What is the OAHN Public Health Update?

The Ontario Animal Health Network (OAHN) was created to achieve coordinated preparedness, early detection, and response to animal disease in Ontario. OAHN is a “network of networks” with individual networks for different species/sectors, each of which involves collaboration among veterinarians, animal owners and stakeholders in the field with laboratory, academic and government experts. This annual update was created especially for public health professionals in Ontario, to highlight pertinent topics from the last 12 months from the OAHN companion animal and other species networks, to help strengthen the link and communication between animal health and public health networks.

Pathogens in dogs imported from Asia: Project summary (Q1 2022)

In this OAHN-funded study from the University of Guelph, 94 dogs recently imported to Ontario from Asia were tested for a number of zoonotic and canine-specific pathogens. Not every dog was tested for every pathogen. Preliminary results showed 28% of dogs were positive for at least one pathogen of interest. Dirofilaria immitis (heartworm) was the most common pathogen detected (n=13) followed by extended-spectrum beta-lactamase (ESBL)-producing Enterobacteriacea (n=9). Testing for canine respiratory viruses was complicated by suspected cross-reaction to intranasal vaccine given around the time of importation. A cluster of Brucella canis infections was detected in one large shipment of dogs. While the study does not provide accurate estimates of the prevalence of each of these pathogens in imported dogs from Asia due to the non-random sampling design, it does identify some of the relative risks. This emphasizes the need for education of prospective dog owners, and the need for infection control measures such as diagnostic testing and short-term isolation of imported dogs. Read the complete project summary on the OAHN website. Also check out the OAHN canine importation, rescue and related resources webpage.
Poultry: H5N1 Avian Influenza (Q2 2022)

The ongoing outbreak of H5N1 highly pathogenic avian influenza (HPAI) that has been plaguing Europe since 2021 finally reached North America in 2022. It was first detected in domestic birds in a small flock in Newfoundland in December 2021 and has since been reported in domestic poultry on 111 premises in 9 provinces, affecting 2,091,153 birds, as well as numerous wild bird detections. In Ontario, the virus was detected in 20 commercial and 6 small poultry flocks. The Canadian Food Inspection Agency (CFIA) quarantined all affected premises and oversaw depopulation of the birds, cleaning and disinfection and follow up surveillance to contain the spread. A map of current and revoked control zones is available on the CFIA website.

This particular flu virus has also been detected in several species of wild mammals. The ability of flu virus to mutate or reassort with other flu viruses means the potential for inter-species spread, including to humans, must always be kept in mind. There have been very few infections with this H5N1 strain detected in people, all of whom had close contact with infected birds.

As wild birds start migrating south again in the fall, another wave of outbreaks is likely to occur. Owners of small flock poultry must be particularly vigilant to prevent direct and indirect exposure to wild birds, as well as to prevent potential spread of flu virus from their birds to people. Seasonal influenza vaccination is also important for people who work with poultry or wildlife to decrease the risk of coinfection with and reassortment of multiple flu viruses in the same host.

Monkeypox and animals: Unknowns

Since May 2022, monkeypox has been spreading among people in dozens of countries around the world, including Canada. Before now, this zoonotic disease occurred primarily in central and west Africa, and occasionally amongst travelers to this area. Although African rodents are the most likely reservoir of the virus, information on susceptibility of other animal species (including North American and various pet rodents) is very limited.

Preventing exposure of rodents, especially wild rodents, is particularly important, in order to avoid introducing the virus to the wildlife population where it could create a wildlife reservoir.

