoid contaminating anterooms with straw or manure, and assist with general cleanup 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 Food Animal Hospital, and certainly not 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.

3.4.1.3.1. MINIMIZING ENTRY INTO THE FOOD ANIMAL 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.

- Only the clinicians, students, technicians 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 or those barrier nursed). If it is necessary to work on patients in multiple housing areas, personnel should take optimal precautions when moving between areas and handling patients with different infectious disease risks. When possible, students assigned to class 3 or 4 patients should not have contact with immune suppressed patients (leucopenic patients, young or very old animals, animals receiving immunosuppressive drugs, etc...) elsewhere in the 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 (see for details section 2.5.9): these 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 before and after entering the unit (and stall if several ruminants are present in the unit)
 - Coverall
- 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 (see for details section 2.5.9):
 - Footbath before and after entering the unit and the stall
 - Hand washing before and after entering the unit and the stall
 - Coverall
 - Gloves
 - Boots
- Clients are **not** permitted to enter the Food Animal Isolation.

3.4.1.3.2. 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 is 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 and thermometer 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.

3.4.1.3.3. PROCEDURES FOR PERSONNEL ENTERING AND EXITING THE FOOD ANIMAL 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 Food Animal barrier nursing unit and isolation unit.
- Regularly, door knobs should be cleaned with disinfectant.
- While entering a class 3 or 4 stall:
 - Take all necessary supplies at once into the stall when entering to minimize traffic in and out the stall.
 - 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.)
- While exiting a class 3 or 4 stall:
 - Avoid dragging 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 footmat while entering the barrier nursing unit.
 - Put on a clean scrub which will be provided at the income of the unit (coverall or over blouse)
- 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 coverall or over blouse 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 coverall.

- Use the footbath or footmat prior to exiting the unit. (if several ruminants are present in the unit; if only one ruminant present in the unit, only at exiting the stall).

Class 4 – isolation ☹

- To enter the Food Animal isolation area (entering the sas):
 - All personnel with boots are required to use the incoming disinfectant footbath or footmat as they enter the Isolation Area.
 - Personnel should change their normal street shoes by boots available in the sas of the isolation area.
 - Leave clinic smocks or coveralls outside the Isolation Unit or hang them in the sas of the Isolation Area.
 - Wash hands or use hand sanitizer before touching any surfaces.
- To enter the isolation perimeter (cement apron surrounding the outside of the isolation facility)
 - Put on clean exam gloves and clean scrubs.
 - Use the outgoing footbath or footmat at the sas of the isolation area.
 - At a minimum all personnel are required to wear clean boots, clean scrubs and clean exam gloves.
 - Personnel handling, examining or feeding different Food Animal isolation patients should change gloves and scrubs between patients.
- To enter isolation stalls
 - 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.
- 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 and re-glove. Use the clean gloves to complete flow sheets and process samples.
- Exiting perimeter of occupied isolation stalls (entering sas):
 - Remove scrubs.
 - Discard gloves.
 - Clean boots (scrub if needed) in footbath before entering the sas.
- Exiting the isolation unit (exiting sas):
 - Use hand sanitizer or wash hands upon re-entering the sas.
 - Remove boots.
 - Wash hands thoroughly with soap and water before leaving the sas.
 - Use the footbath or footmat prior to exiting the isolation sas area.

3.4.1.3.4. 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 RBS solution.
- 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 transported by a Faculty cattle-car (for some diseases the transportation will be forbidden; *e.g.*, Foot-and-mouth disease) in order to exposes them to the least number of other food animals. It is best to have 2 people assist with this effort

- One person dresses in appropriate isolation facility attire, sets up the Isolation stall, and receives the patient at the gate.
- The other person moves the patient from the main hospital to the transportation car.
- 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 (scrubs) 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 ruminants.

Class 4 - isolation: ☹

- A bag with supplies for in the Isolation sas (scrubs, 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 Food Animal Isolation facility in the owners’ trailer/transport vehicle and unloaded in the driveway of the Isolation area.

3.4.1.3.5. CLEANING AND FEEDING IN THE FOOD ANIMAL 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 diarrhea, blood or other excretions/secretions.
- Footbaths 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 as needed during the day.
- Students and interns are responsible for feeding Food Animal 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.

3.4.2. PROCEDURES FOR PATIENTS LEAVING THE FOOD ANIMAL BARRIER-NURSING UNIT OR 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), and appropriately provide suggestions for mitigating risks to people and animals.
- Food Animals housed in the barrier-nursed units or the isolation unit may not be walked.

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 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, and all surfaces and floors that are potentially contaminated must be promptly cleaned and disinfected in order to minimize the likelihood of nosocomial transmission.

Class 4 - isolation: (for discharge or highly exceptional surgical procedures) ☹

- All diagnostic and therapeutic procedures are performed in the isolation unit.
- Leaving the isolation facility, dead or alive, is only permitted when the diagnosis of a reportable ruminants disease in Belgium is invalidated. If such a disease is diagnosed, the animal could only leave the isolation facility after being euthanatized, taken away by the rendering plant.

3.4.3. 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 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.
- 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 diagnosis or other procedures (e.g., radiology, 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 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 diarrhea, one person is needed to lead the animal, and another person must follow with a trash bag to catch any faecal matter, immediately clean/disinfect contaminated areas.

- The 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.

3.4.3.1. USE OF ULTRASONOGRAPHY, RADIOGRAPHY, ENDOSCOPY OR ECG IN THE FOOD ANIMAL BARRIER-NURSING UNITS AND THE ISOLATION UNIT ☺

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

3.4.3.2. 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.
- Zoonotic conditions or disease agents should be double packed and clearly identified on all submission forms.

3.4.4. BREAKDOWN OF THE FOOD ANIMAL 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 can be fully 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 bins.
- 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, intern or primary clinician, or technical staff.
- 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.

3.4.5. REDUCING BIOSECURITY PRECAUTIONS FOR A PATIENT HOUSED IN THE FOOD ANIMAL BARRIER-NURSING UNIT OR ISOLATION UNIT

- 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.

3.4.6. DISEASE DIFFERENTIALS FOR WHICH TESTING IS MANDATORY IN AGRICULTURAL 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 in the Specific contagious Diseases of Concern Section of the Biosecurity SOP.

- For each disease, additional information can be obtained at the two following addresses:
 - <http://www.cfsph.iastate.edu/DiseaseInfo/factsheets.htm>
 - http://www.oie.int/eng/ressources/en_diseasecards.htm

3.4.7. 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.

3.5. FOOD ANIMAL SURGERY AND ANESTHESIA

3.5.1. ATTIRE FOR THE “CLEAN” AREAS OF THE AGRICULTURAL ANIMAL SURGICAL FACILITY

- Refer to the FVM and VDL Dress Code at Clean surgical (blue) 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 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 over the blue scrubs. Personnel must also remove shoe covers when exiting “clean” surgical areas.
- All personnel, including cleaning and maintenance personnel, are required to adhere to all relevant policies regarding attire in ruminants surgery facilities.

3.5.2. HYGIENE FOR PERIOPERATIVE MANAGEMENT OF AGRICULTURAL ANIMAL PATIENTS

- High standards of cleanliness and hygiene must be maintained throughout the ruminants 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 anesthesia students, staff, and faculty between the anesthesia preparation area (1 box with upholstery padding in the hospitalization facility or the main examination room) and the clean surgical areas will be kept to a minimum.

3.5.3. GUIDELINES FOR PERIOPERATIVE MANAGEMENT OF AGRICULTURAL 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 with appropriately diluted RBS.
- Equipment such as endotracheal tubes 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.

