MONKEYPOX:THAT'S WHAT'S NOW!

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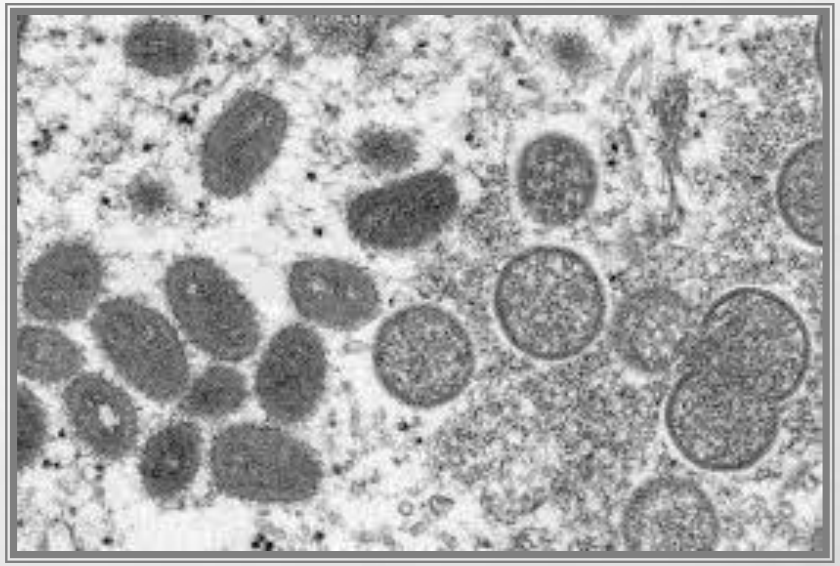
OBJECTIVES

- DISCUSS VIROLOGY
- EPIDEMIOLOGY
- CLINICAL MANIFESTATIONS
- DIAGNOSIS
- MANAGEMENT
- INFECTION PREVENTION PROTOCOLS
  - PEP AND PREP
- STIGMA AWARENESS

VIROLOGY

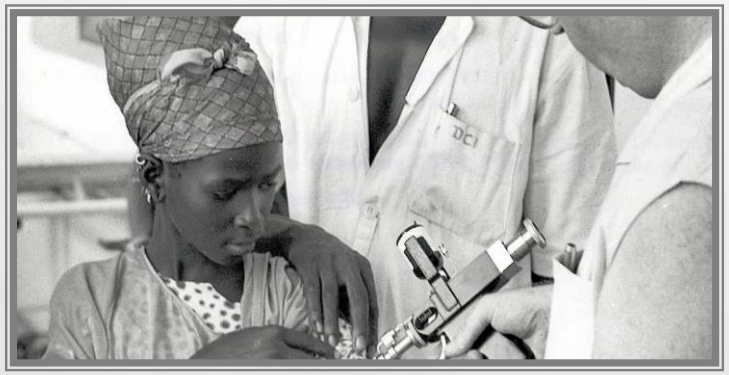
- ORTHOPOXVIRUS FAMILY-SAME GENUS AS VARIOLA (SMALLPOX) AND VACCINA VIRUS
- ELECTRON MICROSCOPY INDISTINGUISHABLE FROM VARIOLA OR VACCINA, BRICK-LIKE SHAPE
- TWO DISTINCT STRAINS IN AFRICA
  - CLADE 1 IN CONGO BASIN
  - CLADE 2 IN WEST AFRICA (LESS VIRULENT)
    - POSSIBLE THIRD STRAIN RELATED TO CLADE 2 RESPONSIBLE FOR CURRENT OUTBREAK IN EUROPE AND N. AMERICA



EPIDEMIOLOGY

- FIRST ISOLATED IN DEMARK 1950S FROM COLONY OF SINGAPOREAN RESEARCH MONKEYS DURING DEVELOPMENT OF THE POLIO VACCINE. SEVERAL OUTBREAKS IN LAB ANIMALS IN US AND EUROPE FOLLOWED
- ISOLATED IN HUMANS IN 1970S IN CURRENT DEMOCRATIC REPUBLIC OF THE CONGO (FORMER REPUBLIC OF ZAIRE)
- AFTER SMALLPOX VACCINATION CAMPAIGN ENDED, CASES WOULD ARISE IN CENTRAL AND WEST AFRICA, MOSTLY AFTER EXPOSURE TO SMALL FOREST ANIMALS.

