

COMMENTARY

Is China ready for monkeypox?

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Monkeypox is a rare viral infection caused by the monkeypox virus, which is similar to human smallpox. It is also a zoonosis which is found mainly in tropical rain forests of central and western Africa. The monkeypox virus was first detected in grivet at a laboratory in Copenhagen, Denmark, in 1958, and was later found in many African rodents, such as murine and squirrels.^[1] Therefore, it is believed that the primary way of infection is through direct human contact with these infected animals. In May 2003, human monkeypox appeared in the Western Hemisphere in the United States and spreaded rapidly, which immediately attracted the attention of all countries.

On May 20, the World Health Organization reported that 11 previously nonendemic countries had monkeypox cases, including about 80 confirmed cases and 50 cases to be confirmed. Monkeypox, a disease that is rarely seen outside the central and west African countries, has recently been reported in less than half a month in Britain, Spain, Portugal, the United States,^[2] Sweden, Italy, and Canada. Human-to-human transmission of monkeypox is infrequent. However, experts described the outbreak as an "unusual" event because the infected person had no history of travel to monkeypox-endemic areas, and most cases were found in sexual health services and among men who have sex with men, as well as widely distributed across many European countries at about the same time.

Monkeypox can be prevented by vaccination.^[3] Before the 1980s, the whole population of China had been vaccinated against smallpox (cowpox). As the smallpox virus and monkeypox virus are orthopoxviruses, the vaccinia vaccine provides some cross-protection against monkeypox. For this group of people, there is good herd protection, that is, good protection against monkeypox (the vaccinia vaccine is very effective and theoretically provides lifelong immunity).

Since the world declared the eradication of smallpox in the 1980s, China has stopped smallpox (vaccination) vaccination for more than 30 years. Therefore, people born after this period lack the immunity and belong to vulnerable groups. In addition, even people who have been vaccinated against vaccinia are at a certain level of risk because their immunity will decrease over time.

Be fully aware of the monkeypox virus, especially some key problems, will be helpful for China to deal with monkeypox. These difficulties include the following. Firstly, monkeypox has a high mortality rate and a lack of prevention, as well as control strategies and deployments. The mortality rate after human infection with monkeypox virus can be as high as 10%, and there is no specific drug treatment. Secondly, host animals are widely distributed. The monkeypox virus is named because it was first found in monkeys. Some rodents also carry the monkeypox virus, such as dormice, cynomys, and squirrels, which have great contact with humans. Thirdly there are many ways of transmission. The monkeypox virus can be transmitted to humans through animal bites, broken skin, respiratory tract, and contact with the mucous membranes of the skin (eye, nose, and mouth mucosa). There is also a risk of human-to-human transmission. Contact transmission is the main route of transmission, but the risk of transmission through respiratory droplets cannot be ruled out.

Although there has never been a confirmed case of monkeypox or animal transmission reported in China, due to the current characteristics of monkeypox and unknown risks, especially with the outbreak in Europe and the United States, the risk of monkeypox virus being spreaded to China cannot be excluded. In theory, unvaccinated people traveling or studying abroad are also at risk of infection. China has a large population and a vast territory. Facing the threat of monkeypox,

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China should take precautions and make full preparations. We believe that China has the ability to do the followings:

First of all, China should strengthen basic research on monkeypox virus. It must further optimize and perfect the monkeypox virus detection technology system. Then, monkeypox virus should be monitored, screened, identified, and isolated from wild, ornamental, companion, and scientific nonhuman primates and mice. Further, an animal model of monkeypox virus infection should be constructed to solve the key technical bottlenecks of vaccine development, drug screening, and basic research.

Second, China should focus on research and development of monkeypox virus vaccine and medicine. On the one hand, vaccine strains should be screened, and monkeypox virus vaccine should be developed based on the isolation and comparative study of monkeypox virus virulence. On the other hand, the emergency drugs should be screened based on the monkeypox virus infection animal model.

Third, biosafety management of the monkeypox virus should be strengthened. For nonhuman primates and rodents, entry and exit quarantine standards for monkeypox virus should be established or improved, quality control of laboratory animals should be the focus, and pet pathogens must be screened.

Fourth, China should strengthen the popularization of science on monkeypox virus for the public. The popularization of science on monkeypox virus will be carried out by popularizing the natural reservoir, infection characteristics and transmission way of monkeypox virus to avoid arousing unnecessary panic in the public and by telling the public not to hunt, raise or eat wildlife. When doing sightseeing and interacting with animals in the wildlife park, it is suggested that people should do

it in a scientific and standardized way. People should be advised to be intimate with pets with a cautious mind, have a good hygiene management and play a supporting role in the work of pet pathogen detection.

It is also important to inform the public that there is no need to be overly nervous about monkeypox, as monkeypox transmission is still at a very limited level, unlike the high-risk mode of transmission in COVID-19.

Fifth, China should step up efforts in international cooperation. China does not have confirmed monkeypox cases in its territorial range and lacks experience in prevention and control of monkeypox virus. Therefore, China should actively conduct comprehensive exchanges with international organizations, countries, and different regions to improve prevention and control capacity.

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How to cite this article: Wei Q. Is China ready for monkeypox?

Anim Models Exp Med. 2022;5:397-398. doi: [10.1002/ame2.12259](https://doi.org/10.1002/ame2.12259)