3.5.4. ANESTHESIA INDUCTION AREA

- Activities conducted prior to entering the anesthesia induction area:
- Anesthesia request forms should be completed the day prior to procedures when possible. All known or suspected contagious diseases should be clearly noted on the request 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 anesthesia induction area. Students assigned to the case should take primary responsibility for ensuring that this is completed if required.
- Activities conducted in the anesthesia induction area:
- Ruminant surgical patients will be delivered to the anesthesia prep area one hour prior to scheduled procedures (i.e., scheduled table time), and placed in a holding pen in the anesthesia prep area until the time of induction.
- Prepare the IV catheter site aseptically and place the catheter using aseptic technique.

3.5.5. POSTOPERATIVE ACTIVITIES

- Ruminants 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.
- Patient 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 RBS solution 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.

3.5.6. OTHER ROUTINE CLEANING AND DISINFECTION PROCEDURES

- All induction, surgery, and recovery areas are thoroughly cleaned and disinfected at night by Animal Care personnel.
- Endotracheal tubes (ET):
 - Clean inside and outside of ET tubes with mild soap and water, using a scrub brush.
 - Soak ET tubes in a large barrel of chlorhexidine solution for at least 15 minutes.
 - Thoroughly rinse ET tubes with warm water being careful not to set them down in the sink.
 - Hang ET tubes to dry in designated cabinet in the anesthesia 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.
- 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.
- All large animal anesthetic machines and ventilators will be broken down and thoroughly cleaned/disinfected on a regular basis.
- Environmental samples will be obtained from the recovery rooms and surgical theatres on a monthly basis and cultured for the presence and of pathogenic bacteria and to quantify bacterial counts.

3.5.7. 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 diseases.

- Procedures on these cases should be scheduled for the end of the day 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.

3.6. AGRICULTURAL ANIMAL AMBULATORY

- Clean coveralls and rubber washable boots are required attire. When indicated, overshoes, gloves and disposable coveralls will be furnished.
- 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, haemostat, and bandage scissors.
- On a given farm, boots are washed as needed after each animal examined. Remove gross contamination of blood, pus, or manure before handling the next case.
- 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 when finished working with these patients.
- All instruments, including stomach tubes, mouth speculums, thermometers, and CMT paddles should 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 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 honour 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.

3.7. DECEASED PATIENTS

3.7.1. BREAKDOWN OF PATIENT ENVIRONMENT

- When a patient deceases, it must be transported in the shortest possible time to the necropsy room with the forklift Manitou. The cadaver has to be transported in a watertight closed container.
- 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 the staff driving the Forklift (Manitou). During this delay, the cadaver will stay in its box.

3.7.2. STORAGE OF PATIENT CORPS

- As soon as possible, the patient corps will be stored in the refrigerated rooms of the necropsy room.

3.7.3. REFERRAL FOR

3.7.3.1. 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.

3.8. BREAKING TRANSMISSION CYCLES

3.8.1. VISITORS-CLIENTS IN THE FOOD ANIMAL HOSPITALIZATION FACILITY

- Visiting hours for the ruminants Hospital are 8:30 am to 18:30 pm daily.
- All visitors must check in at the Food 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, or technician 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, and should not be divulged.
- 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.

3.8.2. CHILDREN IN THE FVM

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

3.8.3. PETS IN THE FVM

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

3.9. ENVIRONMENTAL SURVEILLANCE FOR SALMONELLA

- Upon notification that an inpatient is known or suspected to be infected with *Salmonella*, the housing environment will be scheduled for environmental sampling and culture.
- Clinicians are responsible for ensuring that Biosecurity Personnel have been informed when these patients are discharged.
- After routine cleaning and disinfection procedures have been completed, a sign will be hung on the stall by biosecurity personnel.
- The stall will remain vacant until the culture results are known.
- The biosecurity house officer will obtain environmental samples from the cleaned stall and submit for culture. The stall will be released for use with other patients when negative culture results have been confirmed.

3.10. USE OF FOOD ANIMAL PROCEDURES LABORATORY

- Use of the Food Animal Procedures Laboratory is scheduled through the Food Animal Technicians.
- Footwear and outerwear requirements are the same as those used for the main Agriculture Animal Hospital.
- Students must store backpacks and other materials outside of the Procedures Laboratory.
- Food and beverages are not allowed in the Procedures Laboratory and should also not be stored outside of the laboratory due to the risk for contamination with faeces and enteric pathogens.

3.10.1. REQUIREMENTS FOR LABORATORIES AND CONTINUING EDUCATION WITH ANIMALS OR CADAVER PARTS

- All personnel and attendees must have clean washable rubber boots and coveralls.
- If a surgical procedure is in progress, scrubs are acceptable.
- Clean any area contaminated by faeces, blood, tissue etc. immediately upon completion of procedure.

3.10.2. 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 0.5% 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 adjacent to the main examination room. The food animal technicians will obtain these items when needed.

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.
- Attire should be appropriate to the job at hand
 - Veterinarians and technicians in surgery : Blue
 - Veterinarians and assistants in consultation and hospitalisation: Green
 - Students: white blouse (and trousers) for clinics
 - Isolation wards : yellow labcoats
- 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 (are you willing to fully immerse them in a footbath!?) 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 “to clean” is suspended to the cage and cleaning personnel is alerted. If a cage needs to be utilised before cleaning personnel will have the time to clean it, or outside of working hours of cleaning personnel, students and interns 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 intern or clinician: “to be disinfected”. Cleaning personnel will empty, clean and disinfect this cage as soon as possible, after break-down of the cage by the responsible clinician, intern, nurse or student, and after cleaning off the non-contagious cages by cleaning personnel (see disinfection and break-down protocol). The cage is considered a contagious area until disinfected and thus no animal should enter before it has been cleaned and disinfected.
- Cages used by animals with non-contagious disease are regularly emptied, cleaned and disinfected in between use by different animals. The cage should be cleaned and disinfected in between use by different animals, and at least once daily.
- **Water buckets** need to be regularly cleaned (as needed, or at least twice daily) during hospitalisation 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 hospitalisation 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 (green dustbins for hospitalised animals class 1 and 2; yellow dustbins for class 3 and 4 animals).
- **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 kitchen of MIPA and CHIPA, in the students' dorm and dressing room and in the small meeting room at the end of the surgical wing.
- In the kitchens of the Small Animal Hospital (MIPA and CHIPA) 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 hospitalisation ward prior to working in other areas of the FVM (See page 8 for the hand washing protocol)
- Clean exam gloves should be worn when handling high-risk patients (i.e. infectious disease class 3 or 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 Frontline spray from the pharmacy and bill to the client.
- 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 (e.g. RBS) 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 (e.g. Virkon misting), 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

- Footmats are maintained at the entrance to the Animal isolation ward and will be changed every morning by interns.
- Footbaths solutions are changed every morning by interns, nurses or cleaning personnel.
- Footbaths should be changed whenever they are judged to contain excessive amounts of bedding or dirt.
- 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, interns and clinicians).
- 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 dedicated to this patient only and stored in a well identified box. 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 hospitalisation; 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 shelf 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 or 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 anaesthesia) should be thoroughly disinfected between patients by wiping or 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). 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 defaecation, and this is the responsibility of the 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 in a cage of the special outpatient corridor as long as they are not class 3 or class 4.
- Patients in need of further exam with class 3 or 4 assignment either stay with the owner in the consultation room, or will be hospitalised in agreement with regulations pointed out in the specific chapters regarding class 3 and class 4 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, interns or residents, 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, the intern in or the responsible of the hospitalization area or otherwise the primary clinician.**
- **In general:**
 - The middle corridor is the “Intensive Care Unit”.
 - Two runs are provided for medium care large breed dogs.
 - Medium care facilities for medium and small breed dogs are provided by the short-line boxes.
 - A special corridor for either very loud patients, if not patients in need of a quiet and dark cage is provided at the right hand side of the ICU.
 - Low care facilities are provided on the right hand side of the hospitalisation kitchen.
 - An isolation ward is provided at the right corner of the hospitalisation, and is used for class 4 patients.
- Client beds, blankets, collar tags 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 the student/clinician names (stickers).

