



A Guide to Mitigating the Risk of Infection in Veterinary Practices During the COVID-19 Pandemic

Disclaimer: Under the current Provincial state of emergency, veterinary practices are to take appropriate measures to protect both clients and staff from COVID-19. This guide is intended to assist veterinary practices to implement appropriate measures to ensure the health and safety of both veterinary clients and practice staff.

Veterinarians are strongly encouraged to continue to use their professional judgement to determine whether services or procedures are appropriate for specific patients based on their individual circumstances, and balance the need for treatment with the associated risk to the health of the client and the practice team.

Prepared By:

Dr. Scott Weese, DVM, DVSc, DACVIM
University of Guelph

&

Ontario Veterinary Medical Association

INDEX

Overview	1
General Concepts	2
SARS-Cov-2 Infection in Animals	2
Allowing Clients in the Practice	3
Identification of High-Risk Clients	4
Monitoring Temperatures	4
Client Communication	5
Appointment Only	5
Clinic Entrance	5
Reception	5
Examination Rooms	6
Streamlining Owner/Patient Processing	7
Alternate Service Delivery	7
Telemedicine	7
Hybrid Appointments	7
Food/Medication Delivery	8
Food/Medication Pickup	8
Practice Visitors	8
General Infection Prevention and Control	9
Ensure Physical Distancing	9
Hand Hygiene	10
Personal Protective Equipment	10
Animals as Fomites	11
Facility Management	11
Clinic Flow and Barriers	11
Cleaning and Disinfection	12
Ventilation and Air Management	12
CO2 Monitoring	13
Air Filtration and Treatment	13
Staff Management	13
Minimizing Clinic Staffing	14
Cohorting	14
Clinic Bubbles	14
Self-Monitoring	14
Exposed Personnel	15
Infected Personnel	15
Impact of Infected Employee on Practice	15
Recovered Personnel	15
COVID Alert Mobile App	16
Outside the Physical Practice	16
Identification of High-Risk Clients/Facilities	16
On Farms	16
Mobile Companion Animal	16
Resources	17
Appendix A: Recommended Use of Masks	18
Appendix B: Recommended Use of PPE	19

Overview

The COVID-19 pandemic has impacted the delivery of veterinary medicine, like virtually all sectors. While societal containment measures are being decreased, the risk posed by COVID-19 will continue for months or years to come, and control measures of varying forms will be required during this time. Veterinarians will need to continue to implement measures to minimize the risk of spread of SARS-CoV-2, the cause of COVID-19, associated with veterinary practice.

As COVID-19 is predominantly, if not exclusively, maintained through human-to-human transmission, the overall goal of social distancing is to reduce human-to-human contact, both by reducing the incidence of contacts and reducing the closeness and duration of any required contacts. It is recognized that complete social distancing is not possible in veterinary medicine; therefore, measures must be in place to reduce the risk of exposure when distancing is not possible.

The role of animals in transmission of SARS-CoV-2 is unclear. Zoonotic transmission, if it occurs, is presumably very rare. However, veterinarians are at the forefront of risk groups, particularly as they may have contact with animals owned by people with active COVID-19. While the risk is low, it is impossible to say that it is zero. Therefore, measures to minimize zoonotic transmission risks are indicated.

There is no standard approach to COVID-19 control in veterinary practice that would apply to all situations and practice types. Rather, there is a set of expectations and areas of consideration that veterinarians and veterinary clinics must evaluate and apply, as applicable. Below is a set of resources, tips, and best practices to help employers and employees prevent the spread of COVID-19 and work together to reopen the province.

In addition to reviewing and implementing recommendations set out in this guide, employers and workers in Ontario have certain duties and rights under *the Occupational Health and Safety Act (OHSA)* and its regulations. Employers should also review and follow any applicable directives and guidance coming from the Chief Medical Officer of Health, the Ministry of Health, or the Local Health Unit.

General Concepts

While COVID-19 rates are currently low in many areas, risk of subsequent waves of infection will persist well into 2021, if not beyond. Viral transmission mainly occurs through close contact and droplet transmission. Risks are greatest in three situations, the '3 Cs'.

- Closed spaces
- Crowded situations
- Close contact settings.

Risks are enhanced when droplet generating procedures are common, including talking, coughing, sneezing and yelling, and with longer contact times. These situations are very common in normal veterinary clinics, highlighting the potential risk of transmission and need for preventive measures.

Measures to reduce risk include:

- Limiting the number of people that enter the clinic (maximizing care that does not involve the client entering the clinic)
- Limiting the number of people that are in the clinic at any given time
- Limiting contact between animal owners and clinic personnel or other owners
- Minimizing the duration of contact between animal owners and clinic personnel
- Minimizing or avoiding contact in closed spaces
- Maximizing the use of physical barriers (e.g. plexiglass shields)
- Maximizing the use of personal protective equipment (e.g. masks)
- Physical distancing
- Cleaning and disinfection
- General infection prevention and control
- Evaluating clinic personnel interactions (e.g. 'clinic bubbles')
- Maximizing ventilation

SARS-Cov-2 Infection in Animals

Thorough discussion of SARS-CoV-2 infection in animals is beyond the scope of this document; however, a few important points must be considered.

