

Monkeypox, Smallpox, or Chickenpox?

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Monkeypox

Monkeypox is a disease caused by the **monkeypox virus** and is commonly found in **central and West Africa**. Monkeypox cases in the United States and the United Kingdom are linked to **international travel** or imported animals from regions where monkeypox is endemic.

Monkeypox virus belongs to the ***Orthopoxvirus* genus**, which also includes variola virus (causing smallpox)

It is a viral **zoonotic** disease, meaning that it can spread from animals to humans. It can also spread between people. The natural reservoir of monkeypox remains unknown. However, African rodents and non-human primates (like monkeys) may harbor the virus and infect people.

Transmission

The virus can come from an infected animal, infected person, or materials (bed sheets, clothing) contaminated with the virus.

Direct contact with infectious sores, scabs, or body fluids; Respiratory secretions during prolonged, face-to-face contact; Intimate contact between people, including during sex, as well as activities like kissing, cuddling, or touching parts of the body with monkeypox sores.

The strain being seen in the current outbreak is the West African strain with a mortality rate of 1 in 100.

Signs & Symptoms

Incubation period (infection to symptoms): 7-14 days (Not contagious)

Prodromal Stage (development of symptoms): up to 5 days (may be contagious)

Symptoms:

- Fever
- Headache
- Muscle aches
- Backache
- Swollen lymph nodes
- Chills
- Exhaustion



Signs & Symptoms

Shortly after the prodrome, 1-3 days post fever, the patient develops a rash starting from their face and spreading throughout their body. At this point they are contagious.



Well circumscribed & develop umbilication



Relatively equal in size



Painful & itchy

Lesion Stages

Macules - a macular (flat) rash starts on the face and spreads to the arms & legs and then to the hands & feet, including the palms and soles. It takes about 24 hours to spread. Mostly concentrated on the face, arms, and legs (centrifugal distribution).

Papules - the macular rashes have progressed to papular (raised) rashes

Vesicles - the papules are now clear fluid filled vesicular lesions

Pustules - vesicles have now become pustular (filled with opaque fluid). They are sharply raised, usually round, and firm to the touch (deep seated). They will have developed umbilication, dots on the lesions.

Scabs - pustules have crusted and scabbed over. Once the scabs have fallen off, the patient is no longer contagious.



a) early vesicle,
3mm diameter



b) small pustule,
2mm diameter



c) umbilicated pustule,
3-4mm diameter



d) ulcerated lesion,
5mm diameter



e) crusting of a mature
lesion



f) partially removed
scab

Vaccines

	ACAM2000	JYNNEOS
Vaccine virus	Replication-competent vaccinia virus	Replication-deficient Modified vaccinia Ankara
"Take"	"Take" occurs	No "take" after vaccination
Inadvertent inoculation and autoinoculation	Risk exists	No risk
Serious adverse event	Risk exists	Fewer expected
Cardiac adverse events	Myopericarditis in 5.7 per 1,000 primary vaccinees	Risk believed to be lower than that for ACAM2000
Effectiveness	FDA assessed by comparing immunologic response and "take" rates to Dryvax*	FDA assessed by comparing immunologic response to ACAM2000 & animal studies
Administration	Percutaneously by multiple puncture technique in single dose	Subcutaneously in 2 doses, 28 days apart

Treatment

Tecovirimat

- Antiviral medication developed for smallpox
- Approved by CDC for use in adult and pediatric Monkeypox patients weighing over 3 lbs.

Vaccinia Immune Globulin Intravenous (VIGIV)

- Licenced by the FDA for the treatment of complications related to the vaccinia vaccination

Cidovofir

- Antiviral medication used for CMV rhinitis in patients with AIDS

Smallpox

Smallpox was an infectious disease caused by the **Variola virus**, but it has been **eradicated** with the success of vaccination.

Vaccines for smallpox are not offered unless a smallpox outbreak were to occur. These vaccines are the same as discussed for Monkeypox.

It is very similar to what we are seeing with Monkeypox; they follow similar signs, symptoms and treatments.

