

Equine **Biosecurity** Principles and Best Practices



Keeping your horse healthy

Biosecurity is the outcome of all actions taken to manage the risk disease represents to the health of animals and humans.

Risk factors include exposure, introduction and transmission:

- Precautions taken to reduce the risk of **exposure** to disease
- Preventing **introduction** of infectious disease
- Minimizing the risk of disease **transmission** between:
 - animals
 - premises
 - contiguous regions
 - species of animals, including humans

Biosecurity impacts:

- Animal health and welfare
- Human health
- Food safety
- International trade
- Good business practices
- Legal accountability
- Economic sustainability

Excerpts from AB.VMA manuals

AEF Educational Outreach

Equine Biosecurity Principles and Best Practices

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Introduction

Program Objectives

- Educate the equine community at large about biosecurity risks and principles.
- Encourage horse owners to engage in educated discussions with their veterinarian about disease control and prevention.
- Provide informational tools to guide horse owners in developing a biosecurity program to address their risks.
- Offer resources to AEF members, stable owners and users, show administrators and officials, facility operators to affect change in the equine industry, one horse owner at a time.
- Establish AEF as a leader in providing biosecurity best practices to the Alberta equine community.

What is Biosecurity?

Biosecurity is keeping your horse healthy.

It is the principles, actions, precautions and protocols that protect the health of animals by preventing the transmission of disease through physical barriers and hygiene practices.

Biosecurity is protecting an animal, farm, the equine community and the industry as a whole against biological agents. Biological agents include bacteria, viruses, fungi or other microbes that have the potential to adversely affect the health of an animal. It is a strategy of disease prevention; preventing introduction of disease and controlling further transmission within a herd, facility or community.

Prevention
can minimize
the impact on horse
welfare and reduce
the financial cost of
disease control

Why is Disease Prevention Important?

- Minimize impacts from infectious disease on horse welfare and suffering.
- Prevent financial losses from animal illness.
- Promote an economically strong equine industry.
- Reduce/eliminate the potential of an equine disease outbreak.
- Minimize the risk of introduction of a foreign equine disease such as contagious equine metritis or equine piroplasmiasis which could have major impacts to the horse industry and economy both in Alberta and across Canada. Ask your veterinarian about these and other diseases.

Zoonotic Disease: disease caused by viruses, bacteria, parasites and fungi that are transmitted from animals and insects to humans and can cause human disease. E.g. Salmonella, anthrax, rabies.

Have you experienced an equine disease outbreak? What were the immediate consequences for the horse? Is the impact of the disease still affecting you, your business, your horse or your herd?

Make a list of people you know who have been affected by a contagious disease in their horses. Consider how they were affected by the disease outbreak.



An Industry Reality

On December 18, 2013, Peace Country Sun published the following:

Evergreen Park confirms case of strangles in barn

After a case of strangles at the Lewis Hawkes Pavilion was confirmed last week, Evergreen Park staff have taken some preventative measures to ensure no other horses being boarded at the barn become infected.

Evergreen Park General Manager Dan Gorman said they have met with those involved with the horse boarding program to update them.

"We kind of created a mini-hospital area, if you will, off to the side to help isolate those horses and allow them an area where they can exercise," he explained. "(We're doing) everything from hand sanitizers at all the doors to foot baths at all the doors, disinfecting the entire arena, which is a process that is going to take a number of days... Strangles is just contagious and disinfecting and the cleanliness part of it is just an important part of containment."

So far, three horses have been tested with only one coming back positive. The barn, where the case was confirmed, currently houses 65 horses, said the general manager. To ensure that no other horses become infected, the park is no longer allowing any other animals to enter the barn as well as limiting the number of people going into the building.

"It (strangles) does happen and having said that, now that we know that it's very contagious and there's a horse in there that's got it, we're taking all these measures," he said. "And that's why we're not allowing any new horses in there now because we just want to be cautious and we don't want anyone else to get it if we can help it."

The quarantine on the facility could last several weeks. Gorman said right now it's too soon to tell when they will get the 'OK' from the veterinarian, but he said the cold weather is actually helping keep the spread of infection down.

"I think the cold weather actually helps us because the contagion [contagious] aspect of it is more prevalent in the warmer weather," he said.

The arena manager and assistant manager are monitoring the horses on a regular basis. Testing will be done on any other animals showing signs of the infection as well as on the one horse who has already tested positive.

"We will be following the recommendations of our veterinarian as far as testing goes," said Gorman. "I think it's tests three weeks in a row that test negative (for strangles) from any of the animals that they suspect are infected or (have) ended up testing positive, then we just have to wait... but I am (hoping) that it's going to be somewhere by the end of January."

The Northern Spirit Light Show will still be operational throughout the quarantine. The horses used for the rides through the show are housed at a different barn at the other end of the park. All organizations and clubs who would normally use the Lewis Hawkes Pavilion will not be able to do so until the quarantine is lifted.



Your Obligations

As a horse owner, when you take custody and control of a horse or herd of horses, you also take on the responsibility of caring for the health and well being of that animal. Becoming educated about disease risks and management strategies is as high a priority as riding in a safe and responsible manner.

In addition, your obligations extend to the equine community that surrounds you at home and that you become part of when you travel to equine events. **Your actions, or inactions, may have far reaching effects because a number of equine diseases are highly transmittable.**

Here are some tips that will help you fulfill your obligations to your own horses, horses in your care and the equine community at large:

- Avoid travel with your horse if you suspect (or know!) they have an infectious disease.
- Avoid travelling with a horse that may have been exposed to an infectious disease until you can be sure they are disease free.

- Discuss with a veterinarian whether they pose a disease transmission risk prior to exposure to other horses.

Good planning now will reduce the impact of the next disease emergency

- In the event of a disease outbreak at a commingling site, such as a stable, do not allow horses to leave or new horses to arrive until the disease has been eliminated or tightly controlled with a quarantine or isolation program **and** a veterinarian has given the ALL CLEAR.