- Human-pet transmission may be relatively common in households.
- Most infected animals likely have clinically inapparent infections.
- Cats can develop a range of (usually mild) respiratory tract or GI manifestations. Dogs seem to be resistant to clinical disease but may have mild disease (e.g. transient anorexia and depression).
- Cat-cat transmission can occur, so cat-human transmission should be considered possible.
- Dogs are less effective hosts and infected likely pose a much lower transmission risk than cats.

- Ferrets are likely quite susceptible to infection, and presumably pose some risk of zoonotic transmission.
- Common livestock species appear to be minimally susceptible or non-susceptible
- Susceptibility of horses is unclear.
- Mink are of particular concern because of their susceptibility, ability to transmit the virus back to people and the potential for mutation of the virus with widespread transmission on farms.
- Wildlife susceptibility is variable and inadequately understood. Most urban wildlife species seem to have limited susceptibility but some (e.g. deer mice, deer) can be infected and transmit the virus.

Allowing Clients in the Practice

Limiting the number of people in the clinic is a key control strategy and will remain so until the COVID-19 pandemic is well controlled. There is a need to balance patient care, client satisfaction, clinic efficiency and COVID-19 control, something that is a challenge. Until now, keeping clients out of the clinic has been the default approach. However, as COVID-19 case numbers in many areas of the province remain very low, practices may deem it appropriate to allow clients in the clinic, depending on the purpose of the visit and other factors such as inclement weather and ability to safely transfer the patient in a curbside manner. Ideally, the default should continue to be to use curbside drop-off, with client access to the clinic considered on an as-needed basis. This will reduce the risk through reducing in-clinic contacts and is also critical for other control measures such as direct admission to exam rooms (which require fewer people in the clinic if normal caseloads are maintained).

A common question is, ‘how do I know when it is safe to allow clients into clinic?’. There is no definitive answer to that question. “Safe” is subjective and a moving target and gradations of risk will be present. The more prolonged and closer the contact, the greater the risk. Having a client in the clinic is riskier than having them outside. The epidemiology of disease in the area will impact risk, and that is a dynamic situation. While the odds of any client being infectious are low, the risk is not zero, and measures should be in place to reduce the risk to clinic personnel and other clients.

The decision concerning whether to allow clients in the clinic for patient visits should be informed by:

- The epidemiology of COVID-19 in the local area (see your local public health unit website for the current case count);
- The extent to which the layout of the practice and COVID-19-related enhancements (i.e. plexiglass barriers, six-foot decals on the floor, etc.) allow for appropriate social distancing;
- Practice staff’s comfort level with having clients in the clinic practice; and
- Whether effective alternative approaches are available.

If the practice decides to allow clients in the clinic for patient visits, it may choose not to do so for all visits. The following limitations may be considered:

- Restricting the number of clients attending the appointment with an animal. Attendance of a single owner should be encouraged (or mandated) for routine visits.
- Limiting client visits to instances where it is necessary for the owner to make a patient care decision (e.g. clients would not be allowed in the practice for routine wellness exams).
- Limiting hospital visits only to compassionate situations (e.g. pre-euthanasia).

Whenever a client is allowed in the practice:

- Ensure the client has self-screened and has no signs or symptoms suggestive of COVID-19.
- Require the client to wear a mask.
- Upon entering the practice, hand sanitization stations need to be available for client use.

In-clinic client visits should still be discouraged for product pick-up. If clients are allowed into the clinic to pick up product, clients should be required to call upon arrival to ensure the product is readily available and that there is no reception congestion. If there will be a delay in preparing the product or if the reception area is at capacity, clients should be instructed to wait outside until called, so that the time in the clinic and number of people in the clinic can be limited.

Identification of High-Risk Clients

Querying the health status of animal owners prior to them attending a veterinary practice should remain a standard practice. While this does not assure that encountered individuals are not infected, because of asymptomatic, paucisymptomatic (very mild disease) and pre-symptomatic infections (shedding of SARS-CoV-2 prior to the onset of disease), it will identify a subset of higher risk situations. This will enable decisions regarding whether the appointment should be rescheduled or whether additional protective measures and approaches should be used. As the epidemiology of disease evolves over time and as other activities such as travel restart, the specific approach to querying health status may similarly evolve. The key aspect is having a structured approach to query the risk status of any person that will enter the clinic and every pet's household contacts. Currently, this focuses on whether people have signs and symptoms potentially attributable to COVID-19.

Monitoring Temperatures

Routine testing of body temperature through distanced methods (e.g. infrared forehead temperature sensor) is used in some facilities; however, fever is a poorly sensitive indicator of COVID-19. Further, hot, or cold environmental temperatures can influence skin surface temperature screening. Temperature screening can be considered but does not replace any other precautions. Lack of fever cannot be taken as an indication of lack of risk of infection.