SMALLPOX VACCINATION



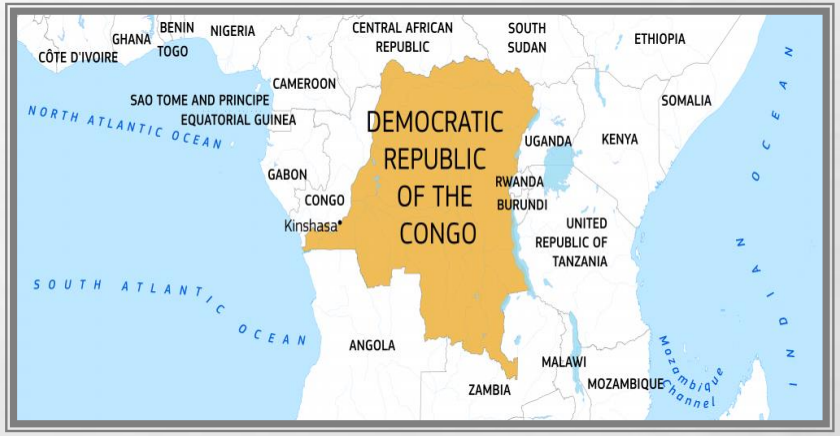
ERADICATED IN 1977

VACCINES STOPPED IN 1980

A FAMILIAR SCENARIO

ENDEMIC OUTBREAKS

- CASES MOSTLY ISOLATED IN DEMOCRATIC REPUBLIC OF THE CONGO MOSTLY BETWEEN 2005-2007
  - UNVACCINATED PATIENTS 5X MORE LIKELY TO BE INFECTED
  - PERSONS LIVING IN FORESTED AREAS
  - MALES
  - AGE UNDER 15 YEARS