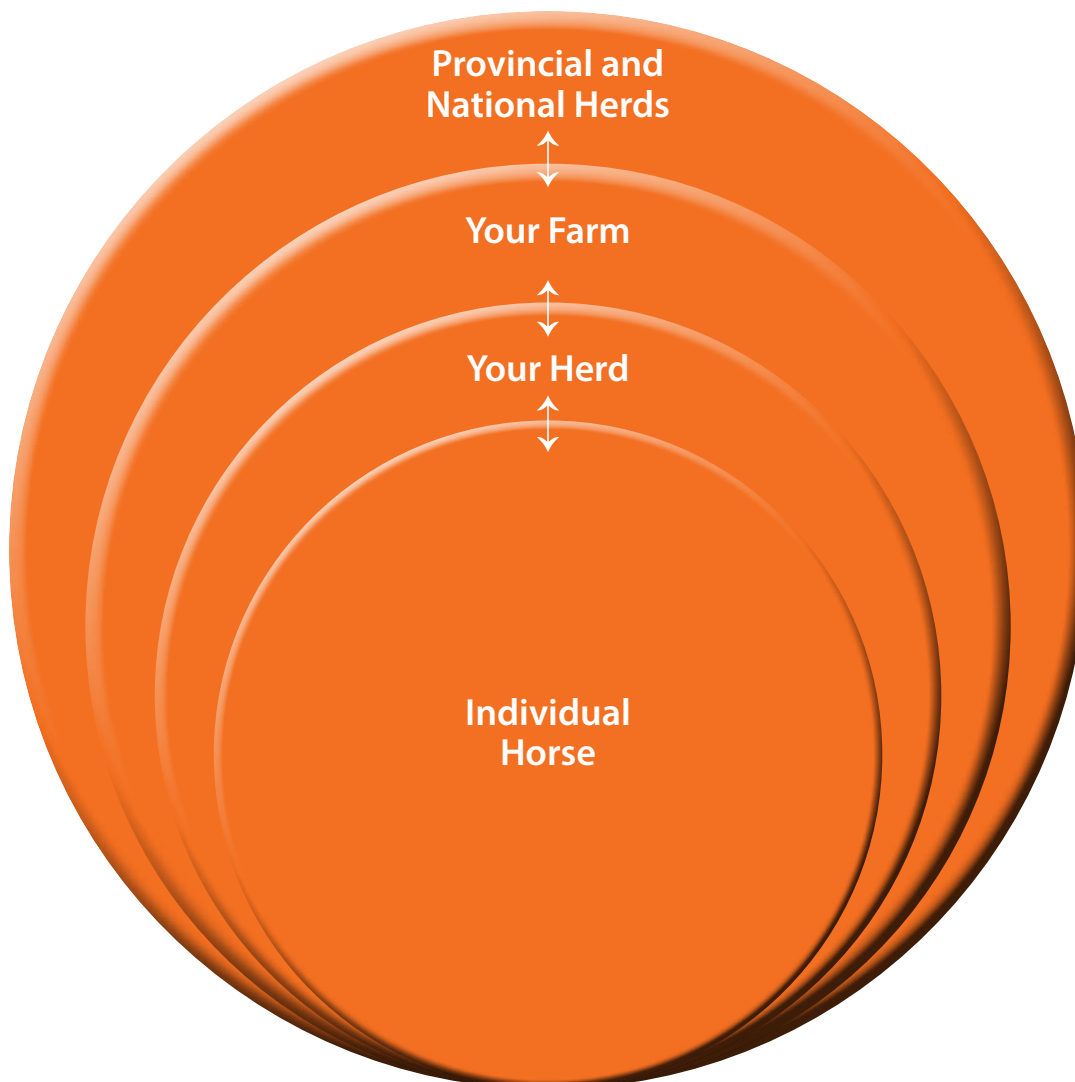
In the event your horse contracts an infectious disease:

1. Consult your veterinarian for diagnosis and medical treatment,
2. Isolate and restrict access to sick animals, and
3. Advise recent visitors to your property of the outbreak and advise them to monitor their own animals for signs of disease.

Disease Transmission

Preventing Spread of Disease Across Boundaries

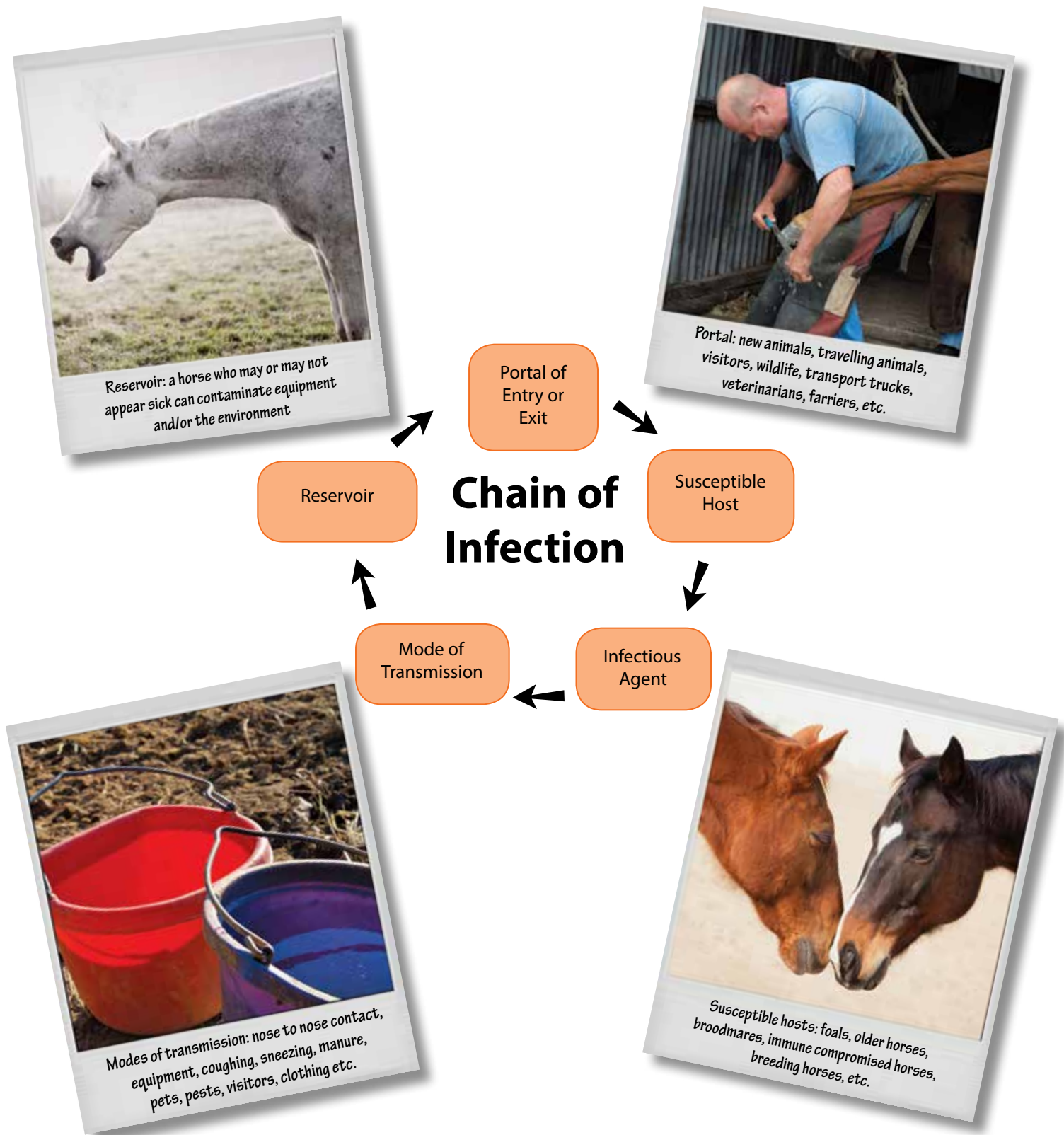
This diagram illustrates the boundaries that disease can travel and quickly spread from one animal to affect a large community. Effective biosecurity serves to protect those boundaries. Keep what's in, in and what's out, out.



This book gives you an overview of how equine diseases can be transmitted. This will help you to understand the questions asked in the risk assessment.