Client Communication

To reduce the likelihood that a client becomes upset because they cannot enter the practice or because they have a different experience in-clinic:

- Inform all clients about the practice's policy regarding in-clinic visits by broadcast email or text message, if possible.
- Let individual clients know whether they will be allowed in the practice prior to their arrival. This should be done when the appointment is confirmed and when appointment reminders are provided, whether by phone, email or text message.
- If clients are allowed in the clinic, inform them about any measures they must take (e.g. wear a mask, complete a self-screening assessment).

Appointment Only

The current provincial directive indicates that veterinary care should be delivered by appointment only. Predictability is important to maintain flow and distancing. People that arrive without an appointment (for veterinary care, purchases or other reasons) can disrupt measures taken to minimize the number of people in the clinic and structured flow. This does not mean everything must be scheduled well in advance. Emergency patient care and spontaneous visits (e.g. last minute food purchases) can be facilitated; however, having clients call first allows staff to be prepared and to alter client arrival times, as needed (e.g. "Our reception area is at capacity now, but if you arrive in 15 minutes you can pick up your pet's food").

Clinic Entrance

- Signage should be placed indicating relevant practices (e.g. when/how to enter, hand hygiene requirement, mask requirement, physical distancing requirements, indication to not enter the building if sick, telephone/text information to contact clinic personnel from outside).
- A hand hygiene station should be positioned at the door.
- If use of a mask by clients entering the building is required (as is recommended), masks can be made available for clients that arrive without one. This could include disposable non-medical masks or re-usable cloth masks. If re-usable masks are provided, clean masks should be in individual sealed bags to indicate they are clean and prevent cross-contamination. A receptacle for used cloth masks for re-processing should be placed at the exit. If disposable masks are used, a garbage container should be placed at, or just outside, the door.
- Controlled entrance (e.g. locked door with buzzer access controlled by reception) should be considered to control numbers of people in the reception area.

Reception

- Reception areas should be viewed as processing areas, not 'waiting rooms'. Congregation of people in reception areas should be minimized.

- Maximum occupancy of the reception area should be determined based on the realistic likelihood of people maintaining a 2-metre distance between each other and clinic personnel.
- Room use and layout should be reviewed, including moving seating areas to facilitate 2-metre distancing between clients, and between clients and staff.
- Consideration should be given to installing clear partitions in reception areas to protect front office staff.
- Floor signage should be considered to maintain distancing while waiting in reception areas. This could consist of signs (e.g. footprints) indicating where to stand while waiting.
- Room design should be evaluated and, if needed, altered, to facilitate client flow, with a goal of maintaining a consistent, one-way flow, preventing unnecessary contact of client with staff and other clients. This can include creating central barriers or displays to disrupt open concept areas, use of crowd control ropes/belts to direct flow.
- Magazines, toys, and other items that might be handled by multiple people should be removed.
- Mandatory mask use by clients is recommended. Personnel must facilitate this by requiring that clients wear masks properly in the clinic.
- The number of staff working at reception should be minimized. If more than one person is required, 2-metre distancing should be arranged.

Examination Rooms

High risk situations for SARS-CoV-2 transmission involve spending time with people in close spaces, with talking or other activities that produce droplets (e.g. yelling, coughing). Examination rooms should be considered high risk areas, because of the typically small space, inability to maintain 2-metre distancing, potential for owners to get close to personnel (e.g. stepping in to help restrain an animal) and talking that inevitably occurs. If clients are allowed in the clinic with their pet, time spent with clinic personnel and owners in examination rooms should be minimized. Examination rooms are ideally client waiting rooms, whereby the client comes in with the animal, most discussion has already occurred by phone or electronically, the pet is taken to a treatment area for any procedures, and the pet is then returned to the client. If the pet and client must remain together, clients should wear a mask and be instructed to stay back. Providing a chair or indicating a standing area through floor signage should be considered. Clinic personnel should be available for restraint so that clients do not have (or feel the need) to approach personnel during patient care.

Streamlining Owner/Patient Processing

Activities that occur in reception and examination rooms should be reviewed to identify those that can be done remotely. Some, such as patient registration, can be done prior to the owner's arrival, limiting the need for the owner to enter the clinic or the time that they must spend in the clinic. Other considerations might include billing and obtaining informed consent, which can potentially be done before or after the visit.

The overall goal should be to minimize any time spent in the clinic not actively engaged in a necessary process. This can improve clinic efficiency and owner satisfaction, while minimizing the number of people in the clinic. This can improve overall clinic function and optimize the ability to maintain normal patient caseload numbers by avoiding bottleneck situations where delays occur because reception areas are at maximum occupancy or examination rooms are occupied by waiting clients.

Alternate Service Delivery

Methods to reduce the need for in-person contact with clients and animals will need to be emphasized for the foreseeable future. As restrictions on in-clinic activities decrease, it will still be important to implement measures to reduce the need for in-clinic contact while maintaining full veterinary services.

Telemedicine

Having an animal visit the clinic or a veterinarian visit the farm or household will be necessary in many situations. However, telemedicine should be approached as the default method to deal with a patient or farm question. A triage approach should be used, whereby telemedicine options are considered first, and in-person visits are used when telemedicine is not appropriate. Veterinarians should remain apprised of College of Veterinarians of Ontario (CVO) guidance on telemedicine.