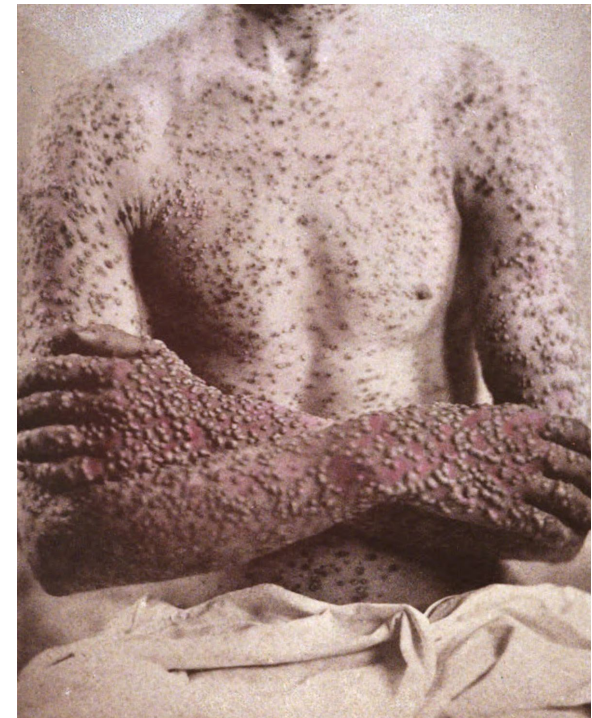
Signs & Symptoms

Incubation period (infection to symptoms):
7-19 days (Not contagious)

Prodromal Stage (development of symptoms): up to 4 days (may be contagious)

Symptoms:

- Fever
- Headache
- Muscle aches
- Vomiting



Signs & Symptoms

Smallpox starts off with small red spots on tongue and mouth that progress throughout the body.

They undergo similar stages as Monkeypox sores and scab over.

After about 4 weeks from the onset of rashes and once all scabs have fallen over, the contagious period is over.

Treatment

Treatment is similar to that of Monkeypox, because it was all first designed for Smallpox

