



GUIDELINES AND RESOURCES

Monkeypox Infections in Animals: Updated Interim Guidance for Veterinarians

These interim guidelines will be updated as new information becomes available and after consultation with additional public health partners.

The Centers for Disease Control and Prevention (CDC) has been working closely with other federal agencies and several state and local health departments to investigate cases of monkeypox virus infections among humans (including veterinarians and staff at veterinary hospitals) who had direct or close contact with ill prairie dogs. The first exposure to ill animals was reported to have occurred after April 15, 2003.

Human monkeypox is a rare zoonotic viral disease that occurs primarily in the rain forest countries of central and west Africa. In humans, the illness produces a vesicular and pustular rash similar to that of smallpox. The incubation period from exposure to fever onset is about 12 days. Case-fatality ratios for human monkeypox in Africa have ranged from 1% to 10% (for additional information about monkeypox, see the monkeypox article in *Emerging Infectious Diseases* at www.cdc.gov/ncidod/eid/vol7no3/hutinG1.htm).

These guidelines have been developed to assist veterinarians in considering infection control guidelines to protect the health of their staff, clients, and patients.

Transmission of Monkeypox in Humans and Animals

Infection in humans may be acquired through contact or respiratory droplets, the nasopharyngeal, oropharyngeal, or cutaneous route. Most of the human cases in this outbreak appear to have been transmitted through the cutaneous route. The route of transmission in animals is less clear. The virus might be transmitted to animals through the nasopharynx or oropharynx route, through skin abrasions, or through the ingestion of infected animal tissue.¹

Animal Species Affected by Monkeypox

In this outbreak, most human cases of monkeypox have been associated with close contact with prairie dogs (including bites, handling, household contact, or handling of cages/bedding). CDC is currently investigating how the prairie dogs may have become infected. The current working hypothesis is that prairie dogs may have been infected by an imported species of exotic mammals kept in close proximity. In Africa, serologic evidence of monkeypox infection has been found in a wide variety of nonhuman primates, rodents, and squirrels; monkeypox virus has been isolated from a species of squirrel in Zaire, but the role of any particular species as a reservoir has not been established. Some species of primates, rodents, and lagomorphs are known to be susceptible. Although no infections have been previously reported in dogs or cats, these species may also be susceptible to monkeypox. Because the types of animals that may become ill with monkeypox are currently unknown, all mammals should be considered susceptible as a precaution.

Manifestations of Monkeypox in Animals

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In the current outbreak, illness in prairie dogs was reported to include fever, cough, conjunctivitis, and lymphadenopathy, followed by a nodular rash. Some prairie dogs died, whereas others apparently recovered. Preliminary information suggests the Gambian giant rat under investigation reportedly experienced a much milder illness than that observed in prairie dogs, with no respiratory signs and possibly limited dermatologic involvement.

Recommendations for Veterinarians Examining Animals with Suspected Monkeypox

Veterinarians should be suspicious of monkeypox in ill prairie dogs or Gambian rats, or any animal presenting with a history of fever, conjunctivitis, respiratory signs, and nodular rash. In some states, health departments are recommending that animals with suspected monkeypox not be transported to veterinary clinics due to public health risks. Veterinarians should check with state and local health officials for recommendations in their state.

Veterinarians who decide to examine or treat animals with suspected monkeypox should use infection control precautions to protect the health of themselves, staff, and clients, as well as other animal patients in the clinic. Clients who have alerted the clinic in advance that they are bringing an animal with suspected monkeypox should not be allowed to enter through the waiting area of the clinic. Veterinarians should isolate the animal and wear personal protective equipment (PPE) during the examination. The animal should not be taken to a common treatment room, and all treatments and diagnostics should be performed in the examination room.

The number of staff allowed in the exam room and that come in contact with the animal should be limited to as few persons as possible. Veterinarians who do not wish to examine an animal with suspected monkeypox should advise the animal's owner to contact the local or state health department for further guidance.

Infection Control Precautions

The most common route for transmission of monkeypox from animals to humans appears to be direct contact with infected animals; however, the possibility of airborne transmission cannot be excluded. When examining animals with suspected monkeypox, veterinarians and staff should use the following precautions:

1. Hand hygiene after all contact with a sick animal and contaminated surfaces.
2. Use of gown and gloves for any contact with the sick animal and contaminated surfaces.
3. Eye protection (e.g., tight-fitting goggles or face shield) if splash or spray of body fluids is likely.
4. Respiratory protection, including a NIOSH-certified N95 filtering disposable respirator (or other respirator offering comparable levels of respiratory protection), for entering the exam room or patient care area.² For additional information about respirators, see Information About Respirators for Use by Veterinary Staff in the Setting of Suspected Monkeypox at www.cdc.gov/ncidod/monkeypox/respirators.htm. Most veterinary clinics will not have N95 respirators. If N95 or comparable respirators are not available for veterinary personnel, then surgical masks should be worn to protect against transmission through contact or large droplets.
5. Contain and dispose of contaminated waste after consultation with state or local health officials. Do not dispose of waste in landfills or dumps.
6. Handle used patient-care equipment in a manner that prevents contamination of skin and clothing. Ensure that used equipment has been cleaned and reprocessed appropriately.
7. Ensure that procedures are in place for cleaning and disinfecting contaminated environmental surfaces. Any EPA-registered hospital detergent-disinfectant currently used by health-care facilities for environmental sanitation may be used. Manufacturer's recommendations for dilution (i.e., concentration), contact time, and care in handling should be followed.
8. Laundry (e.g., towels, clothing) may be washed in a standard washing machine with hot water and detergent. The use of chlorine bleach during hot-water washing can provide an added measure of

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safety. Care should be used when handling soiled laundry to avoid direct contact with contaminated material. Soiled laundry should not be shaken or otherwise handled in a manner that may aerosolize infectious particles.