As an alternative to allowing clients in the building, practices may offer clients the ability to view and participate in the patient visit while they wait in their car via Facetime, Skype or a dedicated telemedicine application.

Hybrid Appointments

There are many situations where telemedicine cannot be used as the sole approach but could still be an effective means of limiting client contact during an appointment. For example, a new puppy appointment could be first conducted via telemedicine, to obtain the history and discuss various issues. This could be followed by a shorter clinic visit for physical examination and vaccination. Since the discussion was already had, the animal's visit could effectively be performed without the owner present in the clinic.

Food/Medication Delivery

Measures to reduce the need for animal owners to come to veterinary practices are important, irrespective of measures that are used to minimize contacts during those visits. Methods to ship or deliver food, medications and other supplies should be used, when possible. This is particularly important for clients at increased risk of being infectious and clients at increased risk of complications or severe disease, should they be exposed.

Food/Medication Pickup

As per physical distancing recommendations, when clients must visit a clinic to pick up food, medication or other supplies, approaches to prevent or limit contact should be used. Curbside pickup with pre-order and pre-payment has been widely adopted by many businesses and can be easily performed in veterinary medicine. Contact-free procedures (e.g. placing the items in the client's trunk while they remain in the vehicle, placing items on a table for clients to pick up) are feasible in most situations.

Practice Visitors

A visitor policy should be created for each clinic. If possible, visits should be done virtually. However, some visits may be important for clinic function (e.g. repairs, continuing education) or for the broader profession (e.g. veterinary and technician student placements, pharmaceutical reps). However, there is always some inherent risk associated with entrance of any new person.

Considerations for short term visits include:

- No drop-in visits should be allowed. Visits should be by appointment only.
- The time and location of the visit should be clearly described.
- Visitors should self-screen for signs and symptoms of COVID-19 on the day of visit.
- Visitors should be admitted directly to the location of the visit and should avoid taking up space in reception areas.
- PPE requirements should be determined. Mask use by visitors is recommended.
- Visits should be structured so that a 2-metre distance is maintained.
- A visitor log should be maintained for contact tracing purposes. The log should include visitor name, contact information, date and time of their visit and purpose of their visit.

All the above cannot apply for longer term visits (e.g. student placements). Long term visitors likely pose increased risk because of the longer time in the clinic and closer contact with clinic personnel. More scrutiny can therefore be applied to their risk and health status. People from areas with increased rates of COVID-19, people that have not practiced responsible social distancing and people that have recently travelled may pose higher risks. Clinic practices can limit the impact of those, such as through prioritizing people from the same area, interviewing to develop confidence in the person's social distancing efforts and to outline clinic requirements. If

longer term visitors are coming from higher risk situations, a 14-day period away from the clinic after arrival could be considered.

General Infection Prevention and Control

Ensuring Physical Distancing

Social/physical distancing is critical and is likely the most important and effective approach to COVID-19 control. The overall goal of social distancing is to reduce human-to-human contact, both by reducing the incidence of contacts and reducing the closeness and duration of any required contacts. This includes contacts with clients, farm personnel, delivery personnel, clinic personnel and anyone else that might be encountered. Specific application can vary in different veterinary situations, but the same principle remains; use of basic measures to maintain separation of 2-metres from others. With that, and droplet reducing measures such as cough etiquette, transmission risks can presumably be markedly reduced.

Distancing of clinic personnel within the clinic must be maintained. This can include:

- Emphasizing the importance of 2-metre distancing whenever feasible.
- Advanced planning and provisioning for procedures that will require close contact (e.g. blood collection, catheter placement) to minimize the contact time.
- Efficient performing of procedures that require people to be in close contact.
- Reviewing scheduling practices to avoid waiting area congestion.
- Reviewing clinic layout and operations to facilitate separation (e.g. seating arrangement in reception areas, offices, meeting/break rooms, separation of procedure or treatment areas in common treatment rooms).
- Maintaining some use of curbside drop off and pickup (animals and supplies) to facilitate limiting the number of people in the clinic.

An additional consideration is distancing from other people that may visit the clinic, such as couriers. A clinic-based approach to receipt of goods should be in place to minimize contact and protect staff. This can include having contactless deliveries made by depositing goods inside a door with no one around or dropping items off outside the clinic. Signatures should be avoided as much as possible, and masks worn for any required contact. Good hand hygiene practices should be used after contact with items handled by external individuals.

Distancing from animal owners is critical, as owners pose the greatest risk of SARS-CoV-2 exposure. Measures to reduce or prevent owners from entering clinics will continue to be a key control measure, and many of those are discussed above. Additional or related approaches include:

- Contactless patient drop-off and return through leaving carriers or attaching leashes to secure hooks in unoccupied entrances.
- Documentation of verbal consent rather than requiring signatures.
- Using contactless electronic payment whenever possible.