Because of the large number of unknowns regarding monkeypox, recommendations for pets of individuals who may be infected with this virus are very similar to those for cases of COVID-19:

• Treat pets like a human member of the household by avoiding close contact as much as possible, covering (human) skin lesions and practicing good hand hygiene when handling the pet or anything in its environment. Keep the pet indoors as much as possible.
• Pets from infected households should be managed by telemedicine whenever possible. If not, contact OMAFRA (877-424-1300) for advice on appropriate precautions before seeing the animal.
REVISED Lyme disease infographic (Q2 2022)

Just in time for the late summer peak in tick activity, OAHN has posted a revised infographic for veterinarians on Ticks and Lyme Disease in Ontario, featuring the latest risk area map for Ixodes scapularis from PHO, and quick tips on monitoring, screening, and when not to treat dogs. There’s also a smaller graphic for sharing on social media to help owners know what to do when they find a tick on their pet. Owners (and veterinarians!) can now download the eTick app to make submitting images for tick identification even easier, and keeping interactive maps and other quick-reference information right in your pocket.

Also don’t forget about the great region-specific owner infographics about ticks available from the Canadian Pet Tick Survey.

The latest summary of the epidemiology of Lyme disease cases (in people) in Canada (2009-2019) is now also available online (Gasmi et al. CCDR 2022).

Anaplasma spp. in dogs, people, cows (Q3 2021)

Anaplasma phagocytophilum is a tick-borne pathogen spread by the same black-legged ticks (e.g. Ixodes scapularis) that spread Lyme disease. According to the recent Canadian Pet Tick Survey, up to 4% of black-legged ticks collected from pets in different parts of Ontario were positive for this bacterium, and a large study from Quebec also found a prevalence of 2-3% in ticks removed from dogs and cats from 2010 to 2017. There have been anecdotal reports in 2021 of increased anaplasmosis cases in dogs in central and eastern Ontario. Infection was also diagnosed in a Kingston resident, and cases have been on the rise in the US as well.

Bovine anaplasmosis was also detected in Ontario in early 2021, but this disease is caused by a different species, A. marginale.

SARS-CoV-2 study link (Q2 2022)

The OAHN study on SARS-CoV-2 in household-exposed pets is now available online (Beinzle et al. EID 2022). Also check out the CAHSS dashboard and the USDA-APHIS website for quick info on SARS-CoV-2 in animals in Canada and the US, respectively.

Another case of AE (Q2 2022)

Another case of alveolar echinococcosis was diagnosed in a dog in the Niagara region this spring. This is a reminder that this zoonotic parasite has become endemic in southern Ontario. Click here to review the recent OMAFRA veterinary reminder on Echinococcus multilocularis risk in Ontario.
Blastomycosis cases in Ontario (Q4 2021)

In late summer 2021 there was a perceived increase in the number of blastomycosis cases referred to OVC, and in the fall another survey respondent also commented of a rise in cases. There was also a devastating outbreak of blastomycosis in people in Constance Lake First Nation in November; a few dogs were noted to be ill around the same time, but none of the dog cases were confirmed.

Blastomycosis is a tricky disease to monitor. It is regionally endemic in Ontario, especially around Georgian Bay, northwestern Ontario and the Ottawa region. Blastomycosis in dogs is periodically notifiable in Ontario, meaning cases are reported to OMAFRA by Ontario laboratories on an annual basis. However, veterinarians in high-risk areas may be accustomed to detecting cases based on history, clinical signs and thoracic radiographs, in which case diagnostic samples are not submitted and the cases are not reported. Cases are also reported by the location of the veterinary clinic, which is typically near where the animal lives, but not necessarily where the animal was exposed to the fungus. Most if not all of the cases detected in major urban centres are likely travel-related, particularly in dogs that spend time at cottages or hunting in high-risk areas. This highlights the importance of taking a good travel history, as some owners may not think of their regular trips to the cottage a few hours away as “travel.”

Although the yeast form of the fungus in an infected dog is not easily spread to others, cutaneous exposure through bites or contact with discharge from draining wounds through broken skin is still a risk to veterinary staff and others. An infosheet for pet owners on blastomycosis is now available from OAHN and the Worms & Germs Blog.