By identifying critical points where disease can be transmitted, recommendations can be made to prevent this from occurring.

Notes



Micro-organisms that cause infectious disease use **vectors** (living entity that may carry the organism) and **fomites** (inanimate objects that carry organisms on their surface) to enter into an animal or herd that is a susceptible host. If a host becomes infected after being exposed it may or may not be clinically sick. Some animals may look healthy but still be able to transmit disease and serve as a reservoir of the infectious agent.

Examples of vectors are: people, dogs, cats, other horses and wildlife. Examples of fomites are brushes, halters, buckets, horse trailers, saddle pads, stall doors, etc. Without your preventive efforts, the disease cycle continues.

Developing an Effective Biosecurity Program

Congratulations!

You are on your way to starting (or updating) your biosecurity program to protect your horses and farm.

The first step is to identify risk factors for disease introduction and transmission for your horse and/or farm. By completing the **Risk Assessment Chart** (page 25) and thinking about the varying factors that affect disease transmission, you can start to identify critical points where you can implement or improve your biosecurity.

Your veterinarian is the best source to help you identify which diseases you should be concerned about and how you can implement change to minimize the risk of transmission.

Use this space to keep a list of questions or discussion points for your veterinarian at your next herd health visit.

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

Step 1: Risk Assessment

Biosecurity programs should be developed specific to each horse, herd or facility. The most effective way to evaluate your biosecurity needs is to complete a risk assessment.

1. What areas have sufficient biosecurity in place?
2. What daily practices can be changed to aid in disease prevention and control?

The **Risk Assessment Chart** on page 25 was designed for horse owners and facility operators to review their current herd demographics, facility design and identify risk factors. It serves as a tool to use in discussions with your veterinarian about developing protocols that you may consider implementing based on your risk factors.

The chart is separated into four sections which represent different categories of risk for disease introduction and/or spread:

Section A: Equine Management Risk Factors

Section B: Biosecurity Protocols

Section C: Herd Health Program

Section D: Facility User and Visitor Risk Factors

Each section of the chart asks about your current practices with regard to disease prevention and control. Once you have identified current practices, you can analyze your answers to determine what areas to improve.

Your veterinarian can help you to identify and prioritize areas of your biosecurity program that can be improved to have the greatest overall impact.

Assess **your** risks with your veterinarian and then make decisions about implementing biosecurity protocols.

Step 2: Identifying Protocols for Implementation

Let's be honest. Biosecurity isn't always convenient. If it was, everyone would do it! But it is necessary to protect **your horse's** health and the health of the horses in your equine community and in some cases, humans as well.

Develop your personalized biosecurity program using the three management pillars:

1. Animal Health Management

2. Access Management

3. Operational Management

These pillars cannot be viewed in isolation. You must consider all the variables of animals, facilities and people to develop the most effective biosecurity program.

Your veterinarian is trained to examine all variables linked to the host (your horse), the agent (the infectious disease) and the environment (farm, vectors, fomites, etc.) and offer advice on cost effective strategies and options to manage risk in a complex system.



What do you mean by demographics of a horse herd?

Identify what sub-groups exist on the farm as defined by age, breed, sex, location, horse related activities (showing/breeding/trail riding). This helps you to identify high risk groups within your herd, both from the perspective of individual animals and disease risk but also from the perspective of the potential for disease introduction or spread.

What diseases are you concerned about in your horse(s)?

What activities occur at your stable/farm that could impact the risk of disease introduction, spread of disease within the farm or transmission of disease to another stable/farm?

What should you be concerned about? Ask your veterinarian!

What are you already doing to decrease the risk of disease in your horse(s)?

Animal Health Management

Monitor Animal and Herd Health

In conjunction with your veterinarian, establish a **disease response plan**. A disease response plan is especially valuable if there is more than one person who may be in charge of the care of your horses. It may include:

- Normal horse vital signs and guidelines respecting abnormal signs:
 - Adult horse (resting values):
 - Temperature: 37.5-38.5°C
 - Pulse: 28-40 beats per minute
 - Respiration (breathing rate): 8-20 breaths per minute.
- When to contact a veterinarian.
- Who will contact the veterinarian.
- Veterinarian contact information.
- Protocols in the event of an emergency, such as colic, tangled in wire, fire, trailer accident, severe weather, etc.
- Establish and follow routines for observing animals; daily is recommended.
- Keep a record for individual animals that may include:
 - ☞ Normal values for vital statistics (heart rate, respiration rate, temperature, gut sounds, weight, height).
 - ☞ Notes of changes of behaviour, feeding patterns and habits.
 - ☞ Veterinary examinations.
 - ☞ Medications administered (including dose, amount, frequency, duration).
 - ☞ Vaccines or dewormers administered.
- Work with a veterinarian to design a **personalized vaccine program**. Consult your veterinarian prior to altering the program.
- Isolate sick animals as soon as possible, then consult your veterinarian for appropriate diagnosis and treatment.

Commingling

Commingling occurs when horses from one farm/stable mix or come into contact with horses from another farm/stable. This can take place at a show, trail ride, clinic, rodeo, when on common pasture, etc.

Why is commingling a biosecurity risk?

Commingling represents a significant disease risk for a number of reasons.

- When animals from different operations are mixed together, horses may be exposed to diseases present in other animals.
- Often, there is little awareness or control of the management practices applied to horses from the other operations.
- The management practices and disease risks can vary significantly between the operations that are commingling horses.
- The disease status of horses can be difficult to ascertain, as horses can be infected without showing signs of disease.
- Close stabling increases the risk of disease transmission. Often horses are housed in barns or temporary facilities for extended periods of time. With fairs/exhibitions there may be multiple species of animals housed under one roof.
- Lots of opportunities for animal and human movement increases the chances of the spread of infectious disease.

Quarantine new horses for 2-3 weeks prior to introducing them to "known healthy" horses.

Quarantine and Isolation

Quarantine and isolation are key to containing or preventing the spread of an infectious disease. Both are common in veterinary practice and aim to control exposure to infected or potentially infected animals.

The two strategies differ in that isolation applies to animals who are known to have an illness and quarantine generally applies

to those who **may** have been exposed to an infectious disease, but who may or may not become ill.

The term quarantine is generally used when animals have been exposed to or are confirmed to have a **regulated disease** (e.g. contagious equine metritis or vesicular stomatitis, etc.).

Both may be undertaken voluntarily or, if the disease is reportable or notifiable, may be required under animal health legislation (provincial or federal).

Manage Disease Risk while Travelling

If you are travelling with your horses, it may not be practical for you to quarantine them when they return home. If this is the case, here are some recommendations you should consider to minimize the risk of bringing home a disease:

- Ensure your horse, and any that it might be in contact with when it returns home, have vaccinations that are current and relevant to the diseases in your area. Consult your veterinarian to establish a vaccination program for travelling horses and those they are in contact with.
- Bring your own water bucket and avoid communal waterers and troughs. Do not let your horse drink from communal water sources. Fill your bucket from a hose or pump that delivers fresh clean water.
- Avoid letting your horse touch noses or contact other horses not from your farm/stable.
- Tie your horse to your own trailer. If not possible, avoid wood hitching posts/rails and choose a site that can be disinfected. Disinfectant sprays are great for this purpose! See page 18 for more information on cleaning and disinfecting.