- Altering owner and personnel flow within the clinic
- Altering waiting room layout (if people are allowed to wait), such as reducing and spacing seating

Hand Hygiene

Hand hygiene should be encouraged for personnel, clients, and visitors. A key aspect of this is ensuring that hand hygiene supplies are present throughout the clinic, including at the entrance and any areas where staff and owners may mix. Alcohol based hand sanitizers and hand washing are equally effective; however, hand sanitizers are easier to add throughout the clinic. Hand sanitizers should be at least 70% alcohol.

Personal Protective Equipment

Proper use of PPE is an important aspect of COVID-19 control and will remain so for some time. Personal protective equipment is used for two main purposes - to protect the user, and to protect others from the user.

The goal for PPE use (protection of, or protection from, the user) is critical to consider when deciding what PPE to require and when to require it. While the field efficacy of routine cloth masks for prevention of COVID-19 transmission is unclear, routine mask use is increasingly common and is a reasonable consideration in veterinary situations. These are used to reduce the spread of droplets from the wearer. Therefore, they are a population protection measure, and for effective use within a population (e.g. veterinary clinic, on farm), they must be worn by all personnel.

Routine use of masks in clinics, in vehicles and on farms, even when outdoors, is strongly recommended, when maintaining a 2-metre distance from others is not possible or predictable. Masks will reduce the risk that an unknown infected person will infect others. In a clinic situation, where contacts might be unpredictable, it is recommended that cloth/non-surgical masks be worn by all clients that are in the clinic, and by all personnel apart from times when they can be assured that there will be no close (<2m) contact with another person (e.g. alone in an office). Face shields offer some protection from a user's droplets, but less than what is provided by a mask. Face shields should be reserved as the sole PPE item for people that cannot wear a mask for health reasons.

While cloth/non-medical masks are mainly intended to protect *from* the user's droplets, they offer some degree of personal protection. Face shield or goggles offer an additional level of personal protection and can be approached as an elective additional tool for people at increased risk of severe disease or that are particularly concerned about exposure. Mandatory use of mask or goggles can be considered for situations where close contact is required, especially if contact might be prolonged and associated with higher risk activities (e.g. talking, struggling). Examples may include placing an intravenous catheter in a patient, where the person placing the catheter and the person restraining may be in very close contact and be talking to one another, creating aerosols with limited distancing options. However, here is the potential for struggling and talking.

N95 masks or equivalent respirators are designed to protect the user. However, they are uncommonly indicated in veterinary practice. The limited supply, importance for human healthcare and need to conserve them for high-risk veterinary situations (see Appendix A) mean that routine use of N95 masks should be avoided.

There are no standard approaches to routine PPE use, and clinics should develop their own specific practices. Suggested approaches are outlined in Appendix B.

Animals as Fomites

While there was concern about the role of surfaces in transmission of SARS-CoV-2 early in the pandemic, surfaces and objects appear to play little role in the epidemiology of COVID-19. While there is the potential that an actively infected person could deposit viable virus on an animal's haircoat, persistence of viable virus on the haircoat is expected to be of short duration. Hand hygiene, glove use and other routine infection control practices would reduce the risk. Screening owners for higher risk situations (households with active or suspected COVID-19 in people) and use of enhanced barriers in those situations to reduce the risk of exposure from an infected animal would be equally effective at mitigating any risk from haircoat contamination. While not contraindicated in most situations, wiping an animal's haircoat with an animal-safe biocide is not recommended as a routine practice.

Facility Management

There are a variety of ways that practices can reduce the likelihood of disease transmission through effective facility management.

Clinic Flow and Barriers

Overlapping flow of owners and clinically personnel is not typically a major consideration in clinic design. As a result, there are often various common contact points of bottlenecks that increase client-staff and client-client contacts. While major infrastructure changes are impractical in most facilities, there are potential options to modify movement and facilitate distancing.

Clinic layout should be reviewed with respect to clinic flow. Ideally, clients enter and flow through the clinic in a specific manner, never having unintended exposure to clinic personnel or crossing paths with other clients. This can be facilitated through means such as one-way flow through reception areas or having clients exit through a side/back door. Completing all visit activities, including dispensing and billing, while the client is in the examination room should be considered to facilitate flow, minimize reception area congestion and facilitate clear planning of reception area occupancy (e.g. avoiding unexpected return of clients to the reception area to wait for something).

Physical barriers can be used to reduce droplet transmission (e.g. plexiglass shields), enforce distancing (e.g. barrier preventing clients from getting close to reception desk personnel) or modify flow (e.g. re-arranging furniture, use of rope barriers to modulate traffic flow). Signage

can be used to designate standing and waiting areas, and the maintain distancing in lines or from stationary personnel (e.g. reception). Clinic procedures such as modifying where clients are greeted, how they are flowed through the clinic and where they wait can be designed to minimize contacts. There are no standard specific approaches because of the marked variation in clinic design but virtually any clinic can make physical or procedural alterations to improve flow and contacts.

Cleaning and Disinfection

Routine cleaning and disinfection practices are adequate for inactivation of SARS-CoV-2. Any routine disinfection will be effective, but those with shorter contact times and less inhibition by organic debris are preferred. The main issue pertaining to disinfection is ensuring that it is done properly.

