

Monkeypox – An update

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Monkeypox virus is a zoonotic orthopoxvirus that causes a serious smallpox-like illness in humans. Since the global eradication of smallpox in 1977, monkeypox has been considered to be the most important orthopoxvirus infection in humans^{1,2}. There are two main strains, one is more virulent and transmissible (Congo Basin clade) than the other (West African clade). The less virulent West African clade has been identified among the current cases³.

Monkeypox is commonly found in central and west Africa where there are tropical rainforests and animals that may carry the virus typically live. People with monkeypox are occasionally identified in other countries outside of central and West Africa following travel from regions where monkeypox is endemic. Since May 2022, multiple cases of monkeypox have been identified in several non-endemic countries. This is not typical of past patterns of monkeypox⁴. The World Health Organization (WHO) has declared the monkeypox outbreak in more than 70 countries as a “Public Health Emergency of International Concern (PHEIC)”. Tedros said that there are now more than 16,000 reported cases from 75 countries and territories and five deaths. In Africa, monkeypox mainly spreads to people by infected wild animals like rodents in limited outbreaks that typically have not crossed borders. In Europe, North America & elsewhere, however, monkeypox is spreading among people with no links to animals or recent travel to Africa⁵.

Monkeypox virus enters through oropharynx, nasopharynx or intradermal route. Ulcers, lesions or sores in the mouth can also be infectious, meaning the virus can spread through saliva. People who closely interact with someone who is infectious, including health workers, household members and sexual partners are therefore at greater risk for infection. The virus can also spread from someone who is pregnant, to the fetus through the placenta or from an infected parent to child during or after birth through skin-to-skin contact. It is not clear whether people who do not have symptoms can spread the disease⁴.

Monkeypox virus replicates at the inoculation site then spreads to local lymph nodes. Next, an initial viremia leads to viral spread and seeding of other organs. This represents the incubation period which typically lasts 7 to 14 days with an upper limit of 21 days. Initial symptoms include fever, headache, myalgia, fatigue and

lymphadenopathy- a key differentiating feature of monkeypox from smallpox. After 1 to 2 days, mucosal lesions develop in the mouth closely followed by skin lesions of the face and extremities (including palms and soles) and are centrifugally concentrated. The rash may or may not spread to the rest of the body, and the total number of lesions may vary from a small amount to thousands⁶.

It is important to consider other potential causes of discrete skin lesions or a disseminated rash and other etiologies for similar-appearing skin lesions at the different stages of development including Herpes simplex virus, varicella zoster virus, enterovirus, measles, chikungunya, dengue, *Treponema pallidum* (syphilis), bacterial skin infections, Parapoxviruses.

The recommended specimen type for laboratory confirmation of monkeypox is skin lesion material, including swabs of lesion surface and/or exudate, roofs from more than one lesion or lesion crusts. Confirmation of monkeypox virus infection is based on nucleic acid amplification testing (NAAT), using real-time or conventional polymerase chain reaction (PCR), for detection of unique sequences of viral DNA. PCR can be used alone, or in combination with sequencing⁷. Antibody detection from plasma or serum should not be used alone for diagnosis of monkeypox. However, IgM detection from recent acutely ill patients or IgG in paired serum samples, collected at least 21 days apart can aid diagnosis if tested samples yield inconclusive results. Recent vaccination may interfere with serological testing⁸.

There are no treatment specifically for monkeypox virus infections. Antivirals, such as tecovirimat (TPOXX), may be recommended for people who are more likely to get severely ill, like patients with weakened immune systems⁹.

Raising awareness of risk factors and educating people about the measures they can take to reduce exposure to the virus is the main prevention strategy for monkeypox. Reducing the risk of human-to-human transmission, reducing the risk of zoonotic transmission and preventing monkeypox through restrictions on animal trade are other important preventive measures of monkeypox.

Several observational studies showed vaccination against smallpox was 85% effective in preventing monkeypox¹⁰. Thus,

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prior smallpox vaccination may result in milder illness. Some countries have, or are developing, policies to offer vaccine to persons who may be at risk such as laboratory personnel, rapid response teams and health workers. Scientific studies are now underway to assess the feasibility and appropriateness of vaccination for the prevention and control of monkeypox.

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