Leishmaniasis in Ontario (Q3 2021)

Leishmaniasis in animals is not currently a notifiable disease in Ontario, but anecdotal reports suggest this parasitic infection is regularly encountered in dogs imported from certain regions, particularly around the Mediterranean basin (e.g. Greece, Turkey). A number of Ontario veterinarians reported diagnosing leishmaniasis in dogs in 2020-2021, including imported dogs and domestic foxhounds. Although a competent insect vector for the disease has not been identified in Canada, the infection can also be spread between dogs by other means including breeding, blood transfusions, vertical transmission and others, particularly within kennels. Foxhounds are considered a high-risk breed, even in North America.

Unfortunately, even with treatment it is extremely difficult to clear the infection, and affected dogs will typically have recurrent bouts of clinical disease throughout their life, and remain reservoirs of the parasite. Sometimes infection may first manifest months or years after the dog is imported. More information about this zoonotic disease is available from leishvet.org, including a detailed factsheet for veterinarians.
Equine: EEE, leptospirosis (Q3/Q4 2021)

Eastern equine encephalitis (EEE) is an ever-present risk in certain geographical areas of Ontario. In 2021, a cluster of disease occurred in the District of Parry Sound with 5 confirmed and multiple unconfirmed equine deaths reported. Previous large outbreaks include the Niagara region in 2018 and Eastern Ontario in 2014. One theory for the distribution of EEE in the province is the association with the black crowned night heron and their breeding grounds. More information is available in the Q3 equine veterinary report (OAHN login required). No equine cases of EEE have been reported in Ontario in 2022 as of August 31.

In the last quarter of 2021, leptospirosis was diagnosed as the cause of abortion in a pregnant mare. *Leptospira* spp. account for approximately 1.5-5.9% of equine abortions. Infected mares do not generally exhibit signs and may abort the fetus, deliver a stillborn fetus, or may give birth to a weak foal. Recurrent uveitis and kidney disease can also be associated with leptospirosis in horses. Horses are typically exposed to the bacterium in the same way as people, pets and other livestock, through contact with urine from infected wildlife, including skunks, raccoons and rodents.

Bovine & Small Ruminant: *Salmonella* Dublin update (Q4 2021)

The OAHN Bovine team continues to monitor cases of *Salmonella Dublin*, which is an emerging disease in all cattle sectors across Canada. As well as causing sickness and death in calves, *S. Dublin is transmissible to people*, and the strains currently circulating are broadly antibiotic-resistant. In 2021, there were estimated to be 24 outbreaks on 20 different premises, including 14 that detected S. Dublin for the first time. In 2020, there were 14 outbreaks with 7 first-time premises.

Also at the end of 2021, S. Dublin was reported in a 1-week-old dairy goat kid that died suddenly on an Ontario farm where veal calves had recently been introduced. Enhanced biosecurity measures have been put in place to control the spread of disease and reduce any human health risks. RAIZO (our OAHN counterpart in Quebec) also reported a case in a goat kid under 2 months of age in that province. Infection with S. Dublin is uncommon in goats, but these cases are a reminder of the importance of biosecurity both between and within different livestock groups.
2nd imported canine rabies case (Q1 2022)

A second case of canine-variant rabies in an imported dog from Iran was detected in Toronto in January 2022, resulting in 37 individuals requiring post-exposure prophylaxis. The dog was imported in late June 2021, and the incubation period in this case was unusually long.

If there is any question regarding the validity of a pet’s previous vaccinations for rabies, then the animal should be revaccinated as soon as possible, and a new vaccination certificate issued. Under the Health Protection and Promotion Act (Reg. 567), previous vaccination using products that are not licenced for use in Canada is considered invalid in Ontario.

The case report of the first imported rabid dog in Canada has now been published (Rebellato et al. 2022).