**Summary for an Effective Biosecurity Program:
Animal Health Management**

- **Establish a disease response plan with your veterinarian**
- **Keep a health record for each animal**
- **Keep a personalized vaccine program**
- **Get veterinary advice about vaccination and deworming protocols for your horse(s)**
- **Manage risks associated with commingling**
- **Quarantine new animals for a minimum of 2-3 weeks**
- **Isolate sick animals as soon as possible and consult your veterinarian for appropriate diagnosis and treatment**
- **Minimize the risk of bringing home a disease when traveling**

Where might you make changes to your animal health management strategies?

Access Management

Access management principles look at how to use the layout of your property to manage or limit disease introduction or spread. These principles look at how diseases may be introduced into a herd, either from outside the farm or from another group of animals on the same premises.

Control Access to Farms, Barns and Horses at Critical Points

Consider having a clearly identified area for visiting horse trailers to park, well away from the main entrance to the facility, barn or paddocks and pastures.

Establish zones to reflect differing standards of biosecurity.

- **Public access zone** is an area where no animal contact or crossover is anticipated. Public access only areas may include viewing/bleacher area, parking lot, stable/event office, etc.
- **Controlled access zone** is an area that you may identify around barns, pens and handling areas that should be restricted to employees and trained facility users. May be identified by a fence, sign, strip of crushed gravel, etc.
- **Restricted access zones** is any area/pasture/pen where animals commonly reside.



- **Quarantine zone** is an area used for newly arriving animals as an evaluation for disease status before being introduced to the main herd. The following are best practices of a quarantine program:

- ☞ Maintain a 2-3 week period of quarantine.
- ☞ Eliminate nose to nose contact with any other horses.
- ☞ Have separate waterers, feed bins and buckets for quarantined horses.
- ☞ Label equipment, including halters, shovels, buckets, blankets, bridles, etc., as QUARANTINE and with the horse name.
- ☞ Post signs outside of quarantine pens and stalls indicating quarantine status and restricted access.
- ☞ Wash hands prior to entering and exiting pens/stalls.
- ☞ Clean and disinfect boots when exiting.
- ☞ Having outerwear (i.e. coveralls) dedicated to the quarantine horses and labeled as such.
- ☞ Restricting facility use by horses in quarantine until the quarantine period is over e.g. wash rack, arena, alleyway would be off limits.

Where might you make changes to accessing your farm, barn and horses?



- **Isolation zone** is an area that should be used for sick animals and should have the highest level of biosecurity protocols in place. The following are components of an effective isolation zone:

- ☞ **NO contact with any other horses.**

- ☞ Wash hands prior to going in and after coming out of pens/stalls.
- ☞ If in a stall, have at the end of the row and with an empty stall beside the isolation stall.
- ☞ Have separate waterers, feed bins and buckets for isolation horses. Clean and disinfect daily.
- ☞ Have rubber boots identified as isolation boots. Clean and disinfect them prior to going into isolation and upon exit from isolation. Consider using disposable booties also.
- ☞ Have coveralls specifically for use in isolation.
 - Label them.
 - Launder after each use or between animals.
 - Keep a covered isolation laundry bin directly outside isolation. Wash isolation laundry with detergent and bleach. Wear gloves when transferring to washer.
 - Keep clean "ISOLATION" coveralls in a closed bin outside the isolation area for quick access.
- ☞ Label equipment, including halter, shovel, bucket, blanket, bridle, etc., as **ISOLATION** and with the horse name.
- ☞ Keep isolation equipment in a closed bin directly outside the quarantine stall/pen. Disinfect the outside every time it is opened.
- ☞ Post signs outside of isolation pens and stalls indicating isolation status and restricted access. Signs are most effective if posted a bit away from the stall/pen versus directly on the stall.
- ☞ **Horses should not leave isolation until cleared by veterinarian as being safe to return to general population. Some horses may still be infectious even if they are not showing clinical signs.**

- ☞ All facility use is off limits to horses in isolation to protect other horses in the facility.

- Post biosecurity signs at barn and pasture entrances. Additional signage may benefit specific cases, such as outside the stall of a new horse.

Restrict pets' access to quarantine and/or isolation zones. Pets can present a risk for transmitting disease.

Manage Visitor Risk

Visitors, especially those who also have horses or regularly come into contact with horses (such as farrier or trainer who works at various barns), pose a risk for introducing disease into your herd. You can manage these risks by following some of these best practices:

- Advise visitors prior to their arrival on farm that there are biosecurity expectations in place. This is especially important for visitors who are routinely in contact with other populations of horses as many equine diseases can be spread indirectly. People can spread the disease agent on their clothing and shoes/boots.
- Establishing visitor parking, for both vehicles and trailers, well away from the barn/stable or animal housing areas and post clear visible signs. Vehicles and trailers can spread disease agents on contaminated tires, wheel wells and undercarriage.

Have clean coveralls, a boot brush and bath as well as spray disinfectant for anyone visiting sick horses.

Notes

- Ask visitors about recent contact with other horses which have, or may have, an infectious disease. If they have been in contact with a sick horse(s), it is very important that they clean and disinfect their outerwear prior to visiting and do not bring in any potentially infected fomites.
- Restrict visitor access to animals where possible.
- Stable owners should also keep a **Visitor Log Book** with date, name and any previous animal contact in the last seven days, in a highly visible area.
- Keep a **Horse Movement Log Book** to record movements, both on-to and off-of the farm/stable. This should include information on which horses were moved, where they went, dates of movements and if applicable, contact information of the owners. This is extremely helpful if you do have a disease incident so that you can attempt to determine how the disease may have been introduced and where it may have spread to.

You as a visitor

If you are visiting another farm, continue with your biosecurity practices by wearing clean clothes / footwear. Launder clothes and disinfect footwear immediately upon returning to your facility.

Summary for an Effective Biosecurity Program: Access Management

- **Control access to your farm, barn and animal areas at critical points**
- **Develop zones for public access, controlled access, restricted access, quarantine and isolation area**
- **Quarantine new arrivals to your farm, facility, operation**
- **Manage visitor risk**
- **Keep a Visitor Log Book**
- **Keep a Horse Movement Log Book**
- **Minimize the risk you pose as a visitor to other facilities, events and farms**



Draw a diagram of your farm, stable or facility. Include stalls, outbuilding, corrals, pastures, gates. Identify different areas of the diagram where you could implement a zoning system. With a ★, identify where signs should be posted. With a ↑↓, identify areas where disease transmission may occur.

