

## MONKEYPOX AUGUST 5, 2022 GERALD ENTE, MD

Another “new” disease has come to our shores. **Monkeypox**, endemic in the tropical rainforest areas of central and west Africa, was first diagnosed in Europe and in the US in May 2022. Monkeypox has always been known as an uncommon zoonotic [in animals] viral disease. Although monkeypox is not at all related to Chicken Pox, it is in the same family as Smallpox [genus Orthopoxvirus, family Poxviridae, which also includes camelpox, cowpox, and horsepox].

The first human monkeypox case dates back to 1970, when a 9-year-old boy in a remote part of the Congo Basin was confirmed to have monkeypox. In September 2017, an 11-year-old boy was treated in Nigeria for “a strange rash and sores in his mouth”. This was finally diagnosed as monkeypox and was the first known case of what would soon become an international outbreak. Until then, most outbreaks were local, mild, self-limited and generally impacted small numbers of children. Thereafter the disease spread exponentially, mostly effecting 20 to 40 year old men. Infected men frequently had extensive genital lesions.

Further assessment showed that these men had higher-risk **sexual behaviors**, including sex with multiple partners and prostitutes. The Nigerian doctors then realized that the virus had changed. This outbreak is on-going as proved by genetic data and is likely to get worse. Monkeypox has an **incubation period** of 5 to 21 days and usually has symptoms lasting from 2 to 4 weeks. Severe disease is rare and the fatality rate for monkeypox, in general, has been between 1% to 10%.

There are **2 varieties** of this virus: one from the Congo Basin or Central Africa which has a mortality rate of 10%; the other from West Africa which has a mortality rate under 1%. Luckily the virus causing the current epidemic is this **West African variant**. Human to human transmission occurs mostly by close skin to skin contact. In Africa, where this disease has been endemic for years, children usually caught this disease though playing with infected monkeys [therefor, the name] or other small animals. Monkeypox has infected more than 26,500 people in 80 countries, with over 7,510 cases reported in the US as of 8/5/22. [These numbers are expected to increase dramatically in the near future.] The question arises as to how the infectiousness of this virus has suddenly changed from infecting occasional travelers coming out of Africa to becoming a major worldwide epidemic. The London School of Hygiene and Tropical Medicine supports the idea that the virus entered several networks of men having sex with men [MSM], many of whom have had multiple partners, and morphed into an easily spreading virus via close sexual contact. To date, 98% of reported cases have been in the MSM community. This has raised alarms and caused stigma to the MSM community, since sexual encounters do play a role in transmission, but by definition this **not a** sexually transmitted disease One reason why this number of reported cases in the MSM community may be so high is that these men actively seek medical attention for any new symptom [they are conscious of their bodies].

It is important to point out to the MSM population that **it is not who you are, but how you are doing what you are doing that creates the risk of exposure.** Like HIV, this is not a disease punishing “bad” people. This virus, as well as viral DNA, has been found in semen but it is not certain that this is as important in transmission as the skin-to-skin contact. [The same is true for transmission of Herpes and Scabies.] The **symptoms** of monkeypox infection may include a rash, fever, headache, myalgia, chills, exhaustion, and swollen painful lymphadenopathy, or sore throat. There may or may not be early before the rash symptoms. The rash may be limited to the genital area; it may even be hidden in the mucous membranes of the anus, mouth or vagina causing severe pain. The rash may start in the mouth and spread to the face and body outwardly. These skin lesions, anywhere from a few to thousands, may be filled with pus, are firm, deep-seated, itchy or painful and may leave permanent scars. The lesions are contagious and have been called “little viral factories”. Patients with a new febrile illness and a rash should be evaluated for monkeypox. **Transmissibility** of this virus results from close contact of any kind, including kissing, touching, oral and penetrative vaginal and anal sex. It may be spread via clothing, bedding, towels and other contaminated materials. Household contacts are at risk.