In addition to routine clinic cleaning and disinfection, increased attention should be focused on common human hand contact surfaces, particularly those touched by many different people (e.g. areas that clinic personnel, owners and visitors such as couriers may all touch).

There is no standard approach for the frequency of disinfection, but a general concept is that more commonly touched sites should be disinfected more frequently. Disinfection of high-touch areas multiple times per day is reasonable.

Disinfection duties should be specifically assigned to facilitate compliance. Measures to record disinfection (e.g. wall sign-off sheet) of highest risk areas should be considered, as are commonplace in areas like public restrooms. They also provide an indication to clients of the measures that are being taken to protect them.

Commercial systems that can disinfect empty rooms are available and are being aggressively marketed in some areas. These systems can use disinfectant aerosols or vapours or emit UV-C light. These will effectively disinfect areas that are reached (e.g. UV-C cannot kill contaminants that are shaded from the light source). They can be effective environmental disinfection tools but for routine veterinary clinic use probably offer limited benefits over good routine cleaning and disinfection and UV-C is potentially harmful if not used properly. They are reasonable to consider but should be approached as a supplemental tool that is used periodically (e.g. end of day, weekly), not as a replacement for routine practices. Currently, CDC only recommends chemical disinfectants.

Ventilation and Air Management

As discussed above, risks are highest within closed spaces. This is due in large part to reduce ventilation, which can reduce dispersion of infectious droplet clouds and facilitate accumulation of aerosols (which may become a concern with prolonged (e.g. >15 minute) presence in a poorly ventilated area. Ventilation standards are not clear, but it has been suggested that the risk of transmission is low if ventilation can be maintained at 8L/person/second, while risk is high if flow is <3L/person/second. Maximizing flow rates while minimizing use of recirculated air should be the goal. This can be challenging with some ventilation systems and reducing re-circulated air can

be particularly difficult in some climates. However, the concept of ‘more is better’ clearly applies to airflow.

CO2 Monitoring

While airflow monitoring is impractical, CO2 monitoring is a useful proxy. CO2 levels reflect the presence of individuals (human or animal) in an airspace and dispersion of the CO2 that they produce. Low-cost CO2 monitors can be obtained to evaluate ventilation in a clinic. Outdoor air is typically ~400 ppm. Indoor air in a highly ventilated space can have similar CO2 levels; however, well ventilated areas may have moderately higher CO2 levels (e.g. 600 ppm). Greater than 1000 ppm CO2 indicates poor ventilation. The goal should be to minimize CO2 levels, within reason, maintaining all areas well under 1000 ppm (ideally <600 ppm). CO2 monitoring can identify the current status of a facility, identify higher risk areas within the facility that need specific attention and evaluate the impact of changes (e.g. opening doors or windows, use of fans, changing HVAC settings).

Air Filtering and Treatment

The role of air treatment systems is unclear; however, they can likely reduce the risk in certain situations. Reduction in viable aerosolized virus can be achieved by filtering (removing virus) or treating (killing virus). In room HEPA filters can remove infectious particles in the vicinity of where they are released. These may be particularly useful in areas where ventilation is poor and cannot be improved and where human traffic is higher. If clients are allowed in the clinic, they can also be of particular use in areas where clients are housed. Portable, in room UVC systems may offer similar benefits. Above room UV-C or HEPA systems (mounted within the room, above head level) may also be useful.

There is no evidence that in duct systems (e.g. UV light, HEPA filters) are necessary. Similarly, systems that can be used in rooms after people vacate (e.g. UV-C) are not likely effective over routine surface cleaning and disinfection, and active in-room filters.

Staff Management

Because of the prolonged close contact that occur, inter-staff transmission of SARS-CoV-2 is a significant concern, and numerous clinic outbreaks of COVID-19 have been encountered. In human healthcare, it has been suggested that more occupational infections of healthcare workers occurred in common (e.g. lounge, office) areas than from patient care, highlighting the potential for transmission between personnel, particularly when preventive measures are relaxed in non-patient-care areas. This supports the need for continued measures to distance and protect from other clinic personnel, not just clients. Physical distancing is a key component. When full distancing is not possible, steps can be taken to minimize the frequency and duration of close contacts. Routine use of non-medical masks by staff is encouraged to reduce inter-clinic transmission.

There are a variety of ways that staffing can be reorganized to reduce the likelihood of disease transmission.

Minimizing Clinic Staffing

Reducing the number of people in the clinic at any time facilitates physical distancing by reducing the number of potential contacts and making distancing and flow measures more practical. Where possible, personnel should work at home. This could include telemedicine, time spent doing client follow-up calls and various practice management activities.

