NEW YORK CITY DEPARTMENT OF
HEALTH AND MENTAL HYGIENE
Ashwin Vasan, MD, PhD
Commissioner

2022 Veterinary Advisory #5:

Potential Risk of Monkeypox and Pet Dogs and Cats in New York City

- Monkeypox is a zoonotic disease caused by *Monkeypox virus* (MPXV), a type of *Orthopoxvirus* enzootic to areas of West and Central Africa.
- The virus is thought to be maintained through unknown animal reservoirs, possibly of certain African rodents and shrews. Monkeypox can be transmitted to people through direct contact with an infected animal.
- Until recently, there had been never been a report of monkeypox in companion and other domesticated animals including dogs and cats. A recent report from France describes likely transmission of MPXV from an infected owner to their pet dog. There is limited data on the susceptibility of dogs and cats however the lack of cases suggests limited risk. The virus has been detected in gerbils, guinea pigs, hamsters and rabbits inoculated in a research setting.
- Veterinarians should consider monkeypox in an animal that has a new onset of pustular rash or other compatible signs and lives with, or had close contact with, a person who has monkeypox. Signs of illness in animals may include poxvirus-like skin lesions as well as fever, lethargy, lack of appetite, coughing or nasal secretions/crust.
- Contact the NYC Department of Health and Mental Hygiene to discuss a suspected case of monkeypox in an animal, and for assistance with arranging testing.
- MPXV testing for dogs and cats is offered for a fee and upon prior approval through the Cornell Animal Health Diagnostic Center using the pan-pox PCR and the Centers for Disease Control and Prevention rtPCR MPXV specific assay.

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Dear Colleagues,

The number of people diagnosed with monkeypox during the current global outbreak continues to rise in New York City, the US and other countries. The World Health Organization, the United States, New York State and New York City have all declared monkeypox a public health emergency. This Veterinary Alert provides information about monkeypox virus in animals, the risk to dogs and cats, and guidance on how to arrange for testing at Cornell's Animal Health Diagnostic Center.

Background
Monkeypox is a zoonotic disease caused by monkeypox virus (MPXV), a type of Poxvirus enzootic to areas of West and Central Africa. The virus was first identified in 1958 during an outbreak of pustular rash illness in research macaques in Denmark (Silva, 2020). There are several genera of *Poxviruses* of great veterinary importance including *Orthopoxviruses* and *Parapoxviruses* (Silva, 2022). *Orthopoxviruses* include monkeypox, cowpox, horsepox and raccoonpox viruses. Examples of *Parapoxviruses* include bovine papular stomatitis, orf and squirrel parapox viruses.

MPXV is thought to be maintained through unknown animal reservoirs, possibly of African rodents (rope and sun squirrels, giant-pouched rats, African dormice) and shrews. The virus has been detected in a limited number of other mammalian species including non-human primates, anteaters, hedgehogs, gerbils, guinea pigs, hamsters, rabbits and prairie dogs. While there are no reports of monkeypox among lagomorphs, in a laboratory study, direct and passive inoculation of research rabbits led to clinical disease and an antibody response (Marennikova, 1976). Laboratory studies using rats of the genus *Rattus* (this includes the Norway rat common in NYC) and mice of the species *musculus* (the house mouse) suggest they may be refractory to MPXV infection (Reynolds, 2012). Non-mammalian species including reptiles, amphibians, and birds are thought not to be at risk for MPXV infection. Additional information about species susceptibility to monkeypox can be found on the Centers for Disease Control and Prevention (CDC)'s website.

Prior to 2022, the few human cases of monkeypox reported outside of West and Central Africa were associated primarily with travel to an enzootic area. The largest outbreak of monkeypox, prior to the current global outbreak, occurred in the US among prairie dogs and their owners in 2003. The outbreak was linked to imported infected African rodents that transmitted the virus to prairie dogs with which they were housed in an animal distribution facility. While the human owners contracted the virus from the infected prairie dogs, there was no person to person transmission of the virus and no other animals residing in the home developed monkeypox.

Monkeypox can be transmitted to people through direct contact with an infected animal or person through viable virus present in their lesions and respiratory droplets. In humans, scientists have detected MPXV DNA in several bodily fluids including blood, urine, semen and feces (Aida, 2022 and Andrea, 2022). Research is ongoing to determine whether the viral DNA is fragments or reflective of viable virus capable of causing infection. In the current global outbreak, MPXV is being transmitted person to person most often through close, prolonged physical contact including sexual or intimate contact with a person who has monkeypox. Characterization of those infected reveal that the majority of people diagnosed with monkeypox identified as gay, bisexual, or other men who have sex with men (MSM).