- Suspected or confirmed infection status is to be written on the cage card immediately upon occupancy in case of class 3 or 4 animals.
- Place pertinent signs on cage with important information for animal care attendants, (i.e. “Keep fasted” “Lepto suspect” “Caution—Will Bite,” “gather stools”, 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 ‘to clean’ 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. PATIENT RECORDS AND MEDICATIONS

- Records of hospitalized cases should be stored in the Student and Intern office space in the hospitalisation.
- Medications, and other materials used in the care of hospitalized cases should be stored in the “corridor medication cupboard” or in the box attached to the cage of the case. All medication and material for a case should be clearly identified.

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

- A stall card **must** be posted at the time that patients are hospitalised.
- 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. Anticipated discharge date and time should also be noted on the whiteboard when available.
- 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.

4.5.2.4. FEED AND WATER

- All food (including that provided by clients) must be stored in appropriate bags, cans or plastic containers with tight fitting covers.
- Only minimal amounts of food are to be stored in the reffridgerator of the Small Animal Hospitalisation kitchen in order to avoid contamination.
- If a new can is to be opened, the opening date is clearly stated on the outside of the can and a plastic cover is placed in order to seal it prior to placement in the reffridgerator.
- All cans opened for more than two days should no longer be used.

4.5.2.5. BEDDING

- Students, nursing staff, and clinicians are responsible for bedding cages for patients as they arrive and during hospitalisation.
- 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.

4.5.2.6. 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 whiteboard and communicated to the responsible student in hospitalization, nurses and intern, in order to optimize patient hygiene at time of discharge.
- 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).
- Cleaning personnel should be notified between 4:00 and 4:30 p.m. if patients will be discharged shortly after the end of their working day so that unnecessary effort is not expended cleaning these stalls.
- 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. Also, Biosecurity personnel and cleaning personnel should be notified of the stall number and patient ID.

4.5.2.7. 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 cleaning personnel 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 into the green dustbins.
- 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 interns and students if called for. In essence, dirty cages are cleaned, and animals are not switched to another cage, pending arrival of cleaning personnel.
- By doing so, all vacated cages are expected to be in mint condition at 08H00.

Weekly Routines

- Sinks and drains in the consultation rooms and hospitalisation 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, small animal isolation, or ICU depending on the circumstances. Transport should preferably be on a gurney or in a cage to decrease hospital contamination.

- The presenting complaint will be written on the schedule as “acute diarrhea” “acute vomiting”, “acute coughing” or “possible infectious disease”.
- The letters “PID” for “possible infectious disease” will be written next to the complaint.
- 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 “Do not use, disinfection required” sign.
 - Notify responsible cleaning personnel of the suspected agent (7-1223) 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 are admitted or develop these problems while hospitalized.
- Only Biosecurity working group or the Hospital Director can give permission to house patients with class 4 in locations other than Isolation Facility.
- Patients with class 3 may also be required to be housed in isolation, at the discretion of Biosecurity working group.
- When class 4 patients are housed in the intensive care unit, at least class 3 precautions should be taken. (Appropriate barrier nursing and biocontainment practices)
 - 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
 - **The suspected or confirmed disease status must be relayed to the biosecurity personnel ASAP so that they can assist in communication and evaluating if appropriate precautions are being taken to house the animal**
- Any animal with a history of acute vomiting and diarrhea, and/or any animal with a history of acute coughing or respiratory signs with a suspicion of an infectious cause should be handled as a suspected contagious disease case (class 3 and 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 dogs can still be visited by the owner if all barrier nursing rules are implemented and if possible in the hospitalisation cage or after correct transport in a consultation room, which will then be disinfected after the visit.
- Class 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 regulations can be authorised by the primary clinician.

4.7.1.2. SPECIAL PRECAUTIONS DURING HOSPITALISATION (CLASS 3)

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 (tide with bleach) 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.
- Biosecurity working group 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. This notification can be made in person, by phone, or by using the biosecurity-fmv@lists.ulg.ac.be
- Biosecurity working group 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 or 4 animals should be stored in a sealed plastic bag (Ziplock or Whirlpak), 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 4)

- The Small Animal Isolation facility and the Critical Care Unit 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 Parvovirus, 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

- Biosecurity Personnel must be notified ASAP whenever patients are placed in isolation and when they are discharged. This notification can be made in person, by phone, or by using the biosecurity-fmv@lists.ulg.ac.be, and should be performed by the veterinarian or student with primary responsibility for the patient.
- 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 or footmats encountered. Footbaths are changed and the plastic tub cleaned completely twice per 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 to prevent contamination of the isolation environment by dirty hands, gloves, or shoes.
- Environmental hygiene is the responsibility of all personnel and students working in the isolation unit. Do not wait for 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 5pm on weekdays) 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 5pm notify a medicine 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.
- Use sinks in the medicine pit to wash 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 or footmat as they enter the Isolation Area.
 - Wash hands for at least 30 seconds or use hand sanitizer before entering the transition room and before touching any other surfaces or objects.
 - Put on clean yellow 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.)
- Finalising 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% isopropyl 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 be 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 or intern 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 hospitalised 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 animal's 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.
 - An Email must also be sent to biosecurity-fmv@lists.ulg.ac.be notifying key FVM personnel that an animal has been admitted to the Small Animal Isolation facility including information about the suspected disease agent(s).
- With approval from Biosecurity Working Group, or the Hospital Director, or Prof. Cécile Clercx, Ward 1 can be used as an overflow isolation ward for patients that should not be housed together in the original isolation ward. Remove patients from Ward 1 prior to housing infectious patients.
 - Cleaning personnel **must** be notified of this special circumstance so that they can appropriately assist with environmental decontamination.
 - Post on the whiteboard, the name of the patient, the primary clinician's name and the infectious agent. In an emergency situation approval to use Ward 1 can be granted by the faculty clinician involved with this case. Notify Biosecurity Personnel as soon as possible.
- In order to minimize the number of personnel and students handling cases in isolation, the primary clinician, intern and student should be prepared to perform all physical examinations and

treatments themselves. If necessary, the primary clinician may assign additional students and staff to help.

- 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 faecal 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 “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 changed on Monday Wednesday, Friday and Sunday.
- 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 clearly marked on the whiteboard to alert responsible cleaning personnel to disinfect the room.
- Whenever possible try to discharge isolation patients prior to 4:30 pm Monday through Friday, so that medicine nurses can help with the breakdown of the room.
- From 8:30 am to 4:30 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, **IMMEDIATELY** 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 shelf in the transition room.
 - Fluid Pump: throw plastic away and spray and wipe down the fluid pump.
 - Vaporizer: Empty water out of the vaporizer holding reservoir, spray and wipe down the vaporizer, soak the plastic bottle and blue corrugated tubing in the sink with disinfectant. Rinse everything off, wipe dry, put the unit back together and hang tubing on the wall.
- 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.
- Biosecurity working group should be notified as soon as reasonably possible that there is a reasonable index of suspicion that a hospitalized patient may be infected with one of the agents listed below.

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 4 animals should be stored in a sealed plastic bag (Ziplock or Whirlpak), 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 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 (tide with bleach) 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 from ancillary services 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 ancillary services 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 depositing the material at the sterilization service.
- All surfaces should be cleaned and disinfected carefully and no other patient can enter the room until this has been completed.
- Surgeries on class 3 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 Biosecurity Personnel or the FVM Director 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/eng/maladies/en_tech_cards.htm
 - 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/eng/normes/en_mmanual.htm?e1d10
- 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 KNOWN/SUSPECTED CONTAGIOUS DISEASES/CONDITIONS

- **Gastrointestinal Infection:** Gastrointestinal agents of greatest concern to patients as contagious nosocomial hazards in the FVM include Parvovirus 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).