Operational Management

Animal Husbandry

- **Handle healthy horses before sick horses as routine practice.**
- **Wash your hands** after handling a horse and before handling a horse in a different zone.
- Identify those animals who may be more susceptible to infectious diseases (very young, very old, horses under stress or horses recovering from injury or disease) and ensure that they are monitored on a daily basis.
- Practice good pasture management to minimize internal parasites as well as vectors such as mosquitoes and ticks. This includes rotational grazing, monitoring stocking density and removing manure.
- Routinely monitor all animals for normal versus abnormal behavior and health indicators such as:
 - ☞ wounds, scabs, hair loss, scratching.
 - ☞ changes in body weight.
 - ☞ signs of illness such as not eating, drinking or standing in the same place for long periods of time.
 - ☞ abnormal discharge from eyes or nose.
 - ☞ lameness or swelling in the limbs.

Handle healthy horses before horses that are sick or may have been exposed to a disease.

Animal Movements

- **Plan animal movements to minimize risk of introduction or further spread of disease.**
- **Quarantine horses on arrival:** includes new horses or horses returning home from a commingling site such as a show, rodeo or veterinary clinic.
- **House horses that do not leave the property separately from those that do (i.e. competition horses vs breeding stock).** This management practice will help protect the horses that do not leave the property from the variety of viral and/or bacterial diseases that travelling horses may be exposed to and bring home.
 - ☞ **This is especially important for broodmares in foal. For these groups, avoid nose to nose contact and sharing waterers, feeders, buckets and such with the travelling group.**
- When moving young or sick animals, use a route that is not crossing a heavily used area such as alleyways, tie areas or arena.
- Ensure horse trailers are clean, disinfected and rinsed properly prior to transporting horses.
 - Always ensure that you handle healthy horses prior to horses that are sick or may have been exposed to a disease. This will reduce the risk of transmitting disease.

Mobile Biosecurity Tool Kit

1. Scrub brush
2. Shovel and broom
3. Soap or detergent concentrate for cleaning
4. 4L jug of water for mixing cleaner and disinfectant (separately of course!)
5. Measuring cup for measuring accurate amounts of water and disinfectant concentrate
6. Bucket for cleaning and mixing disinfectant (should not be used to water horses)
7. Appropriate disinfectant concentrate e.g. Virkon powder or tabs
8. Hand held spray bottle for applying disinfectant
9. Disinfectant wipes

What else would **you** carry in your tool kit?

Notes

Clean and Disinfect Equipment and Barns

- Designate basic equipment for each horse. At a minimum this should include a halter and lead rope, bridle, brushes, saddle pad and girth. If this isn't possible then shared equipment should be disinfected between horses.
- Avoid sharing tack or equipment with other farms/stables unless disinfected between use.
- Wash vehicles regularly, especially after visiting another farm or commingling site.
- Keep the interior of vehicles and trailer tack rooms as clean as possible and avoid dirty boots, tack and equipment as these can all act as fomites and carry disease.
- Follow manufacturer's directions when using commercial cleaning and disinfection products.
- Keep in mind the following points when cleaning and disinfecting tack, equipment, barns, pens, stalls:
 - ☞ Read all labels thoroughly.
 - ☞ If you have a cleaning and disinfection protocol, record the following information:
 - Product used
 - Rationale for selection of that product
 - Concentration used (include calculations)
 - Mixing procedure
 - Volume used
 - Area covered
 - Application method (spray, fog, etc.)
 - Safety precautions suggested by manufacturer
 - Drying conditions
 - Cleaner used
 - Validations for all of the above
 - ☞ Disinfectants have strengths and weaknesses. Those that are excellent against bacteria may not be the product of choice against viruses. Ease of application and safety are major considerations. Consult your veterinarian for recommendations tailored to your facility.



- ☞ Mixing common household cleaning products can cause serious injuries. **DO NOT MIX BLEACH AND AMMONIA OR BLEACH AND ACIDS; DOING SO CAN PRODUCE TOXIC GASES.**
- ☞ Use the correct dilution of disinfectant. Disinfectants work best at approved levels. More is not necessarily better.
- ☞ Disinfectants must be mixed properly before use.
- ☞ Follow local government regulations regarding the labeling and disposal of hazardous products to ensure compliance with environmental legislation.
- ☞ During the mixing and application process, ensure that appropriate personal protective equipment (PPE) is worn such as gloves, masks and eye protection if necessary.



Cleaning and Disinfection Protocol

The following is a sample cleaning and disinfection protocol that may be modified to fit your facility. Don't forget your horse trailer!

1. The floors will initially be scooped and free of material. Fecal material should be moved to where uncontaminated animal waste is to be deposited; ideally compost area. Floors may also be swept if applicable.
2. Area such as rails, chutes, stalls, stocks and walls, doors and floors should be sprayed and cleaned. Consider using a dilution device such as a pressure washer with hot water and detergent (such as Nutrafoam or Sunlight™, which is a neutral pH detergent). The area should be scrubbed and free from any gross contaminant.
3. If area use is continuing within the same day, the area should be squeegeed in order to remove as much water as possible.
4. After drying, the area should be covered in disinfectant solution (such as Virkon 1%), and then allowed to dry.
5. If time does not allow for complete drying before applying **disinfectant** solution, squeegee as much water as possible to the drain; apply disinfectant and allow a minimum contact time **according to manufacturer's directions** (Virkon 1% is 15 minutes). After this, if the area is needed; the Virkon may then be squeegeed off.

Disinfectants require **contact time** with surfaces to be effective.



A simple crossover station at the entrance and exit to isolation. Physical barriers serve to remind people to change footwear, outerwear and wash hands prior to entering and upon exiting quarantine and/or isolation

Use Personal Protective Equipment

Personal protective equipment (PPE) is specialized clothing or equipment used to prevent contact with hazardous substances. These hazardous substances can be chemical or biological in nature and can include infectious organisms that can spread from animals to humans.

PPE is an integral part of infection control and prevention measures that protect us from exposure to blood, nasal secretions and other bodily fluids which can potentially cause disease in people.

Basic PPE should include the use of gloves when handling any sick animals. The use of face masks and disposable coveralls and boots are recommended when handling foals or horses with diarrhea. Talk to your veterinarian about the risk of zoonotic disease. If your horse is sick and you have any symptoms contact your physician. Children and people that have a compromised immune system (allergies) should take extra precautions.

Pest Management Program

Pests and parasites cause direct and indirect damage to horses. They feed on the horses, cause irritation, spread diseases and cause digestive upsets, poor condition and impact overall health.

Insects are vectors and known to spread many equine infectious diseases including West Nile Virus, Western and Eastern Equine Encephalomyelitis (mosquitoes), Equine Infectious Anemia (horse and deer flies) and equine granulocytic anaplasmosis and Lyme disease (ticks).

- If/when insecticides are used in animal housing areas, remove animals and follow manufacturer's directions.
- Build rodent proof feed storage areas.
- Keep vegetation mowed short and eliminate standing water sites.
- Establish, follow and document a deworming program for all species on the premises.
- Use bait stations for insects and rodents. **Be sure they are out of reach of pets and stray animals.**
- Eliminate pest habitats and breeding areas for pests.
- Clean up manure, spilled feed and standing water as soon as possible.
- Communicate with neighbors about your efforts to reduce fly populations.

Q: What does indirect spread mean?