Cohorting

An individual who has been in close, prolonged contact with an infected person may be required to self-isolate for 14 days. When feasible, measures should be taken to reduce the number of different contacts within veterinary practices. This is not always possible but can be performed in some clinics. Examples of this would include operating separate shifts with specific personnel, designating specific work groups (e.g. constant pairing of veterinarian and technician) or other approaches to try to reduce exposure of all personnel in a clinic should one person be infected. This may be challenging over the long term from a practical perspective. Cohorting should be approached as an ideal, with the goal to maintain as much group separation as possible. In situations where cohorting is not possible, the use of other measures (e.g. PPE) becomes even more important.

Clinic Bubbles

Considering all members of a clinic as a 'clinic bubble' has been used in some facilities. This typically involves decreased use (not elimination) of preventive measures such as masking and distancing. This can be a consideration in areas where community transmission is low and where clinic personnel are low risk for exposure outside the clinic. However, this approach involves risk because one infected staff member could rapidly expose the rest of the clinic to SARS-CoV-2.

Community transmission rates, the number of people in the bubble, the number of other contacts each bubble member has, the risk status of out-of-clinic contacts and out-of-clinic behavior of staff (compliance with control measures) affect the risk and maybe hard to assess and control.

The risks posed by this approach are difficult to justify and this approach is not recommended, particularly in areas with abundant community transmission, or in clinics with many personnel or personnel that have many other (especially high risk) contacts.

Self-Monitoring

Self-monitoring by all veterinary personnel is a critical tool to reduce intra-clinic and veterinary-client spread of SARS-CoV-2. Personnel must be cognizant of their health and err on the side of caution if they may be ill. The signs and symptoms of COVID-19 (e.g. fever, cough, chills, sore

throat, vomiting, diarrhea) are similar to other illnesses, including the cold and flu, which complicates matters. However, personnel with symptoms related to cold, flu or COVID-19 be sent home and/or not be allowed to visit farms, households or facilities. People with signs or symptoms potentially compatible with COVID-19 should use Ontario's [online self-assessment](#) or call Telehealth ([1-866-797-0000](tel:1-866-797-0000)) or their primary healthcare provider.

Exposed Personnel

The approach to exposed personnel may vary and guidance is provided via Ontario's online self-assessment. Exposure to an infected person is defined as living in the same household or having been less than 2 metres away in the same room, workspace or area as the infected person during the time they were potentially infectious (from 48h prior to the onset of symptoms to 10d after the onset). However, the type of contact, duration of contact and use of masks or other preventive measures may influence recommendations. Contact with local public health is recommended to clarify the need for self-isolation; however, the current default recommendation is 14-day self-isolation. Guidance for self-isolation is available [here](#). Testing is also recommended after exposure, but testing cannot be used to replace self-isolation. Since testing is not 100% sensitive, a negative test does not indicate that the self-isolation period can be ended.

Infected Personnel

Infected personnel must self-isolate. Current Ontario [recommendations](#) are to self-isolate for 14 days after the onset of symptoms, as long as clinical signs and symptoms have resolved by the end of the 14 day period. Since there is some variation between regions, infected personnel should confirm the recommended isolation period with their local public health unit.

Impact of Infected Employee on Practice

Several OVMA members have asked, "Will I have to close my practice if a staff member becomes infected?" Although there is no one-size-fits-all answer to this question businesses are not being asked to close just because they have an infected employee. If a staff member becomes infected, contact your local health unit. The health unit will assess the situation and determine next steps. The extent to which the practice might be affected will depend to at least some extent on the degree to which the practice had implemented and enforced social distancing, masking, and other measures to protect against the spread of COVID-19.

Recovered Personnel

Recovery from COVID-19 likely provides reasonable immunity, at least in the short term. However, re-infections have been documented. Therefore, people that have had COVID-19 previously must use the same preventive measures as everyone else.

COVID Alert Mobile App

A free, anonymous COVID tracking app is available. This app anonymously registers contacts with other people using the app. If a user tests positive, they enter a code into the app, and anyone that they have had contact with receives an alert that they were exposed to someone that was positive, without providing any specific information about who was positive. This app does not work on all devices (it does not work on older models) but is a useful monitoring tool in veterinary clinics. It is recommended that all clinic personnel download the app, if it is compatible with their device. This will allow early intervention if there is exposure in the clinic.

Outside the Physical Practice

Identification of High-Risk Clients and Facilities

Querying the health status of animal owners prior to veterinary personnel visiting a farm, household or facility should remain a standard practice. This will enable decisions regarding whether the appointment should be rescheduled or whether additional protective measures and approaches should be used.

On Farms

The approach to farms involves the same concepts as those in clinics. The goal is to minimize the number and closeness of contacts. Visits should be coordinated such that close contact (<2 metres) with owners or farm personnel is avoided as much as possible. Contact may be unavoidable in some situations (e.g. restraint of an animal when a technician or assistant is not available or adequate). In those situations, the following can be considered:

- Using the lowest risk person on the facility based on their health and exposure status.
- Minimizing duration of close proximity through proper planning and organization, and efficient performing of a procedure.
- Asking the person to wear a mask. If they do not have one and clinic supplies are adequate, they could be provided with a mask.
- Use of PPE by veterinary personnel (e.g. mask and eye protection).