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 (green) 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.
- Green 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, 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 hospitalisation wing (at the cage for class 3 animals, in the transition room for class 4 animals) 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 hospitalisation 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 (class 3) or on the examination table in the isolation department (class 4). 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 (class 3) or in the Small Animal Isolation housing area (class 4).
- 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 department for class 4), class 1 and 2 class dogs can also recover in the anesthesia preparation and recovery area.
- Patient transport tables must be cleaned and disinfected (allowing 15 min contact time), then thoroughly rinsed with water between uses.
- Recovery cages must be swept and mopped by students, technicians or interns between cases.
- The oxygen insufflation hose used in recovery must be, and sprayed with 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 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 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.
 - ET tubes are stored in this cabinet until needed.
 - **Any ET tube laid on the ground will require disinfection before use.**
- All anesthetic machines and ventilators will be broken down and thoroughly cleaned/disinfected on a regular basis.

- Environmental samples will be obtained from the recovery rooms and surgical theatres regularly and cultured for the presence and of pathogenic bacteria and to quantify bacterial counts.

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 class 3 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 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 parvovirus, 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 Small Animal Isolation facility.
- Only the Biosecurity Working Group or the Hospital Director can give permission exceptionally to house an animal with class 4 suspected or confirmed infectious disease in the ICU under class 3 (exceptional load). In this case the same level of biosecurity will be applied.
- 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:
http://www.oie.int/eng/normes/en_mmanual.htm?e1d10
- **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. 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. 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 changed to “Parvo”.
 - 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)**
 - 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.
 - See section 4.7.5. for more information on managing patients infected or colonized with resistant bacteria.

4.10. BREAKING TRANSMISSION CYCLES

4.10.1. Visitors in the FVM

- Visiting hours for the Small Animal Hospital are 14H00 to 16H30 and 18H00 to 20H00 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.

4.10.2. 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.

4.10.3. 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.

4.10.4. PETS IN THE FVM

- Pets are under no circumstances allowed to visit other hospitalised 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: "to be disinfected". 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 cadaver should be taken to the Autopsy Department as soon as possible.
- During evenings or weekends: the following morning, including Saturday morning, or Monday morning. In the mean time, the cadaver will be stored in the refrigerator underneath the radiology department.
- The animal will be placed in the refrigerator if an autopsy needs to be performed. The request form for autopsy needs to be clearly present on and taped to the cadaver. On the outside of this request form it should be clearly mentioned to which class the animal belongs (class 1-2, 3 or 4).
- OR in the appropriate collector if the cadaver can be destroyed without autopsy. This occurs when no request form is present. However, it should be clearly mentioned when the case belongs to a class 3 or class 4.

4.11.3.2. CREMATION ☺

- If the owner desires a cremation service for his/her animal
- The client can chose between individual cremation or group cremation.
- The firm is authorized to transport cadavers. No other ways of transport are accepted.
- While waiting for the transport, the cadaver should be stored in the refrigerator underneath the radiology department.

Chapter 5.

**BIRD, RABBIT, RODENT, POULTRY,
ZOOLOGICAL AND EXOTIC SOP**

5. BIRD, RABBIT, RODENT, POULTRY, ZOOLOGICAL AND EXOTIC BIOSECURITY SOP (BRRPZE 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% isopropyl alcohol or 0.5% chlorhexidine available in various areas. Clean equipment is sterilized everyday 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.
- When fleas or ticks are found on an animal, clinicians must determine the best way to treat the animal.

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 BRRPZE 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 BRRPZE Hospital. This type of footwear is easier to clean and disinfect compared to footwear constructed of porous materials (e.g. running shoes).
- 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. All the attire necessary for the visit (disposable overalls, overshoes,...) are provided by the BRRPZE Hospital.

5.3. GENERAL CLEANLINESS AND HYGIENE

- Maintaining hospital cleanliness and appropriate personal hygiene are responsibilities of **ALL** personnel working in the BRRPZE Hospital.
- 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 (e.g. Virkon misting), 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. PROCEDURE

- The necropsy room and equipment present are cleaned and disinfected once daily with Dettol. Duration of 10 to 15 minutes of soaking in the solution must be respected. Once cleaned the instruments are sterilized daily in an autoclave. Furthermore a weekly disinfection with Virkon is also performed. The consultation tables are cleaned with water and alcohol between each patient. In case of suspicion of an infectious disease disinfection with Dettol is also applied.

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 Virkon 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 sterilised 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 BRRPZE 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 (see reportable list of reportable diseases at section 1.5.6.). 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.
- Reception of the client and patient
- 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 (in latin) 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.

Necropsy

- All animals received for postmortem examination must be considered as patients at high risk of infectious disease. Only students and teaching personnel are authorized in the necropsy room. Wearing a white overcoat is compulsory to enter the room. The white overcoats are forbidden in any other area of the clinic
- General instructions : Students must change in the corridor and wear their white overcoat before entering the necropsy room. Hair must be tied back and sleeves of civilian clothing pulled up to prevent any accidental contamination. A film explaining precisely the basic techniques for postmortem examination is projected at the beginning of the week. It is strictly forbidden to leave the room without a valid reason between the beginning and end of the clinic. Moreover it is forbidden to wear the necropsy overcoat in the consultation or hospitalization rooms. At the end of the week the used overcoats must be put into a plastic bag and be washed immediately in a machine at the highest temperature possible, ideally 95°. It is strictly forbidden to wear these overcoats outside of the clinic beforehand.
- In practice:
 - Depending on the number of cases the students are divided into several groups for postmortem examination (generally two students per necropsy). The cadavers and instruments necessary have previously been placed on necropsy plates by the staff.
 - Disposable gloves are freely available for the students. Only the student performing practically the necropsy must wear gloves, the other student's role is to takes notes and to prevent contaminations (see below).
 - The aim being to prevent contamination of environment or of other necropsies, cleanliness is a major priority. Feathers, hairs and useless waste must immediately be put into the bins intended for biological contaminated waste (yellow bins).
 - Furthermore it is strictly forbidden to:
 - Exchange or mix instruments between different necropsies

- Contaminate surfaces, for example by manipulating microscopes, taps, sides of necropsy tables, etc., with gloves on.
- In other words, all students wearing gloves are forbidden to touch anything else than the cadaver and the necropsy instruments.
- The aim of binary group work is to allow complementary examinations to be carried out directly and notes to be taken on specific sheets during necropsy.
- After correction of the necropsies by staff the students performing the necropsy are responsible for correct sampling for the complementary examinations.
- The students present in the necropsy room are also responsible for coprology examinations of clinical cases.

Exploitation/holding visits

- 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.
- All the attire necessary for the visit (disposable overalls, overshoes...) is provided by the BRRPZE hospital.

5.4.2. INPATIENTS

5.4.2.1. STALL ASSIGNMENTS

- Cages for housing BRRPZE 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 hospitalisation 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 BRRPZE Hospital in order to decrease the likelihood of contamination.

5.4.2.4. BEDDING

- The students 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 with Dettol and if necessary with Virkon S. 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 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 BRRPZE 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 Liège University (ULg): all contaminated waste must be put into the special yellow bins as recommended by SPMT.
- It is strictly forbidden to take feathers, beaks, skulls,...or any other element of the animals presented at consultations or necropsy away.
- For certain diseases specific precautions must be taken (Terrestrial Animal Health Code: http://www.oie.int/eng/normes/mcode/en_sommaire.htm)
 - 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. DISEASE DIFFERENTIALS FOR WHICH TESTING IS MANDATORY IN BRRPZE PATIENTS

- In cases of suspicion of NCD or HPAI the compulsory samples will be performed and transported, under the responsibility of the BRRPZE hospital, to the laboratory of reference following the legal recommendations in application.