A: It is a transmission mechanism in which the infectious agent is transferred between animals by fomites. A fomite is an inanimate object that may be contaminated by an infectious disease and serve in their transmission. Virtually any object can serve as a fomite, including equipment, water buckets, tack, hoses, clothing, bedding, etc. An example of an equine disease that can be transmitted by fomites is Strangles.

Communicate Biosecurity Program Effectively

- Use highly visible clear signage to post your biosecurity protocols.
- Include biosecurity protocols in staff training and document employees' completion of training.
- Educate facility users about biosecurity expectations. Consider adding a discussion of biosecurity to a welcome booklet or brochure.
- Make visitors aware of biosecurity protocols before they arrive on the farm, barn or stable.
- Keep a visitor log book with date, name and any previous animal contact in the last seven days. Display the log book in a location that is accessible to employees, facility users, owners and visitors. Encourage them to use it!
- Ensure signage is adequate to communicate expectations.
- Identify access/entry points (roadways, laneways, etc.), ideally with a physical barrier such as a gate.
- Establish and communicate health, vaccination and deworming requirements for horses using the facility. Your veterinarian can help you develop requirements tailored to your facility. This may include the requirement for a negative test for Equine Infectious Anemia (EIA) - Coggins test.
- Consider recognizing an individual within your organization, barn, riding club, etc. as a Biosecurity Champion. Maybe it is the stable manager, or riding instructor, or a facility user with an interest in animal health and wellness. Their role might include:
 - ☞ Documenting a biosecurity program for your club
 - ☞ Go-to person for information on your club's biosecurity standards



Summary for an Effective Biosecurity Program: Operational Management

- **Handle healthy horses before sick horses as routine practice**
- **Wash your hands**
- **Plan animal movements to minimize risk**
- **Quarantine horses on arrival**
- **House horses that do not leave the property separately from those that do**
- **Clean and disinfect equipment prior to and after use**
- **Encourage use of personal protective equipment**
- **Control pests and pets**
- **Communicate biosecurity program effectively with clear visible signs**



Equine Traceability

Traceability is a crucial component of an effective animal health and food safety system that enables precise and rapid emergency response to protect livestock, producers and consumers. Determining where livestock are, where they have been and what other livestock they have come into contact with, allows for efficient emergency planning and response.

The Government of Alberta **Premises Identification Program (PID)** was established to track the location of animals in case of an animal disease occurrence, a public health related emergency, or an emergency such as a natural disaster affecting animals and people. Regulations requiring premises identification is part of the Animal Health Act. Visit www.agric.gov.ab.ca for information on the PID program.

A. Equine infectious anemia (EIA) is an infectious and potentially fatal viral disease affecting the immune system of members of the Equidae family, including horses, donkeys and mules. Most EIA-infected horses show no clinical signs of disease; however, they remain carriers of the virus for life and can be a source of infection for susceptible animals.

A Polaroid photograph of a brown horse and its foal standing in front of a wooden barn. The horse is on the right, facing left, and the foal is on the left, also facing left. They are standing on a patch of dry grass and dirt. The barn has horizontal wooden siding. The Polaroid has a white border with a faint, repeating pattern of the word 'Polaroid' along the bottom edge.

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

Notes

Your Role

Biosecurity programs are only effective as long as owners, handlers and visitors are educated about the program and are committed to practicing good disease prevention and control **EVERY DAY**.

The information presented in this book is intended to encourage you to review your situation and consult with your veterinarian on biosecurity practices.

By taking biosecurity seriously, you protect your horses and the equine community at large.

Work with your veterinarian to protect the health and wellness of your equine partners. Disease prevention and control is their professional area of focus. Specific questions, concerns, ideas and protocols should be discussed with your veterinarian who has the best understanding of your risk factors.

If you suspect your horse(s) have been exposed to or contracted a disease, contact your **veterinarian immediately**.

More information on biosecurity can be found at:

- Alberta Veterinary Medical Association
www.abvma.ca
- Alberta Equestrian Federation
www.albertaequestrian.com
- Alberta Agriculture and Forestry
www.agric.gov.ab.ca/biosecurity
- Equine Guelph
www.equineguelph.ca
- Canadian Food Inspection Agency (CFIA)
www.inspection.gc.ca, search biosecurity





Summary

You have obligations as a member of the equine community. One of those obligations is to practice safe and effective means of disease prevention and control. Be conscious of your role in the transmission of disease and how those diseases may affect you, your horse, your herd, and the equine community at large.

Do not travel with your horse if you suspect your horse or another horse that it is housed with, has a contagious disease.

Effective biosecurity programs can be developed in two steps.

Step #1 is assessing your horses' risk of contracting (and spreading) diseases.

At the end of this booklet is a **Risk Assessment Chart** that may be used by horse owners, handlers, facility operators, event managers and anyone who has or is involved in horses. It is designed to help you to identify animal management factors that might influence the

risk of disease introduction and spread on your farm. You may also consider using the Risk Assessment Chart as a platform to discuss specific biosecurity recommendations with your veterinarian.

Step #2 of establishing effective biosecurity is implementation of procedures and protocols related to risk management.

Signage, education, awareness and commitment are key components to effective programs.

This manual contains a wide variety of recommendations based on the three pillars of biosecurity including **Animal Management, Access Management** and **Operational Management**. Implement them all, or pick and choose which recommendations are practical for your situation.

Be aware and educated of the risks you need to manage and the choices you can make.



Glossary

Best Practices: for this document, a best practice is a program, process, strategy, or activity that has been shown to be effective in the prevention and control of disease; is based on current information; is of value to, or transferable to, other organizations.

Biological agents: bacteria, viruses, fungi or other microbes that have the potential to adversely affect the health of an animal.

Biocontainment: keeping disease causing pathogens inside a particular area to avoid contaminating other animals, equipment, premises, etc.

Bioexclusion: a set of practices used to minimize the introduction of pathogens and pests in animal and plant populations into specific pathogen free (SPF) herds/facilities, breeding facilities or other such operations.

Biosecurity: a set of practices used to minimize the transmission of pathogens and pests in animal and plant populations including their introduction (bioexclusion), spread within the populations, and release (biocontainment).

Commingle Site: any location where animals are brought together from more than one location; may be short or long term; examples include veterinary clinic, auction, summer pasture, staging site, horse show, rodeo, 4-H event, horse clinic, etc.

Closed Herd: a herd that does not introduce new animals on a regular basis; maintains its own breeding stock; is isolated from direct contact with other same species herds, flocks, etc.; introduction of new animals follows a strict quarantine and observation period which may include diagnostic testing to determine health status.

Contact time: a specific amount of time, identified by manufacturers, required by disinfectants to adequately disinfect or sterilize a surface; may vary with concentration, temperature, presence/absence of organic matter.

Decontamination: the process that removes microorganisms from an object, rendering it safe for handling; the process of cleaning, followed by the inactivation of pathogenic microorganisms, in order to render an object safe for handling.

Disinfectant: a chemical agent used on inanimate objects to destroy virtually all recognized pathogenic microorganisms, but not all microbial forms (e.g. bacterial spores).

Disinfection: a process that kills most organisms but rarely kills all spores; a process that kills most forms of microorganisms on inanimate surfaces; 3 levels of disinfection are low, intermediate and high.