Mobile Companion Animal Practices

The general approach in mobile practices is similar to those for companion animal clinics and farm visits, with the understanding that mobile practices may pose a higher risk because they entail entering a client's house. They also often require closer contact with animal owners for restraint. Therefore, identifying and avoiding higher risk situations (see below) is particularly important. Other considerations would include:

- Examining the animal outside of the household (e.g. in vehicle, garage, fenced yard, enclosed porch) where safe for the veterinarian and where escape of the animal can be prevented.

- Using the lowest risk person in the household for restraint, based on querying health and exposure status.
- Minimizing duration of close proximity through proper planning and organization, and efficient performing of a procedure.
- Asking the animal owner(s) to wear a mask. If they do not have one and clinic supplies are adequate, they could be provided with a mask.
- Use of PPE by veterinary personnel (e.g. mask and eye protection).

In some situations, it may be prudent to reschedule or divert the appointment to a physical veterinary clinic where safe handling of the animal without owner involvement can be performed.

Resources

A comprehensive resource for small animal clinics is the [*OAHN Best Practices for Infection Control in Small Animal Veterinary Clinics*](#).

Information for farms is available through the Canadian Food Inspection Agency's [National Biosecurity Standards documents for different species groups](#).

Appendix A

Recommended COVID-19-Related Use of Masks in Veterinary Practice

Item	Use/comments
Cloth/non-medical mask	<ul style="list-style-type: none"> ▪ Mainly to protect FROM the user's droplets. ▪ Some degree of personal protection. ▪ Should be routinely use by everyone in the clinic, except when alone in a room ▪ Should be mandatory whenever a 2 metre distance cannot be maintained.
Surgical mask	<ul style="list-style-type: none"> ▪ Mainly to protect FROM the user's droplets. ▪ More predictable performance than cloth/non-medical masks. ▪ Unnecessary in routine non-medical situations (e.g. interacting with a person where a 2 metre distance cannot be maintained). ▪ Best reserved for sterile procedures and higher risk patient contact situations (see table).
N95 mask	<ul style="list-style-type: none"> ▪ Protection both OF and FROM the user. ▪ Wearer must be fit tested. ▪ Rarely required in veterinary situations.
Face shield	<ul style="list-style-type: none"> ▪ Some protection FROM the user's droplets but likely inferior to a cloth/non-medical mask. ▪ Provides eye protection and addition level of respiratory protection. ▪ Prevents hand contact with mask. ▪ Potential (but inferior) alternative for people that cannot wear a mask for medical reasons or in limited situations where mask use is not possible (e.g. interaction with a client that needs to read lips). This should be restricted and other protective measures (physical distancing, ventilation, limited duration) should be concurrently maximized. ▪ Potential added level of protection for the wearer in close contact situations. ▪ Recommended along with mask for certain higher risk situations (see table).
Goggles	<ul style="list-style-type: none"> ▪ Excellent eye protection if using appropriate goggles. Goggles intended for protection against droplets should be used when eye protection is indicated. ▪ Unlike masks, goggles do not provide additional respiratory protection or prevent hand contact with masks. ▪ Regular safety glasses provide impact protection but not the same level of protection against droplets. ▪ Eyeglasses offer some protection are not considered adequate protection from droplets.

Appendix B

Recommended COVID-19-Related Use of PPE in Veterinary Practice

Situation	Gloves	Mask	Outerwear	Eye protection
Daily activities in the clinic		Cloth/non-medical/medical	Routine (e.g. lab coat, coveralls)	
Contact with a healthy animal that has no known SARS-CoV-2 exposure			Routine	
Contact with a healthy animal of a species that can be infected by SARS-CoV-2 (e.g. cat, dog, ferret) that has had known or suspected contact with a person with COVID-19 in the <u>past 14 days</u>	Yes	Medical	Dedicated*	Yes
Contact with a healthy animal of a species not known to be susceptible to infection but that has had known or suspected contact with a person with COVID-19 in the <u>past 3 days</u>	Yes	Medical	Dedicated	+/-
Contact with an animal of a species that can be infected by SARS-CoV-2 (e.g. cat, dog, ferret)** that has had known or suspected contact with a person with COVID-19 in the past 14 days and which has signs potentially compatible with COVID-19 (acute respiratory or gastrointestinal disease)	Yes	Medical or N95	Single use, impermeable***	Yes
Aerosol generating procedure (e.g. intubation, dental examination, close contact with the face of a panting dog) involving an animal of a species that can be infected by SARS-CoV-2 (e.g. cat, dog, ferret)* that has had known or suspected contact with a person with COVID-19 in the past 14 days and which has signs potentially compatible with COVID-19	Yes	N95 if possible. Medical mask acceptable if needed.	Single use, impermeable	Yes

* *Dedicated means in item used only for that patient. This could include a laboratory coat that is laundered after use.*

** *Note: The species range that is susceptible to COVID-19 is still poorly understood. The risks are thought to be highest with cats and ferrets. The risk related to dogs is unclear and likely much lower than cats and ferrets. The list of higher risk species may change over time and veterinarians should follow ongoing developments.*

*** *E.g. surgical gown.*