5.5.7. MANAGEMENT OF PATIENTS WITH KNOWN OR SUSPECTED CONTAGIOUS DISEASES OR CONDITIONS

5.5.8. 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 BRRPZE 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 hospitalisation/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 hospitalisation/isolation areas.
- At the end of a period of hospitalisation/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 IN BRRPZE PATIENTS

- 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 BRRPZE ISOLATION PATIENTS

- Specimens obtained from high risk patients should be correctly labeled with appropriate identification, then placed in a Ziplock or Whirlpak 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. BRRPZE SURGERY AND ANAESTHESIA

5.7.1. ATTIRE FOR THE "CLEAN" AREAS OF THE BRRPZE SURGICAL FACILITY

- Disposable blouses found at the entrance of this area must be worn by personnel and students.

5.7.2. HYGIENE FOR PERIOPERATIVE MANAGEMENT OF BRRPZE PATIENTS

- High standards of cleanliness and hygiene must be maintained throughout the BRRPZE 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 and less than 3 students can be present during surgery at the same time. Personnel must wear clean examination gloves before placing IV catheters or examining mucous membranes.

5.7.3. GUIDELINES FOR PERIOPERATIVE MANAGEMENT OF BRRPZE PATIENTS

- 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 anesthesia prep area or other areas of the surgical facility. If needed the tables, floor, cages... should be hosed between patients and disinfected.
- 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.

5.7.4. ANAESTHESIA INDUCTION AREA

- Anaesthesia request forms should be completed the day prior to procedures whenever possible. All known or suspected contagious diseases should be clearly noted on the request form.
- No anaesthesia will be made on parrots suffering from dyspnoea or diarrhoea without specific chlamydia testing.
- Feathers will never be plucked off or animals will never be shaved without the express authorization from a staff member. Plucked feathers and hairs will be put directly into the appropriate garbage

5.7.5. POSTOPERATIVE ACTIVITIES

- BRRPZE patients must be put back in their cages as soon as they have recovered from the anaesthesia. All equipments and anaesthesia machines must be cleaned and disinfected as soon as surgical procedures are finished.

5.7.6. MANAGEMENT OF SURGICAL PATIENTS WITH CONTAGIOUS DISEASES

- At the exception of emergency surgical procedures aimed to save patient's life, no surgical procedure will be made on patient known to suffer from contagious diseases before a final diagnosis is done.
- According to this diagnosis, surgical decision will be made at the discretion of the BRRPZE team who will take appropriated and strictly decontamination measures at the end of the procedure.

5.8. EXOTIC/ZOOLOGICAL AMBULATORY

- Students going on visits to aviculture holdings, rabbit holdings or rehabilitation centres 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. All the attire necessary for the visit (disposable overalls, overshoes...) are provided by the BRRPZE HOSPITAL Sector.
- The same standard of hygiene and work quality (hand washing...) as in the clinic (see specific chapters) must be applied.

5.8.1. VISITORS IN THE BRRPZE

- Visitors are only allowed under direct control of the BRRPZE team.

5.8.2.CHILDREN IN THE FVM

- At the exception of children's pet owners who may stay close to their animals under supervision of an adult, children in the BRRPZE facilities are forbidden.

5.8.3.PETS IN THE FVM

- Pets in the BRRPZE are forbidden, without exception.

Chapter 6.

FOOD SCIENCE BIOSECURITY SOP: EXTRAMUROS PRACTICAL WORK

6. Food Science Biosecurity SOP: Extramuros practical work

6.1. GENERAL INTRODUCTION

6.1.1. FOR WHOM AND FOR WHAT

- This document aims at providing routine procedures in order to minimize:
 - the risk for students and faculty staff to transmit human or animal diseases from various facilities to livestock, poultry or foodstuffs;
 - and the risk for them to be infected by diseases transmitted by animal and food products.
- The facilities include farms, dairies, swine premises, slaughterhouses, food processing units and other facilities where there are animals or unprocessed animal tissues, secretions or excretions, e.g. saliva, manure, urine, soiled feed, bedding, water, dirt and milk.

6.1.2. APPLIES TO

6.1.2.1. 1ST AND 2ND GRADE OF THE MASTER IN VETERINARY MEDICINE (GVM):

- Visits are organized each week for the 1st and 2nd GVM students at the following facilities: Liege-Waremme slaughterhouse, Herelixka poultry slaughterhouse, Derwa S.A. (meat cutting plant) and Vieille Abbaye S.A. (meat processing plant).
- During their visit to the Liege-Waremme slaughterhouse, students of 2nd GVM carry out inspection tasks on the swine and bovine slaughtering chains, while students of 1st GVM only make a visit of the facilities and do not touch the food products.

6.1.2.2. ADVANCED MASTER IN SPECIALIZED VETERINARY MEDICINE, MAJOR IN VETERINARY PUBLIC HEALTH/ FOOD SCIENCE:

- Students are taken to several food industries in the context of practical training with regard to food quality and safety management.
- The programme is different each year.
- The students and the staff receive specific instruction before each visit.

6.2. GENERAL PRINCIPLES OF HYGIENE

6.2.1. MEDICAL CERTIFICATE

- A medical examination performed by the Service of Prevention and Occupational Medicine (SPMT) is required for all students that are likely to come into contact with food products.
- A copy of the SPMT medical certificate, which is valid for one year, is provided to the visited facilities (i.e. slaughterhouse and meat plants).
- If a student is suffering from a contagious disease known to be potentially harmful for food products, he must inform the faculty assistant of his condition. The student will not be allowed to enter into the production area.
- The persons in charge of the slaughterhouse should know about all potential zoonotic infections that could be present at the slaughterhouse.
- If applicable, they will inform the faculty assistant about these diseases, so that students will not be in contact with infected materials, e.g. animals, carcasses, tissues, secretions, excretions, etc.

6.2.2. GENERAL HYGIENE PRINCIPLES

- Students are given clear instructions on food hygiene matters in order to minimize the risk of hazards causing food contamination. Besides, since most visited slaughterhouses / food industries are BRC, IFS or ISO certified or follow HACCP plans, students are requested to strictly follow their internal Good Hygiene Practices.

- They are also asked to have a high degree of personal cleanliness.
- The general hygienic rules (see appendix 1) are read by the faculty assistant; students are asked to sign in a visitor's registry book, stating that they have understood the instructions. The book is filed by the slaughterhouse / food industry staff.
- During the whole visit of the facilities, the faculty assistants make sure that students follow the hygienic rules. In particular, students are asked not to touch the food products, except if they need to perform inspection tasks (i.e. students of 2nd GMV). Also, clothing and shoes worn on foreign farm visits should be cleaned and disinfected before use on Belgian facilities.
- On entering a facility, students need to inform the assistant about any livestock facilities visited within the previous 48 hours, including any animal confinement or waste storage areas. It is strictly forbidden to bring and eat or drink any food or beverages into the slaughterhouse / food industry premises.
- Also, smoking and the possession and use of alcohol or drugs are strictly prohibited in the production sites. Wearing of jewellery is prohibited (except wedding rings), including watches, earrings, piercings and false nails.

6.2.3. HAND WASHING

- On entering and leaving an animal or food facility, after a visit to the toilet and when hands are visibly soiled, hands should be thoroughly washed with antibacterial soap and water, antibacterial wipes or alcohol-based gels.
- Disposable paper towel is used for hand drying, and thrown away in a bin. Disposable latex gloves may also be used but not as a substitute for proper hand washing. In the event the student shows a hand adhesive dressing or a wound, disposable latex gloves must be used.
- Hands washing protocol: ☞ refer to general protocol in the Chapter 1.

6.2.4. STUDENT CLOTHING

- Students are requested to wear clean clothes. When entering the facilities, they put on a single-use lab coat, a disposable hat or hairnet, a plastic safety helmet as well as clean white boots or disposable overshoes.
- Hands are washed in a knee-operated washbasin.