Vaccines

- ACAM2000 and JYNNEOS are the only licensed vaccines in the US

Antiviral Medications

- Tecovirimat and Cidovofir

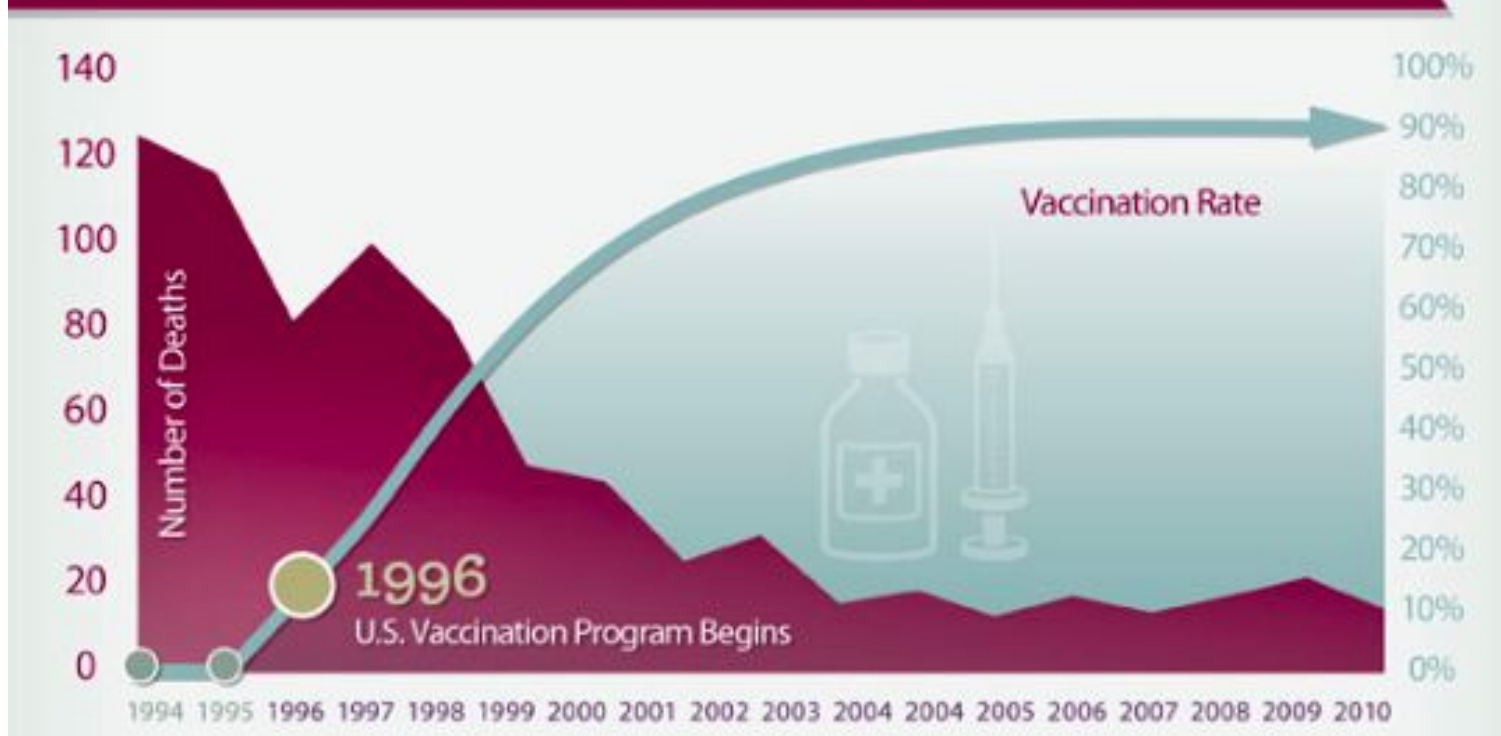
Chickenpox

Chickenpox, also known as Varicella, is caused by the **Varicella Zoster Virus** and is highly contagious.

Cases were much higher prior to the introduction of the Varicella vaccine. Two doses of the **Varicella vaccine provide more than a 98% effective rate to protect against the disease.** Those with the vaccine may still get the disease, but will experience less mild symptoms.

If there is a person in a room with Varicella, upto 90% of the people around them, who are not immuned will also become affected.

Chickenpox-related deaths in the U.S. have decreased dramatically



Signs & Symptoms

Incubation period (infection to symptoms):

10-21 days (Not contagious)

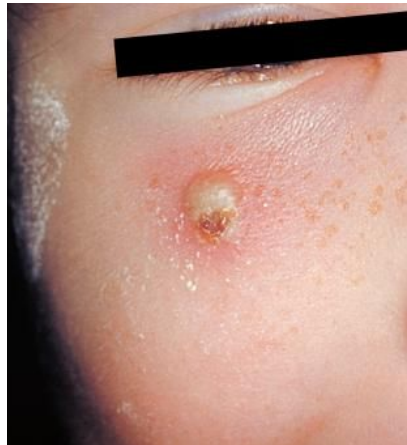
Prodromal Stage (development of symptoms): 2-4 days (contagious)

Symptoms:

- Fever
- Malaise
- Loss of appetite



Unvaccinated



Vaccinated



Transmission & Prevention

Chickenpox is transmitted 1-2 days before rash onset and until the scabs have fallen over.

The virus spreads quickly through close contact with someone with the disease.

Children typically miss a week of school, because it lasts 4-7 days.

It's important to get vaccinated against chickenpox to prevent it (2 doses).

Reach out to a Healthcare Provider if you are not vaccinated or a high risk patient exposed to the disease.

Treatment

At Home

- Maintaining good hygiene and using Calamine moisturizes to soothe the itching
- Prevent scratching lesions to avoid spread or develop into an infection

OTC medications

- AVOID using aspirin to relieve fever for chickenpox, this can cause Reye's syndrome in children
- Use Acetaminophen for fever and symptoms
- Ibuprofen has also been recommended to be avoided because it has been associated to life threatening bacterial skin infections for those with Varicella.

MONKEYPOX**CHICKENPOX****SMALLPOX (ERADICATED)**

	MONKEYPOX	CHICKENPOX	SMALLPOX (ERADICATED)
Virus	Monkeypox virus	Varicella-zoster virus	Variola virus, orthopoxvirus family
Incubation Period	7-14 days	10–21 days	7–19 days
Rash Characteristics	Begins on the face and progresses to arms, legs, chest, palms and soles. Very firm, painful, itchy, and deep seated lesions. Lastly turns into a scab and falls off.	A rash consisting of itchy blisters first start on the chest, back, and face, and then spreads over the entire body. Not present on palms and soles.	Begins as red macular spots on tongue and face and spreads to arms and legs, and then palms and soles. The rash forms a scab that falls off.
Duration of illness	2–4 weeks	4–7 days	Up to 5 weeks
Death	1–10% of cases, depends on strain	Rare	Disease has been eradicated

Sources

<https://www.cdc.gov/poxvirus/monkeypox/index.html>

<https://www.who.int/news-room/fact-sheets/detail/monkeypox>

<https://www.cdc.gov/smallpox/index.html>

<https://www.cdc.gov/chickenpox/index.html>

Thank you!