Dog importation ban: September 28, 2022 (Q2 2022)

The Canadian Food Inspection Agency (CFIA) has announced that as of September 28, 2022, commercial dogs from over 100 countries considered high-risk for canine rabies will no longer be permitted entry into Canada. Commercial dogs can include, but are not limited to, dogs for resale, adoption, fostering, breeding, show/exhibition, or research.

Lung fluke cluster, Goderich (Q4 2021)

Several cases of infection with the North American lung fluke, *Paragonimus kellicotti*, were reported in the Goderich ON area at the end of 2021. This parasite has a complex life cycle involving snails and crayfish, and its definitive host in the wild is thought to be mink. However, dogs can be infected by eating raw crayfish, or by eating other small animals like rodents that prey on crayfish. People can also be infected by this parasite, but only by eating uncooked crayfish - it cannot be spread directly from a dog. Human infections in North America are rare.

Check out the OAHN infosheet for veterinarians about this lung fluke for information on transmission, clinical signs, diagnosis, and treatment in animals.
Wildlife Rabies Update

Rabies response and control in Ontario is a joint effort involving the public, animal owners, veterinarians, animal and wildlife control organizations, public health units, the Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA) and the Ministry of Natural Resources and Forestry (MNRF). Click here for the latest Ontario rabies surveillance map. Annual maps of rabies cases in Ontario (including terrestrial rabies and bat rabies cases) are available at ontario.ca/page/rabies-cases. Watch for a NEW interactive rabies surveillance map coming soon!

Remember that ANY direct contact between a pet and a live bat is considered a potential rabies exposure, and ALL* dogs and cats - even if currently vaccinated - require a rabies booster within 7 days of an exposure unless the bat can be tested (and is negative) within this window. The OMAFRA rabies website has additional detailed rabies response information for veterinarians.

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To date, all raccoon-variant rabies cases in 2022 have been detected in the St. Catherines area.

The MNRF distributes oral rabies vaccine (ORV) baits to help limit further spread of rabies in raccoons, skunks and foxes (there is currently no effective means of controlling rabies in bats). Over 8 million ORV baits have been distributed since December 2015, and the MNRF has performed over 25 800 dRIT screening tests as part of their surveillance efforts.

Highlights:

- **Q1 2022**: OAHN created a domestic animal exposure flowchart for public health professionals to provide an overview of how OMAFRA helps veterinarians manage these cases. For a pdf copy of the flowchart, please email oahn@uoguelph.ca.
- **Q2 2022**: MNRF has begun their annual ORV baiting campaign. The control zone continues to shrink as no cases have been detected outside the Niagara region since July 2020.

**REMEMBER**: Owners who have a concern about potential exposure of one of their animals to rabies should always be referred to their local veterinarian FIRST. Veterinarians seeking assistance with a rabies risk assessment or animal testing should contact OMAFRA using the online rabies response request form (omafra.gov.on.ca/rabiesrequest), or at 1-877-424-1300.
Updates to notifiable disease list, Ontario

Following consultation in late 2021, an update to the appendices listing notifiable hazards in O. Reg. 277/12 (Reporting of Hazards and Findings) under the Animal Health Act, 2009, was proposed for 2022. The update is expected to include clarification of some of the pathogens and diseases already included on the lists, some adjustments to which hazards are periodically notifiable (i.e. reported annually by diagnostic laboratories in Ontario) versus immediately notifiable (by either the veterinarian or laboratory involved), and the addition of some hazards such as *Echinococcus multilocularis*, *Leishmania spp*, and SARS-CoV-2. Once enacted, the final list will be available on the Ontario.ca website (www.ontario.ca/laws/regulation/120277).

OAHN disease reporting portal

Ontario veterinarians can now report unusual companion animal infectious disease cases to OAHN any time using the online disease reporting portal on the OAHN companion animal homepage. Submissions will be reviewed by members of the network team to detect any notable disease patterns and occurrences that should be communicated to Ontario veterinarians.

Please note that listed notifiable or reportable diseases must still be reported to the appropriate provincial or federal animal health or public health authorities.