Fomite: an inanimate object or substance, such as clothing, furniture, or soap, that is capable of transmitting infectious organisms from one individual to another.

FAD: Foreign Animal Disease; a disease not normally found in Canada; federally and provincially reportable by a veterinarian or diagnostic lab immediately upon suspicion or confirmation of presence in animal(s).

Infectious Agent: microorganism capable of causing disease in humans; infectivity is affected by the organisms' viability, virulence, invasiveness and pathogenicity.

Mode of Transmission: the method whereby the organisms are transmitted from one place to the next. Examples may be by direct contact, indirect contact with a contaminated body substance, vectors, and fomites (contact with inanimate objects carrying infectious disease).

Pathogen: something that can cause disease; e.g. bacteria, virus, toxin.

Personal protective equipment (PPE): specialized equipment or protective clothing used to protect oneself from direct exposure to blood, tissue or body fluids; may include gloves, gowns, fluid-resistant aprons, head and foot coverings, face shields or masks, eye protection, and ventilation devices (e.g. mouthpieces, respirator bags, pocket masks).

Premises: an area of land where recordable animals are bred, kept, raised, displayed, assembled or disposed of.

Protocol: a set of rules or practices that outline a way of behaviour or accomplishing tasks, daily operations, treatments; ideally written and accessible to employees, facility users, producers, horse owners.

Reportable: a disease that either the federal or provincial government identify as poses a risk to animal or public health and safety.

Reservoir: a source that allows for microbial growth and multiplication; examples include people, equipment, and materials.

Sanitize: a process that substantially reduced the bacterial count without eliminating all microbial forms.

Sterilization: a process that kills all microorganisms, including bacteria, viruses, spores and fungi.

Susceptible Host: a person or animal who lacks the immunity or resistance to the invasion of the body and reproduction by the microorganisms, resulting in infection.

Vector: organisms that transmit infections from one or more hosts to another.

Zoonotic Disease: disease caused by viruses, bacteria, parasites and fungi that are transmitted from animals and insects to humans and can cause human disease. E.g. Methicillin Resistant Staphylococcus aureus (MRSA), Salmonella ssp.



Risk Assessment Chart

This self-assessment tool is designed to provide horse owners and stable keepers with a quick and easy way to evaluate the risk of introduction and/or spread of disease on a property based on an evaluation of current biosecurity practices.

HEALTH MANAGEMENT PRACTICES AND AWARENESS

Do you, or your staff:	YES / Always	Sometimes	NO / Never	N/A	Comments / Action Points
	SAFE	WARNING	ALERT		
Regularly monitor and inspect horses for signs of illness (daily where/when possible)?					
Know how to take your horse's vital signs (temperature, pulse and respiratory rate)?					
Know what is considered normal temperature, pulse (heart rate) and respiratory rate?					
Consult your veterinarian each year for current vaccination guidelines specific to your facility?					
Follow veterinarian guidelines on vaccination?					
Require all horses arriving on your premises (haul-ins for clinics/shows/training, etc.) to comply with the vaccination guidelines?					
Follow a veterinarian recommended deworming program? If yes, do you:					
- regularly evaluate the effectiveness of the deworming program through fecal egg counts?					
- require all boarders comply with the deworming program?					
- require that all horses visiting the facility comply with deworming policy?					
Know the clinical signs associated with Equine Infectious Anemia EIA (Swamp Fever)?					
Test new additions to your herd for Equine Infectious Anemia?					
Work with healthy horses before any sick horses are handled/treated?					
Properly use and dispose of all needles?					
Wash your hands, or wear gloves, when handling sick horses?					
Wear designated personal protective equipment (footwear and outerwear) when handling and treating sick horses?					
Use separate equipment or clean and disinfect equipment when working with sick horses?					
Isolate horses that are ill with an infectious disease?					
Have an isolation stall/area for sick horses? If yes, do you:					
- clean and disinfect this stall/pen and equipment used between horses?					
Quarantine and observe horses that may have been exposed to an infectious disease?					

HEALTH MANAGEMENT PRACTICES AND AWARENESS					
Do you, or your staff:	YES / Always	Sometimes	NO / Never	N/A	Comments / Action Points
	SAFE	WARNING	ALERT		
Quarantine new horses in such a way that disease cannot spread to the resident horses?					
Quarantine, or segregate returning horses (horses returning from events, shows, clinics, breeding, etc.) in such a way that disease cannot spread to the resident horses?					
Monitor and take the temperature of horses in quarantine?					
Have a designated stall for foaling that is cleaned and disinfected between births?					
STABLE / FACILITY OWNER					
Have a new horse protocol?					
Require a current veterinary certificate of health for new horses?					
Require all boarders to comply with the vaccine guidelines?					
Require all horses stabled on, or entering your premises to have been tested for Equine Infectious Anemia?					
Quarantine new horses (i.e. no direct contact with other horses or sharing of equipment, etc.)					
Ask where horses have been traveling when they return to the facility? (local, provincial, national, international)					
Ask what type of horse contacts occur on an average trip off the facility? For example pack trips with direct contact and shared feed, etc. OR, no contact					
Have a logbook and require visitors to check in? On average, how many people visit the facility each week?					
<p align="center">RISK FACTOR REVIEW AND ACTION PLAN – SELF ASSESSMENT</p> <p>SAFE – meeting basic biosecurity practices WARNING – potential for failure of biosecurity element, action required ALERT – biosecurity gap identified, action required</p> <p>The sections where you marked in the ALERT column requires the most action. Based on the answers you provided, what is your proposed action plan to improve on-farm biosecurity?</p>					

EDUCATE, PLAN, RECORD					
Do you, or your staff:	YES / Always	Sometimes	NO / Never	N/A	Comments / Action Points
	SAFE	WARNING	ALERT		
Have a biosecurity plan?					
Have a documented disease contingency plan in place if an infectious disease were to be suspected on your premises? (Call veterinarian, isolate sick horses, no horses to leave the premises, etc.)					
- have you reviewed the plan with everyone who uses the facility?					
Have emergency contact information for veterinarians or clinics in the area?					
Have emergency contact information for the barn owner / manager / trainer?					
Have emergency contact information for all horse owners?					
Have an agreement in place for horses under the care of individuals other than the owner that provides for an immediate response in the event of potential welfare concerns or disease?					
Include isolation protocol in your plan? If yes:					
- does the isolation protocol require that a veterinarian examine sick horses?					
- does your isolation protocol include quarantine protocol?					
Have a health record for each animal? If yes, do you:					
- document medications, vaccines and dewormer given, when and by whom?					
- document all incidences of horse illness?					
Know about regulations regarding the disposal of deadstock and the availability?					
Identify areas/zones of your premises that are closed to public access (closed gates, signage)?					
<p>RISK FACTOR REVIEW AND ACTION PLAN – SELF ASSESSMENT</p> <p>SAFE – meeting basic biosecurity practices WARNING – potential for failure of biosecurity element, action required ALERT – biosecurity gap identified, action required</p> <p>The sections where you marked in the ALERT column requires the most action. Based on the answers you provided, what is your proposed action plan to improve on-farm biosecurity?</p>					