Risk of MPVX Infection for Dogs and Cats

A recent article describes the first report of monkeypox in a dog (Seang, 2022). Prior to this report, MPXV had not been reported in companion or other domesticated animals including dogs and cats. However, given the scientific plausibility, the CDC had recommended out of an abundance of caution, that people with monkeypox avoid contact with pets and other animals, especially pet rodents including gerbils, guinea pigs, hamsters, rats and rabbits.

The affected dog, an Italian greyhound, aged 4 years and with no previous medical disorders, was tested based on a combination of the clinical presentation and a known risk factor; the dog developed several mucocutaneous lesions, including abdomen pustules and a thin anal ulceration, and lived and slept with two owners both of whom had developed monkeypox in the preceding 12 days. Testing was performed using PCR on specimens collected from the skin lesions and swabs of the anus and oral cavity. While MPXV DNA was detected, it is unknown whether the lesions contained infectious virus.

In the context of this outbreak, our current understanding is that prolonged direct contact with the lesions of someone who has the virus is the primary mode of transmission. This, along with the paucity

of documented animal cases or data showing that dogs and cats are highly susceptible to MPXV, likely means the risk that people with monkeypox will transmit the virus to their pets is low. Given the important role that dogs and cats play in peoples' lives by offering companionship and security, it is not recommended to relocate pets of owners with monkeypox. To minimize the risk of transmission, advise pet owners who have monkeypox to take the following precautions to safely interact with dogs and cats. Before coming into contact with a pet they should:

- Practice proper hand hygiene.
- Completely cover their rash and sores with clothing (including gloves if there are sores on the hands). Use bandages to cover areas that cannot be covered by clothing.
- Wear a well-fitting face mask.
- Not let pets have direct contact with the person's lesions, garbage, clothes, bedding or other materials they touched.
- Not share dishes, food, drinks or utensils.
- Avoid close contact that occurs through cuddling, kissing, hugging, licking, and sharing sleeping areas.

When to Consider Monkeypox Infection in a Dog or Cat

Veterinarians should consider monkeypox in an animal that has a new onset of pustular rash or other compatible signs and lives with, or had close contact with, a person who has monkeypox. Signs of illness in animals may include poxvirus-like skin lesions as well as fever, lethargy, lack of appetite, coughing or nasal secretions/crust.

Testing Dogs and Cats for MPXV Infection

Animals suspected of MPXV infections should arrange to have the animal brought directly to an exam room when it arrives. All diagnostics and treatments should be performed in a private exam room that is thoroughly sanitized afterwards. If handling an animal with suspected or confirmed monkeypox, the following precautions should be followed:

- Hand hygiene: Practice proper hand hygiene after all contact with a sick animal and all contaminated surfaces.
- Wear recommended personal protective equipment: gown, gloves, and an N95 or well-fitting surgical mask.

MPXV testing is offered through the Cornell Animal Health Diagnostic Center (AHDC) for a fee using both the pan-pox PCR and the CDC rtPCR MPXV specific assay. Contact the NYC Department of Health and Mental Hygiene (Health Department) for consultation and assistance with arranging testing by calling 347-296-2600.

Acceptable clinical samples and how to collect:

- If rash is present, use a polyester swab with a thin plastic, wood, or aluminum shaft to swab either the lesion surface, fluid, or crust. Vigorously swab the lesion to ensure adequate DNA is collected. Avoid using cotton swabs if possible.
    - If multiple lesions are present, more than one should be swabbed, preferably from different areas of the body and/or from lesions in different development stages.
    - Take pictures of the lesions to help as diagnostic tools.

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Sample storage and shipping:

- Swabs can be stored in 300 ul viral transport media (VTM) or universal transport media (UTM), or in a dry tube.
- Swabs can be stored in O-ring sealed 2 mL screw-cap tubes or other gasketed sterile container.
- Use one storage container per sample; do not store multiple swabs or samples in a single container.
- If lesion crusts are available, they should be sent in a dry tube.
- Samples should be stored refrigerated or frozen within an hour of collection if possible.
- Ship samples with enough ice packs to ensure they arrive cold.
- Submit with a general submission form and write in test request for monkeypox/orthopox virus PCR.

If an animal has a positive test result, confirmatory testing will be performed by the CDC and the US Department of Agriculture. The NYC Health Department along with the NY State Department of Agriculture will follow up with the veterinarian and the pet owner to provide appropriate guidance and management of the pet and anyone who had direct contact with the animal.

Helpful Resources
CDC's Information for Veterinarians on Monkeypox:
https://www.cdc.gov/poxvirus/monkeypox/veterinarian/index.html

As always, we greatly appreciate your partnership and cooperation.

Zoonotic and Vector-borne Disease
Bureau of Communicable Disease
ZIVDU@health.nyc.gov
347-396-2600

References

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-Visit our webpage for more information and resources for veterinarians: Zoonotic and Vector-borne Diseases: Information for Providers
-If you do not receive these alerts via email and would like to added to the distribution list, please email zivdu@health.nyc.gov