There is question as to whether the virus is transmissible via airborne route through coughing and sneezing, although we know that prolonged face-to-face contact can spread this through respiratory secretions. At least 6 children have been infected and the first disease in a pregnant woman in the US has been reported. There is scant information about women in the literature, although a woman in Virginia was confirmed by CDC to have monkeypox. I know of no reason why this disease should spare women. There is a possibility for human-to-small animal [with house pets who are really close with their human owners] transmission, but there is not enough data yet to be certain of this. **PCR test** of the cells [done by swabbing a lesion] or fluid is diagnostic. Suspicion of the diagnosis warrants testing.

Technicians working at Quest Diagnostics and LabCorp have been refusing to draw blood from people suspected of having monkeypox. **Treatment**, when needed, consists of antivirals with positive poxvirus activity but as yet no specific medicines have been approved for monkeypox, like Vistide [cidofovir by Gilead Sciences], Tembexa [brincidofovir by Chimerix] and TPOXX [ticovirimat by SIGA Technologies. For **prevention**, there are 2 vaccines available. The FDA has given **Jynneos** [Bavarian Nordic] an indication for prevention of monkeypox and an older-generation vaccine [**ACAM2000**, Pasteur Biologics Co.], which is a live vaccine, may be used off-label still onto the skin with many stabbings as used to be done. Either of these administered immediately after suspected exposure is expected to abort or significantly lessen the effects of the disease. The Jynneos vaccine has fewer side effects, has no live components and may be given to immunocompromised patients, pregnant and breast-feeding women and children, as well as patients with certain exfoliative skin conditions like eczema. Massachusetts General Hospital, in Boston, has vaccinated its healthcare workers as a precaution in late May '22.

When these vaccines are not available, **vaccinia immune globulin** may be given. Older people who had received smallpox vaccination have been afforded some residual immunity [we do not know how much]. In the US, smallpox was eradicated in 1971 and the routine use of smallpox vaccinations was stopped in 1972. [The WHO declared smallpox eradicated worldwide in 1980.] The US supply of monkeypox vaccine will be limited for months because officials delayed requesting adequate number of new supplies.

The US Strategic National Stockpile was supposed to hedge against viral contingencies. Unfortunately, this has not happened with respect to monkeypox vaccine. The Biden administration has stated that it may need \$7 billion to mount a proper response to this problem. Moderna is considering the possibility creating an mRNA monkeypox vaccine. The W.H.O., NYS, NYC, California, and Illinois have declared Monkeypox to be a **Public Health Emergency**. As of 8/4/22, the US Department of Health and Human Services also has done so. The future, globally and for the US, depends on how quickly control efforts are implemented. The US and many other countries have issued limited guidance. Education about this illness, including how to reduce the risk of infection must be universal. Vaccine production must be increased and equitably offered globally. **Healthcare workers must have an increased awareness** of this infection as well as being protected from it. [e.g., vaccinations, masks, gloves, hand washing and awareness.] Faster diagnosis will allow for quicker isolation and treatment of patients, which will reduce future potential transmission. As of 8/3/22, with case numbers doubling every 5-7days, monkeypox is on its way to becoming a permanent threat to the US and the world.

Presently, monkeypox effects mostly the gay and bisexual community, but the W.H.O. has warned that **this virus is capable of evolving and is likely to evolve [while viruses are active, they mutate] at any moment to infect anyone**, with 4 groups of people at the highest risk: newborns, children, pregnant women and the immunocompromised. After more than 2 years of dealing with the Covid-19 pandemic, the thought of another potential Public Health Emergency becoming a second, concomitant pandemic is frightening. The similarities in the early history of both of these epidemics and the recent mutations of the monkeypox virus indicate the need for the US and the rest of the world to quickly and seriously do everything possible to contain the spread of monkeypox. As always, I am available for questions. Please keep in mind that this is a “new” disease [twice in our lifetimes is beyond amazing] and so, numbers, data, facts and ideas will change frequently as “new” numbers, data, facts and ideas become known.