6.3. PARTICULAR ASPECTS REGARDING THE VISITED FACILITIES

- The visit of the facilities is made starting in the clean and ending in the dirty sectors, i.e. from the cutting plant to the slaughterhouse, through the meat processing plant, in order to minimize the risk of cross contamination.

6.3.1. LIEGE-WAREMME BOVINE AND PORCINE SLAUGHTERHOUSE

- On arrival, the students go to the student meeting room located opposite to the slaughterhouse. They put on a clean coverall (blue or green) and clean white boots.
- At the entry of the slaughterhouse, they put on the protective equipment, as described in the Chapter 1.
- Both slaughtering chains (bovine and porcine) are parts of the visit.
- The clean and dirty sectors for both chains are identified, either by a metal rope for the porcine chain, or by a ground line for the bovine chain.
- Students will start the visit by both clean sectors, and continues by both dirty sectors.
- The visit ends in the cattle sheds and the site of ante mortem inspection.
- Students of 2nd GVM perform veterinary inspection on the porcine slaughtering chain in Liege-Waremme slaughterhouse. In this perspective, they wear a plasticized leather apron and chain mail gloves.

- In the event the student shows a wound or a cut, he / she immediately stops the inspection task, washes his / her hands in a knee-operated wash sink. The cut is disinfected with alcohol or another disinfectant (chlorhexidine, isobetadine) in the student meeting room.
- During the whole time inspection tasks are performed by the students, a faculty assistant is present and, in particular, makes sure organs do not present a sanitary risk which would need it to be discarded.

6.3.2. VISIT OF THE MEAT CUTTING PLANT

- In order to get to the meat cutting plant, the students must walk through the clean sector of the slaughterhouse.

6.3.3. VISIT OF THE MEAT PROCESSING PLANT

- In the entry room of the meat processing plant, the students put on a new disposable lab coat, wash their boots and hands, and put on some overshoes.
- At the exit, overshoes are removed and thrown away.

6.3.4. POULTRY SLAUGHTERHOUSE

- General hygiene rules (see Chapter 1) are applied in this slaughterhouse.

6.4. WASHING AND DISINFECTION OF EQUIPMENT

- The use of not disposable equipment (boots, helmets, knives, chain mail gloves, plasticized leather apron) is strictly limited to the Liege-Waremme slaughterhouse (and satellite facilities).
- This equipment can not be use in other facilities.

6.4.1. Boots

- At each entry and exit of the slaughterhouse, boots are washed with the shoe brush cleaner.
- Once a week, or more often if necessary, the boots are disinfected by immersion in warm water additioned with RBS x20. They are then rinsed with clean water and air-dried.

6.4.2. Safety helmets

- They are disinfected with water and antibacterial soap at each exit of the facilities.

6.4.3 Knives and chain mail gloves

- They are rinsed in a knee-operated washbasin, and sterilized after use in a 82°C water sterilizer on the slaughtering chain.

6.4.4. Plasticized leather apron

- Protective aprons are rinsed with warm water, and washed with antibacterial gel at the end of the slaughtering chain.
- Once a week, or more often if necessary, they are disinfected by immersion in warm water additioned with RBS x20, and then thoroughly rinsed with water.

Chapter 7.

EXPERIMENTAL FARM SOP

7. **EXPERIMENTAL FARM SOP**

7.1. INTRODUCTION

- The Experimental Station is located near the FVM at a distance of 300 meters. It includes cattle and pig herds used for both teaching and research. The number of animal herds is stable except variations related to the season or to the protocols.
- At the Experimental Station are located:
 - Cattle: 170 animals
 - o Dairy cows: 45
 - o Lactating cows: 26
 - o Bulls over 2 years: 3
 - o Cattle under 2 years: 106
 - Pigs: 287 animals
 - o Fattening pigs: 150
 - o Weaned pigs: 72
 - o Breeding sows: 56
 - o Boars: 9
- The cattle and pigs are kept under the regulations of AFSCA as in a **commercial farm** where born animals are destined to stay until they are sold, slaughtered or reformed. They are therefore healthy animals.
- Other animals are also housed at the Experimental Station in separated **buildings for experimental purpose** for which additional specific biosecurity procedures are applied (under the responsibility of the research promoters).

7.2. IDENTIFICATION, REGISTRATION AND ANIMALS MOVEMENT

- These points are relevant to the regulations set up in commercial farms.
- The **cattle herd** has a registration number (Herd number: 60015943):
 - Each new-born calf is identified with 2 ear tags, no later than 7 days after birth, and always before leaving the herd. All the animals have two ear tags. In case of loss of an ear tag, another ear tag with the same number is ordered by ARSIA, so each animal keeps the same ear tag number throughout his life.
 - Each animal is recorded. An identification document, as a passport, is established for each animal and an inventory is kept. This inventory is managed by the Sanitel system (ARSIA).
 - Any movement of the cattle is reported to ARSIA by means of special document where the introduction, the departure, the transport to the slaughter house or the death of an animal in the herd is indicated.
 - The herd is tested annually for paratuberculosis. In case of positive test, the animals are sold within 6 months. With regard to the IBR, the herd is in the process of certification status I3.
 - Animal purchases are limited. Only breeding bulls (one per year) or animals needed for experiments according to protocols are purchased.
 - When a new animal is introduced in the herd, it is kept in a quarantine box. Its identity is checked and examinations (clinical examination, tuberculation) are carried out and blood samples are taken and sent to ARSIA to check for enzootic bovine leukosis and brucellosis.
 - The herd is officially free of brucellosis, tuberculosis and enzootic bovine leukosis. Furthermore, animals to be introduced into breeding are tested for IBR, BVD and paratuberculosis. The animal is only introduced into the herd if all the results have been proved to be negative.
- The **pig herd** is registered with its herd number (Herd number: 600-64286; tattoo identification: P96C):
 - The conditions to cleaning and disinfection equipment are met.

- The pigs are identified by a Sanitel ear tag at the latest at the weaning, and always before leaving the herd. There is no introduction of new pigs in the herd.
- Only semen from boars is purchased from a certified centre (CIAP, Argenteau).
- If a pig coming from outside of Belgium had to be introduced into the herd, it should be identified with an ear tag within 48 hours after its arrival. If a pig from Belgium had to be introduced into the herd and had not to be fattened, it should be identified within 48 hours.
- Slaughter pigs are identified on both sides with a tattoo machine within 5 days before the departure of the animal herd. The inputs and outputs of pigs are included in an inventory by the responsible of the herd.
- During movement, a movement document is completed and returned to ARSIA.
- When an animal dies, its corpse is taken to the autopsy room in watertight bins.