HOUSING, FACILITIES AND EQUIPMENT					
Do you, or your staff:	YES / Always	Sometimes	NO / Never	N/A	Comments / Action Points
	SAFE	WARNING	ALERT		
Ensure all fences and gates are maintained to prevent unplanned commingling of your horses with those from another operation?					
Use non-porous material for stalls and floors (plastic, concrete, rubber mats)?					
Have dedicated tack/equipment for each horse (halter/lead rope, tack, etc.)?					
- if not, do you clean and disinfect tack/equipment between horses?					
Use equipment for a single purpose (e.g. one shovel for manure and another for feeding)?					
Clean and disinfect your horse trailer?					
Clean and disinfect stalls?					
Keep water troughs and waterers in good condition and clean regularly?					
Have measures in place to protect horses from flies and biting insects such as mosquitoes and horseflies (spray program, fly sheet, fly masks, etc.)?					
Store grain and pelleted feed in a sealed bin or other container that does not allow access by other animals, such as birds or rodents?					
Bring your own water bucket and source clean water when travelling with your horse?					
RISK FACTOR REVIEW AND ACTION PLAN – SELF ASSESSMENT SAFE – meeting basic biosecurity practices WARNING – potential for failure of biosecurity element, action required ALERT – biosecurity gap identified, action required The sections where you marked in the ALERT column requires the most action. Based on the answers you provided, what is your proposed action plan to improve on-farm biosecurity?					

Quick Reference Disinfectant Chart for Producers

Type	Products ³	Uses ⁴	Advantages	Disadvantages	Cautions ⁵
Alcohols	AlphaDyne Plus (Chemi3); Relyon Disinfectant Spray (Dupont)	Disinfecting	Rapid action, evaporate with little residue; good for disinfecting clean hands	Fast evaporation reduces available contact time; Reduced activity in the presence of organic matter	
Aldehydes: Formaldehyde/ Gluteraldehyde	Formaline (Vétoquinol); Profilm® (Zoetis); Virocid® (Merial)	Vapor-Phase Surface Disinfecting Fumigant			Eye and skin irritation. Poisonous if inhaled.
Hypochlorites	BioSentry™ Chlor-A-Foam™ (Zoetis); Javex® (Colgate-Palmolive)	For the cleaning and disinfection of hard non-porous environment surfaces	Viricidal; biodegradable	Do not mix with other disinfectants. Do not use with acid cleaner.	Keep out of reach of children. The powder is irritating to eyes, skin and mucous membranes.
Iodophors	Biodine, Mikrokylene, Barn-Storm Iodine Cleaner Sanitizer (Ostrem)	Cleaning and disinfecting buildings, crates and trucks	Not adversely affected by water hardness or low temperature water. Inexpensive; many are biodegradable; long storage life.	No residual activity. Stains some surfaces; Rapidly inactivated in organic material; Effectiveness decreased in basic pH (>7)	May cause burns to the skin and eyes. The vapour is harmful if inhaled.
Oxidizing Agents	Virkon (Vétoquinol); Hyperox (Vétoquinol); Hyperox	Cleaning & disinfection of surfaces & equipment. Aerial disinfection. Sanitizing drinking water system	Biodegradable	Do not exceed thirty minutes for metal objects. Handle in such a way to minimize dust release.	Do not get powder in eyes. Powder irritating to eyes, skin and mucous membranes. Poison. Keep out of reach of children.
Phenols	1-Stroke Environ® (Steris); Multi-Phenolic Disinfectant (Bio Agri Mix); Environ LPH	Simultaneous cleaning, disinfection and deodorization.	Not affected by hard water, residue activity, good storage life; Effective in presence of some organic material; Compatible with many soaps, detergents; Good residual activity; Does not stain surfaces	Concentrate is corrosive.	Causes eye and skin damage. Do not get in eyes, on skin or on clothing
Quaternary Ammonium	BioSentry™ 904™ (Zoetis); Clinicide (Bimeda-MTC); Proquat® (Zoetis); Quatsyl®-D Plus (Zoetis); Rocco (Vétoquinol)	Cleaning and disinfection of vehicles, animal buildings and equipment.	Effective at high pH and temp.; Very good storage life; Many are biodegradable; Effective over wide pH range. Detergent activity, residual activity	Inactivated in organic matter, hard water and by many soaps/detergents	Corrosive to eyes. Wear goggles or face shield, protective clothing and rubber gloves when handling.
Peroxide	Peroxigard™ (Bayer), accelerated hydrogen peroxide	Sanitizing and disinfecting in veterinary hospitals and animal care facilities.		Corrosive material. May dry with a residue that requires rinsing. Do not mix with other cleaning or disinfecting products.	May cause burns. Avoid contact with eyes and skin. Wear suitable protective clothing. Do not store in food processing areas. Avoid storage at elevated temperatures.

³ Does not constitute an endorsement or guarantee effectiveness of product.

⁴ Consult a professional for recommendations for specific purposes.

⁵ Read all warning labels. Follow manufacturer's directions.

Checklist and Tool Kit for the Travelling Horse

What		Why
Did you consult a veterinarian about vaccines for your travelling horse(s)?	✓	To ensure you have considered all the diseases that can be vaccinated against that may present a risk to your horse and herd
Did you consult a veterinarian about vaccines for your not travelling horses?	✓	Horses in contact with travelling horses are at risk of contracting a pathogenic organism that a travelling horse may bring home
Are vaccines current and up to date on travelling and not travelling horses?	✓	Most vaccines are labelled for yearly administration. Protection a vaccine offers does decrease with time. How long? Ask your veterinarian!
Do you have the following information:		
Health record, including normal values	✓	Health records may be required by facilities, shows, events, etc. to provide assurance of horses' vaccination and disease status. E.g. Coggin's tests. Knowing normal values for each horse can help identify when values are not normal and by how much
Contact information for veterinarian on site or local to destination?	✓	In case you need it in an emergency!
Do you have the following equipment to enact your own biosecurity measures while away:		
Scrub brush	✓	To clean stalls/pens prior to disinfecting
Shovel and broom	✓	To remove existing, possibly dirty or contaminated bedding
Soap or detergent concentrate	✓	For cleaning
4L jug of water; measuring cup may be helpful	✓	For measuring and mixing cleaner and/or disinfectant
Bucket	✓	For cleaning and disinfectant mixing
Appropriate disinfectant concentrate	✓	To make up practical usable volumes of disinfectant as needed
Hand held spray bottle	✓	To apply disinfectant to non porous surfaces e.g. stalls, railings, tie rail as needed
Own water bucket(s)	✓	To water your horses and avoid communal waterers
Own feed bucket(s)	✓	
Is all your equipment labelled?	✓	
Do you have clear, visible signage indicating special instructions, such as: Please wash hands Restricted access Contact name and phone number	✓	



This best practices guide was developed as a joint initiative with the Alberta Equestrian Federation, Alberta Veterinary Medical Association and Growing Forward 2. Material may not be used or reproduced without express written permission of the Alberta Equestrian Federation and Alberta Veterinary Medical Association.

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