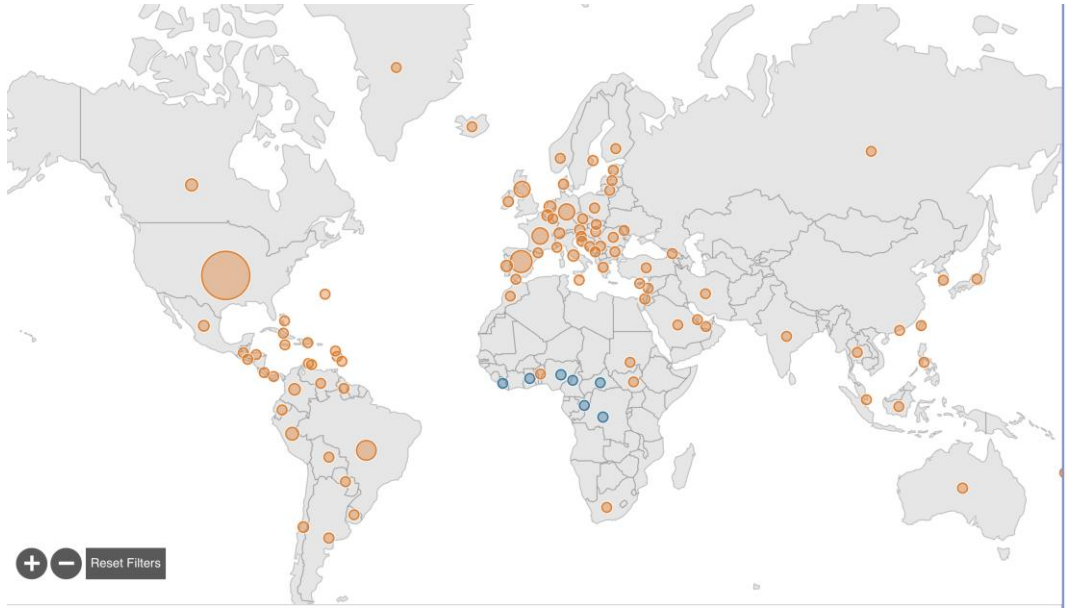


NONENDEMIC OUTBREAKS

- 2003-U.S.- BETWEEN MAY AND JUNE, 71 CASES IN SIX CASES (IL, IN, KS, MO,OH, WI). LINKED TO PET PRAIRIE DOGS WHO HAD AQUIRED MONKEYPOX FROM AFRICAN RODENTS HOUSED IN THE SAME ILLINOIS-BASED DISTRIBUTION CENTER
  - NO NOSOCOMIAL INFECTIONS REPORTED
  - CDC BANNED THE TRANSPORTATION, SALE, OR RELEASE INTO THE WILD OF PRAIRIE DOGS AND AFRICAN ANIMALS (TREE SQUIRRELS, ROPE SQUIRRELS. PORCUPINES, AND STRIPED MICE)

2022 OUTBREAK

- GLOBAL OUTBREAK, FIRST RECOGNIZED IN EUROPE IN MAY 2022. DECLARED AN OUTBREAK JULY 2022.
- MOST CASES AMONGST MSM. SPREADER EVENTS LINKED TO PRIDE EVENTS IN GRAN CANARIA AND MADRID.
- MONKEYPOX IDENTIFIED IN 16 COUNTRIES, 98% MSM



2022 Monkeypox Outbreak Global Map

Data as of 07 Sep 2022 5:00 PM EDT

View: CASES DEATHS

< 2022 U.S. Monkeypox Outbreak

Confirmed Cases

56,026	55,515	511
Total Cases	in locations that have not historically reported monkeypox	in locations that have historically reported monkeypox

Locations with cases

102	95	7
Total	Has not historically reported monkeypox	Has historically reported monkeypox

CDC STATUS UPDATE IN RT

NEW STI?

- MOST DIAGNOSED REPORTED HIGH RISK SEXUAL BEHAVIOR. EARLY CASES LINKED TO SPAIN. MOST REPORTED ANONYMOUS OR MULTIPLE SEX PARTNERS IN THE PRECEDING TWO WEEKS.
  - ATTENDING “SEX ON PREMISES” VENUES (BATHHOUSES, CLUBS, ETC)
  - REPORTING RECREATIONAL DRUG USE DURING SEX
  - CONCOMITANT STIS IN UP TO 30% OF CASES. GONORRHEA, CHLAMYDIA, AND SYPHILIS MOSTLY
  - HIV POSITIVE INDIVIDUALS MADE UP 36-42% OF NEWLY DIAGNOSED MONKEYPOX CASES

VACCINATED FOR SMALLPOX?

- PREVIOUS SMALLPOX VACCINATION PROVIDES SOME PROTECTION AGAINST SEVERE DISEASE
- DOES NOT PROVIDE LIFELONG PROTECTION
- LESIONS TEND NOT TO BE AS DIFFUSE OR AS PAINFUL. DURATION OF ILLNESS ALSO LESS