7.3. EPIDEMIOLOGICAL SURVEILLANCE

- The responsible of the **cattle herd** is Prof. Louis Istasse, member of the Department of Animal Production.
- The responsible veterinarian designated operating is Dr. Isabelle Dufrasne, who also is a member of the Department of Animal Production. She is responsible for enforcing the laws on epidemiological surveillance, including the purchase (see above) or the suspicion of contagious diseases.
- When an animal is purchased, she is called within 48 hours after the acquisition. She examines the animal and a blood sample is taken when the animal is older than one year and it is not intended for fattening. Other samples will be taken depending on the destination of the cattle or the status of the operation (see above).
- If the responsible person or the cattle men notice one or more animals showing abnormal salivation, they will immediately notify the responsible veterinarian who examines the animals.
- If the clinical examination does not invalidate the suspicion of a reportable disease, the veterinarian inspector will be warned and his instructions followed (☞ for reportable diseases, see section 1.5.6). In cases of suspected infectious disease, sanitation and disinfection would be taken as well as restrictions on movement of animals and people attending the farm.
- Medicines are stored in a specific room at the experimental station under the responsibility of Dr. Isabelle Dufrasne (identification number of the medicine depot: 6/4000/1218).
- The responsible of the **pig herd** is Marcel Bustin, who works for the private company Animal Breeding Partners (ABP).
- The designated responsible veterinarian for the clinical swine, Dr. Martine Laitat has a convention for the epidemiological surveillance and prevention of reportable diseases. Another veterinarian is appointed in case of non attendance of the designated veterinarian.
- Three times a year with an interval of three months minimum, the responsible veterinarian realizes an epidemiological surveillance visit and prepares a report that is sent to ARSIA. These 3 annual visits are in charge of the Health Fund.
- As part of the swine fever control, a sanitary register, which is set by law, is kept. All entries and outputs are recorded. For each movement, the date, the number and type of pigs and the origin or the seller (for admissions) or the destination or the buyer (for output) are indicated. This register must be approved by the veterinarian at each of the 3 annual visits for epidemiological surveillance.
- The pig herd has an A4 statute prohibiting any vaccination against Aujeszky disease.
- Maintaining this status is provided through serological tests on 22 blood samples (12 fattening pigs and 10 breeding pigs) every 4 months.
- If the clinical examination does not invalidate the suspicion of a reportable disease, the veterinarian inspector will be warned and his instructions followed (☞ for reportable diseases, see section 1.5.6).

- In cases of suspected infectious disease, sanitation and disinfection would be taken as well as restrictions on movement of animals and people attending the farm.

7.4. STAFF

- Station workers wear coveralls, jackets, boots that are specific and adapted to their work. These clothes are worn only in the station and are washed regularly.
- Staff members regularly wash their hands according to the procedures described.
- If station workers are required to visit other farms, they use a different set of clothes (coveralls, jackets, and boots).
- Pig men wear coveralls belonging to ABP (identified by the mark "Detry").
- Showers, a cloakroom and a refectory are located in the administrative building of the Station.
- Not allowed to eat and drink at the farm.

7.5. STUDENT ACTIVITIES AT THE EXPERIMENTAL STATION

- There are different types of activities for students. Students come to the station mainly for practical work, monitoring calvings duties.
- The content of these activities is well planned and determined in advance. Other activities may be planned in advance: they concern prophylaxis (vaccination, blood sampling), foot care, horns removal, diagnostic tests by hand, bolus application, castration, first cares on piglets.
- A third type of activities is to take care of any sick animals.

7.6. PROCEDURE FOR STUDENTS

- Students wear clothes (coveralls) different than those used for their clinical activities at the Faculty. These clothes are provided by the Station and placed in a locker at the Station. Students must wear them before going to the stables.
- Students use their thermometer and stethoscope for clinical activities. These materials must be regularly cleaned with soap and water, and disinfected with hand sanitizer.
- During the **Swine Clinic activities**, students wear coveralls belonging to ABP (identified by the mark "Detry"). One overall can be used several times. From September to May, the coveralls are dropped in a secure container, 1 time per week, to the hallway of the centre-Ruminants-Swine to be removed by the laundry service. Students wear overshoes on their personal shoes. Overshoes are put after each visit in the grey metallic container in the farmyard. If available, staff members use a pair of boots used only in the station, otherwise the staff also uses overshoes over his personal shoes.
- Given the ABP project to achieve a SPF status in a near future, new measures have been planned, such as buying a large number of pairs of boots. Students are expected to put on a pair of overshoes on their socks inside the boots.
- People using boots can wash them with the washing boots located at the entrance of "Gestation" buildings.
- In the **cattle area**, students must be equipped with their own boots and:
 - wash them if necessary with the washing boots machine located at the entrance of the station and disinfect them in the footbath filled with an approved disinfectant (see the Chapter, point 1.3.5.). This procedure is mandatory before entering and when activities come to an end.
 - wash their hands especially when activities come to an end.
- The footbath should be changed whenever they are judged to contain excessive amounts of bedding or dirt. Footbaths should be refilled by anyone noticing that they are (nearly) empty; this is the responsibility of the staff members working in this area. Footbaths require full immersion of feet, and therefore water impervious footwear must be worn wherever footbaths are employed. The students wash their hands with soap ("savon-sept") after their visit at the Farm in accordance with the procedures previously described in the Chapter 1.

7.7. MANAGEMENT OF ANIMAL MANURE

- Litter consisting of animal manure of the Station and straw are stored in a specific area. This area is covered and equipped with a tank for the juice of manure. Manure of pigs and cattle are recovered in the slurry tank.
- Animal manure from the clinics (except the isolation unit) and animals used for teaching housed in the Faculty are brought to the Station manure area in sealed trays. Animal litter and excretions from the breeding units of the small healthy animal colonies (certified free of diseases) of the human hospital (CHU) are brought in the manure area of the station. The faeces of animals linked to animal experimentation are considered as B2 waste and are not brought to the Station.
- The manure remains on average 3 months in the area before being evacuated by neighbour farmers or being spread on the pasture of the Station. During this storage, the rise in temperature helps in the killing of most pathogens. The applications on the pasture of the Station are in conformity with the regulations of the Nitrate Directive for amount spread and periods of application.

7.8. MANAGEMENT OF CALVES

- After housing, boxes for newborn and until 10 days old calves are completely cleaned and disinfected with an approved disinfectant (☞ see the Chapter, point 1.3.5.).

7.9. SPECIFIC MEASURES

- The Experimental Station has developed activities such as a "pedagogic farm" for the general public and especially for children. The general procedures restricting public access do not apply to the station for this purpose. These activities are only for small groups under the supervision of a competent person working in the Station.
- Visitors can only have contacts with healthy animals and can not eat nor drink in the stables.
- Visitors must applied an appropriated level of biosecurity:
 - use clean boots
 - wash them if applicable with the washing boots machine located at the entrance of the station and disinfect them in the footbath filled with an approved disinfectant (☞ see the Chapter, point 1.3.5.). This procedure is mandatory before entering and when activities come to an end.
 - wash their hands especially when activities come to an end.

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 veterinary assistant in charge of the euthanasia.
 - **Animal husbandry:** sound rabbits and poultry. A clinical examination is carried out by the veterinary assistant in charge of the euthanasia.
 - **Cointe SPA:** sound dogs and cats. The veterinary in charge of the euthanasia keeps only sound animals for the anatomy department.
 - **Autopsy 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 by Dr Cassart, responsible of the autopsy room.
- The animals coming from animal dealers or animal husbandry are euthanized as soon as they arrive at the anatomy department. The animals coming from the SPA or the autopsy 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): it includes 2 dissection rooms, the euthanasia room, the refrigerator, the deep freeze, the maceration room. The other part is not at risk (clean zone) and comprises the osteology room, the workroom, the reserve room, the offices, the laboratory, the museum and the secretariat. The passages to the refrigerator and the deep freeze, as well as the entrance hall are considered as transit zones.
- The entrance hall is also used by the staff of the B43 and by students going the histology laboratory. 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.
- The backdoor entrance gives access to the changing room with lockers for students.
- Dissections are organised by weeks. Students come with their own rubber boots, latex gloves and dissection case. They will receive an apron at the beginning of the week.
- 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 racks after each dissection. Rubber boots and dissection instruments have to be washed thoroughly and disinfected at the end of each dissection week before the students take them back home. Used scalpel blades and dirty latex gloves must be placed in yellow boxes (materials at risk).
- 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 (or special shoes) as soon as they enter the risk zone. The rubber boots are stored in a cupboard placed in the entrance hall.

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 the dissection room and these must be taken off as soon as they leave the risk zone and place them into racks after each dissection.
- Rubber boots have to be scrubbed and disinfected at the end of each dissection week 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 week before they take them back home.
- 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 week.
- Dissection rooms will be washed with a rotary machine and industrial detergents 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.