9. Contaminated surfaces should be cleaned and disinfected. Standard household cleaners or disinfectants may be used in accordance with the manufacturer's instructions. The animal's bedding, cage, toys, or food and water bowls should not be disposed of with the clinic trash or at a dump or landfill because this material may be potentially infectious; contact the state or local health department for further instructions. Items that cannot be disposed of should be disinfected as contaminated surfaces.

Specimens for Diagnosis of Monkeypox

Veterinarians that suspect monkeypox in an animal (i.e., an animal with a clinically compatible illness or is asymptomatic but is associated with human illness) should contact the state health department for information on specimen submission. CDC will not accept any specimens that are not sent through state health department laboratories. CDC recommends that practicing veterinarians **not** perform necropsies or biopsies to collect samples for diagnosis because of the risk for infection to the veterinarian. Samples that may be obtained by minimally invasive procedures, such as serum or conjunctival swabs, should be collected only by personnel wearing PPE. If the animal is deceased, double bag the carcass and place it in a freezer pending a decision for shipment.

Recommendations for Pet Owners

Veterinarians should advise pet owners to consult the document "Monkeypox Infections in Animals: Interim Guidance for Persons Who Have Frequent Contact with Animals (Pet Owners, Pet Shop Owners and Employees, Animal Rescuers, Animal Handlers, and Animal Control Officers)" at www.cdc.gov/ncidod/monkeypox/animalhandlers.htm.

Disposition of Animals with Suspected Monkeypox

All animals with suspected monkeypox infection should be humanely euthanized to prevent further spread of the disease. Disposal of the carcass should **not** include burial in a landfill or backyard setting. CDC recommends incineration of the carcass. If the animal is associated with a human case, it should be tested for monkeypox. Do not perform necropsies on animals with suspected monkeypox. Rather, whole carcasses should be double bagged and frozen. Consultation with the state epidemiologist (www.cste.org/members/state_and_territorial_epi.asp) and state health laboratory (www.aphl.org/public_health_labs/index.cfm) is necessary to obtain submission instructions before sending specimens to CDC.

Exposed asymptomatic animals should be quarantined in the home and not allowed to come into contact with other animals or people. They should be observed for development of symptoms compatible with monkeypox for at least 6 weeks following the last date of exposure. Should such symptoms develop, the animal should then be evaluated and euthanized if indicated, in consultation with state or local health officials. For more information on home quarantine, veterinarians and home owners should consult the document "Monkeypox Infections in Animals: Interim Guidance for Persons Who Have Frequent Contact with Animals (Pet Owners, Pet Shop Owners and Employees, Animal Rescuers, Animal Handlers, and Animal Control Officers)" at www.cdc.gov/ncidod/monkeypox/animalhandlers.htm.

Recommendations for Veterinarians Who Have Been Exposed to Monkeypox

Veterinarians and staff who have come in contact with animals with monkeypox should be alert for signs of illness for 21 days following the date of last exposure. Although restriction of day-to-day activities is not recommended for healthy, asymptomatic persons, individuals who develop a fever, respiratory symptoms, or unusual skin lesions within 21 days of contact with the animal should immediately limit activities outside the home and contact their physician. Guidance regarding monitoring of exposed healthcare

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workers can be found in the document "Updated Interim Infection Control and Exposure Management Guidance in the Health-Care and Community Setting for Patients with Possible Monkeypox Virus Infection" at www.cdc.gov/ncidod/monkeypox/infectioncontrol.htm.

Veterinarians who are diagnosed with monkeypox should not examine animals during their illness because they may pose a risk of disease transmission to animals, and should isolate themselves at home to minimize contact with other persons and animals. These individuals should remain in home isolation as outlined in the guidance "Updated Interim Infection Control and Exposure Management Guidance in the Health-Care and Community Setting for Patients with Possible Monkeypox Virus Infection" at www.cdc.gov/ncidod/monkeypox/infectioncontrol.htm. Veterinarians may resume job duties when their physician and state and local health officials have determined that they are no longer infectious.

At the present time, CDC is recommending smallpox vaccination for persons who are within 4 days of initial direct physical contact with sick prairie dogs acquired since April 15 within the affected areas. Vaccination should also be considered for persons with such contact within the past 2 weeks. In addition, vaccination can be considered for persons who have, within the past 2 weeks, had close contact likely to have resulted in exposure to this environmentally hardy virus in respiratory secretions or through fomites on contaminated surfaces. For more information about smallpox vaccination practices in the monkeypox setting, see CDC's interim guidance at www.cdc.gov/ncidod/monkeypox/treatmentguidelines.htm.

Additional Information

For further information, contact your state or local health department or the CDC Emergency Operations Center at 770-488-7100. Additional information and recommendations will be released as they become available. Updated information can be accessed at the CDC monkeypox website at www.cdc.gov/ncidod/monkeypox/index.htm.

¹ Jezek Z, Fenner F. Human Monkeypox. Monographs in Virology vol 17. 1988.

² Respirators should be used in the context of a complete respiratory protection program in accordance with OSHA regulations. This includes training and fit testing to ensure a proper seal between the respirator's sealing surface and the wearer's face. Detailed information on respirator programs, including fit test procedures at www.osha.gov/SLTC/etools/respiratory. Where possible, a qualitative fit test should be conducted for N95 respirators; detailed information on fit testing at www.osha.gov/SLTC/etools/respiratory/oshfiles/fittesting1.html.

For more information, visit www.cdc.gov/ncidod/monkeypox or call the CDC public response hotline at (888) 246-2675 (English), (888) 246-2857 (Español), or (866) 874-2646 (TTY)

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