MONKEYPOX: EPIDEMIOLOGY
LITERATURE REVIEW

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WHAT IS MPOX?

History of Monkeypox:

- Monkeypox is a zoonotic disease caused by an infection with a virus.
- First discovered in 1958, when two pox-like outbreaks occurred in a colony of research monkeys
- The first human case was reported in 1970 in the Democratic Republic of Congo
  - Since then cases continued to to spread throughout Central and West Africa
- Belongs to the family of viruses called *poxviridae*
  - The family *poxviridae* comprises large, brick-shaped or ovoid-enveloped viruses that contain a linear, double-stranded DNA genome.
  - Widely known virus family due to the *Variola Virus,* the causative agent of smallpox.
- Became the most significant pathogenic zoonotic Orthopoxvirus for humans since the eradication of smallpox.

Two types of Mpox that share the same clinical signs:

- **Clade I:** This type is responsible for the rise in cases in Central and Eastern Africa
- **Clade II:** This clade caused the global outbreak in 2022. Infections from this clade are less severe than Clade I with a 99.9% survival.
  - endemic to West Africa

TRANSMISSION & RISK FACTORS

WHO CAN GET IT?

- People who live with infected people
- Multiple sexual partners
  - Most cases identified in individuals who identify themselves as gay, bisexual, or MSM
- Healthcare workers
- Children are a higher-risk population compared to adolescents and adults
- Pregnant women to fetus
- Parent to child post-birth through skin-to-skin contact

TRANSMISSION

HUMAN-TO-HUMAN

One can get infected from the following modes of contact

- skin-to-skin (e.g., touching, sex*, and unclothed cuddling)
- mouth-to-mouth (e.g., kissing or sharing drinks)
- mouth-to-skin (e.g., kissing)
- face-to-face (e.g., talking in close proximity frequently or periods of time)
- fomite (e.g., coming into contact with items previously touched by an infected person)
- mothers can transfer the infection to their child during pregnancy

ANIMAL-TO-HUMAN

- Less frequently than human-to-human transmission.
- Primarily prevalent in endemic regions, such as:
  - Central and West Africa
  - Heavy hunting/trapping areas in endemic regions.

PROTECTIVE FACTORS

- Limit contact with individuals who are suspected to have the disease or are confirmed
- Self-isolation
- Covering any:
  - Lesions
  - Cuts
  - Injuries
- Hygienic preventative measures

MPOX Outbreaks

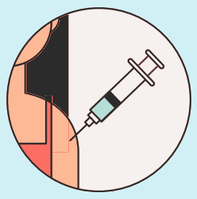
Monkey pox was first identified in Denmark in the 1950s. It was first identified as a cause of human disease in the 1970s in the Democratic republic of Congo. *The first outbreak of mpox in the United States occurred in 2003.* There were 71 confirmed and probable cases in six states (Illinois, Indiana, Kansas, Missouri, Ohio and Wisconsin).

In May 2022, a global multi country outbreak was recognized in Europe, occurring in non-endemic countries. Subsequently, Mpox was declared a public health emergency in May,2023.

In the United States, the first case of Mpox was reported in May 2022 in a Massachusetts resident, since then there have been more than 38,000 cases and 58 deaths. During the peak of the outbreak there were 645 confirmed cases in a day, in August 2022. The cases were mainly caused by clade II mpox types. There have been no reports of clade I mpox in the United States yet. *In Texas, there were 2970 cases reported in 2022*. In 2024, the Texas public health region 2/3 which includes Tarrant County reported 136 cases, which is the highest report of cases among the 11 regions. There are still reports of Mpox cases but the number of cases has significantly decreased.

PREVENTION

Prevention



- The spread of the virus should be contained
- Wearing a mask when around infected individuals
- Counseling on safe sex practices (condom use)
- Avoid touching animals that harbor the virus
- Having health care workers use personal protective equipment (i.e., gloves, gown, eye shield, and N95 respirator).

Vaccine Education

- JYNNEOS vaccine is the safest vaccine available for pre-exposure and post-exposure use in preventing monkeypox
  - Administered in 2 doses, 4 weeks apart.
  - Common side effects: Redness, swelling, and itching at the injection site; fever; headache; muscle aches; and fatigue. Reactions are generally mild and resolve without intervention.
- ACAM2000 vaccine is an alternative used when JYNNEOS is limited or unavailable
  - Administered as a single dose and is given “percutaneously” by puncturing the skin of the upper arm multiple times with a two-pronged needle holding a small drop of the vaccine
  - Common Side Effects: Sore arm, fever, body aches, and mild rash.

REFERENCES AND RESOURCES