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:**
 - Force 1 Savonet: scouring, skimming, and cleaning.
 - Vet-Clean: cleaning and disinfection.
- **Hand soaps and disinfectants:**
 - Tendresse Savonet: pink handi soap
 - Purell hygienic Hand Rub: disinfection
- 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.
- **For the instruments:**
 - **ECUTAN 5%** : disinfection for instruments and tubes, chlorhexidine 50g/l diluted at 10% (Ecuphar)

8.2.5. FOOD AND BEVERAGES

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

8.3. 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 Dr Dominique Cassart, responsible of the autopsy room (☞ see also point 8.1.).

8.4. DECEASED PATIENTS

8.4.1. 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.

8.5. BREAKING TRANSMISSION CYCLES

8.5.1. VISITORS IN THE FVM

- Visitors are only allowed to walk along the corridors and the clean zone.
- To make access more visible to visitors, floor lines have been applied to specific parts of the anatomy department (☞ see the chapter 1, point 1.4.2.).

8.5.2. CHILDREN IN THE FVM

- Children visiting the anatomy department are only allowed to walk along the corridors and the clean zone under supervision of an adult.

8.5.3. 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.

DIAGNOSTIC LABORATORY BIOSECURITY SOP

9. DIAGNOSTIC LABORATORY BIOSECURITY SOP

9.1. NECROPSY AREA BIOSECURITY SOP

9.1.1. INTRODUCTION

- Infection risks are common in the autopsy suite. Students and Faculty personnel expect protection from hazardous infections in their working practice.
- The aim is to reduce the risk as far as feasible within the resources available whilst teaching the students and maintaining a service to clinicians, practitioners and owners.
- If a significant human infection risk is encountered, there are protocols for prophylaxis, treatment and counselling available in the nearby University Hospital.
- If a significant animal disease transmission risk is encountered, there are protocols for minimizing the probability of microbe dissemination.
- 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
 - The development of protocols to deal with the more commonly encountered hazardous infections, and with rare but dangerous infections
- There are other, non-infectious, risks to students and Faculty personnel in the autopsy suite. These include electrical safety, manual handling of knives, 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 autopsy room can be acquired by these five routes:
 - Percutaneous inoculation
 - Inhalation
 - Ingestion
 - Skin contamination without inoculation
 - Contamination of mucosal surfaces (eye, mouth, nose)
- The main practical concerns during food or companion animal autopsies are rabies virus, *Mycobacterium* spp, and prions, *Salmonella*, *Clostridium*. For autopsies of monkeys, the main practical concerns are blood-borne viruses and inhaled pathogens such as *Mycobacterium tuberculosis*.

9.1.4. CLASSIFICATION OF PATHOGENS

- The advisory Committee on dangerous pathogens of the Belgian Scientific Institute of Public Health (www.biosafety.be) categorised human and animal infectious agents into four hazard group (HG) categories.
- For students and Faculty personnel, the significant groups are HG#3 and 4 for human pathogens and HG#4 for animal pathogens.

9.1.5. HAZARD GROUP 2 PATHOGENS

- 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 autopsies on animals with granulomatous lesions, with the low risk of inhaled infection during the procedure, wearing a mask appropriate for a tuberculosis/tularaemia autopsy provides sufficient protection and additional antibiotic prophylaxis can be considered on a case-by-case basis.

9.1.6. HAZARD GROUP 3 HUMAN PATHOGENS

- These are biological agents that can cause severe human disease and presents a serious hazard to autopsy attendees; it may present a risk of spreading to the community.
- In practice, the only situations generating concerns of this type are autopsies of primates. In these cases, students do not have access to the autopsy suite.
- The autopsies and sampling procedures are exclusively made by skilled staff personnel wearing masks and eye protection.

9.1.7. HAZARD GROUP 4 ANIMAL PATHOGENS

- These are biological agents that can cause economically devastating epidemics due to restriction of trade from affected countries and stamping out procedures in affected areas.
- Whenever a suspect case is identified, students and faculty personnel attending the autopsy are required to avoid any contact with food animals, farms/farmers for a week.

9.1.8. HAZARD GROUP 4 HUMAN PATHOGENS

- This group includes the viral haemorrhagic fevers (VHF), for which there are no current vaccines: Marburg, Ebola, Lassa fever, Congo-Crimean haemorrhagic fever, and Nipah virus.
- These pathogens are not present in the country at the time of writing.

9.1.9. STANDARD PROCEDURES FOR ALL AUTOPSIES

- The last 25 years have seen an upward trend in the application of safety and hygiene precautions during all autopsy procedures. Students and Faculty personnel are required to wear the following:
 - Water-resistant disposable gown that completely covers the arms, chest and legs (e.g. Tyvek) ;
 - Latex gloves ;
 - Rubber boots with reinforced toe-caps ;
 - 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 HG#2 and 3 infections to an acceptable level, even when they are not known prior to the autopsy.
- Last but not least, 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 were clearly demarcated in the necropsy suite thanks to the generation of a new door, the installation of new railings and chains, the painting of red lines on the floor, the installation of a grid and the installation of a new shelter serving as a changing room. These six distinct areas are the following a:
 - Changing room
 - Sieve with separated entry and exit paths
 - Hall
 - Working area
 - Disinfection area
 - Dipping area
- The only authorized circuit is painted on the floor, with successively:
 - Entry in the changing room where students put their personal affairs in cases, put a disposable overall and yellow boots on:
 - Entry in the main building via the entry path of the sieve ;

- Entry in the working area where disposable gloves and disinfected dissection equipments are available ;
- Exit first via the disinfection area, where students are requested to leave the dissection equipments, to wash their boots, to trash their gloves and to wash and disinfect their hands ;
- Passage in the dipping area (disinfectant) ;
- Return in the changing room where students put their overall and boots off, wash and disinfect their hands and bring their personal affairs back.
- The Faculty staff and students were informed that red lines, railings and chains cannot be crossed in any case, except in case of emergency (fire). The staff of the pathology service is not directly implicated in the autopsy room, their access to this room is totally forbidden.

9.1.10. WATERPROOF TRANSPORTATION CONTAINER

- The transportation of cadavers in the FVM is achieved via a waterproof transportation container adapted to the Forklift (Manitou).
- The cadavers must be put down at the entrance of the autopsy room.
- The cadaver is further stored in the refrigerator by the technician responsible of the autopsy room.
- The container, as well as the tires of the Forklift (Manitou), are then washed with hot water and disinfected with the Cleaner with high pressure (Karcher).
- 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 (surgical option...), 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 (yellow sticker if necessary).
- It is the responsibility of the primary clinician to coordinate transport of the animal to the Imaging Section or to organize the visit of a radiologist in the infectious unit for an ultrasound examination in case that the patient cannot or should not be moved; at least one student responsible of the patient has to follow the case in Imaging Section.
- 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 exam (with Tristel). The ultrasound pillow used for small animal patients should be placed in plastic bag and covered by an undersheet 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.
- See section 2.4.11.1 for information on examination of horses housed in equine isolation.

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.

Chapter 10.

FUTURE TASKS OF THE BIOSECURITY WORKING GROUP REGARDING TO THE SURVEILLANCE OF THE PROGRAMME

10. FUTURE TASKS OF THE BIOSECURITY WORKING GROUP REGARDING THE SURVEILLANCE OF THE PROGRAMME

A permanent working group has been established in the FVM. The first task of the biosecurity working group was the redaction of this biosecurity SOP applied to the FVM.

The future tasks of the biosecurity working group will be the following:

- The organization of a six-monthly meeting
- The implementation of a teaching programme on biosecurity at the FVM
- The implementation of the biosecurity SOP applied to the FVM
- The updating of the biosecurity SOP applied to the FVM
- The organization of scheduled controls of hygiene in the clinics and isolation units
- The evaluation of antibiotic use in the different clinics and bacterial resistance patterns over the years
- The consideration of new governmental laws
- The consideration of new emerging infectious diseases in Europe related to the biosecurity SOP applied to the FVM