TRANSMISSION

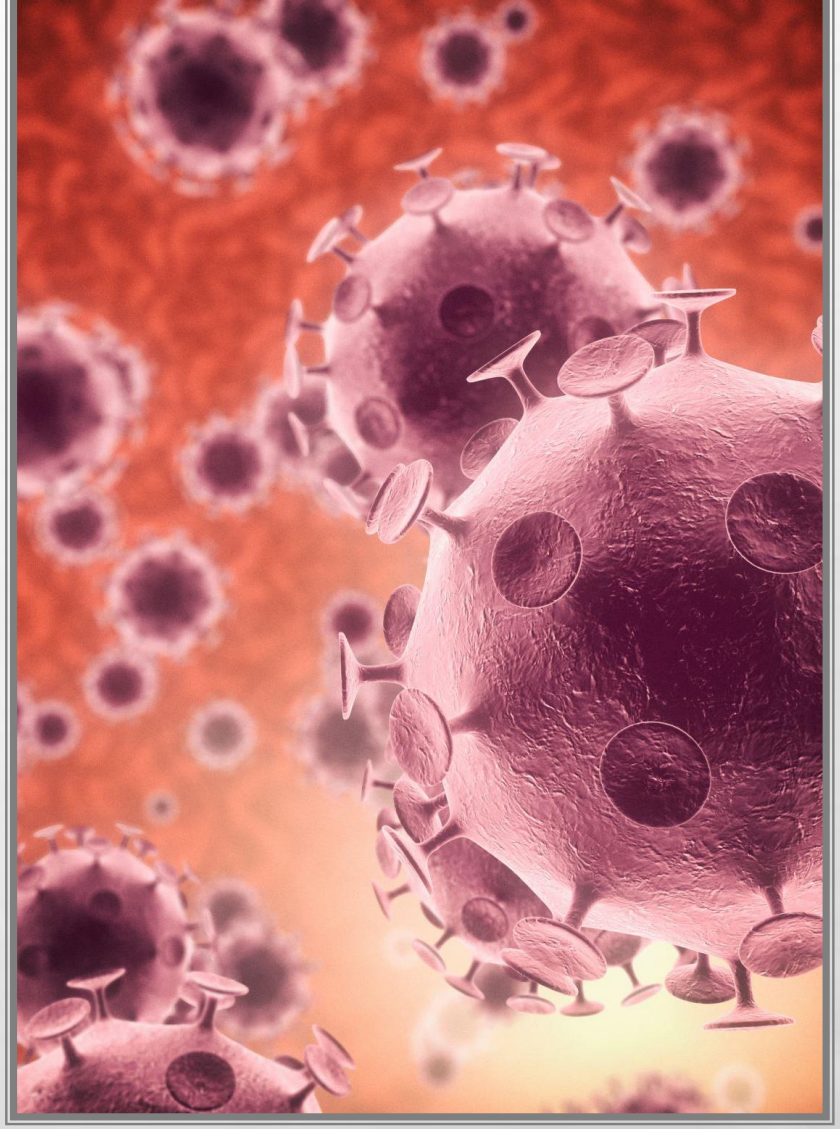
- ANIMAL TO HUMAN
  - CONTACT WITH INFECTED ANIMAL'S BODILY FLUIDS OR THROUGH A BITE.
  - PREPARATION OF BUSHMEAT
  - FOUND IN AFRICAN SQUIRRELS, GAMBIAN POUCHED RATS, DORMICE, AND MONKEYS
  - MONKEYS AND HUMANS ARE INCIDENTAL HOSTS, RESERVOIR UNKNOWN BUT IS LIKELY TO BE IN RODENTS
- HUMAN TO HUMAN
  - DIRECT CONTACT
  - INDIRECT CONTACT VIA FOMITES
  - RESPIRATORY SECRETIONS
  - VERTICAL TRANSMISSION

VIRAL SHEDDING

- A PERSON IS CONSIDERED INFECTIOUS FROM THE ONSET OF CLINICAL SYMPTOMS UNTIL ALL SKIN LESIONS HAVE SCABBED OVER AND RE-EPITHELIALIZATION HAS OCCURRED.
- VIRAL LOADS ARE MUCH HIGHER IN SKIN LESIONS THAN IN PHARYNGEAL SPACE

PATHOGENESIS

- INFECTION CLASSIFIED AS EITHER SYSTEMIC OR LOCALIZED (AT THE SITE OF ENTRY)
- GENERALIZED DISEASE USUALLY MANIFESTS AS A DIFFUSE RASH WHEREAS CUTANEOUS INOCULATION IS USUALLY LOCAL AND MAY OR MAY NOT BE FOLLOWED BY DIFFUSE LESIONS DUE TO VIREMIA



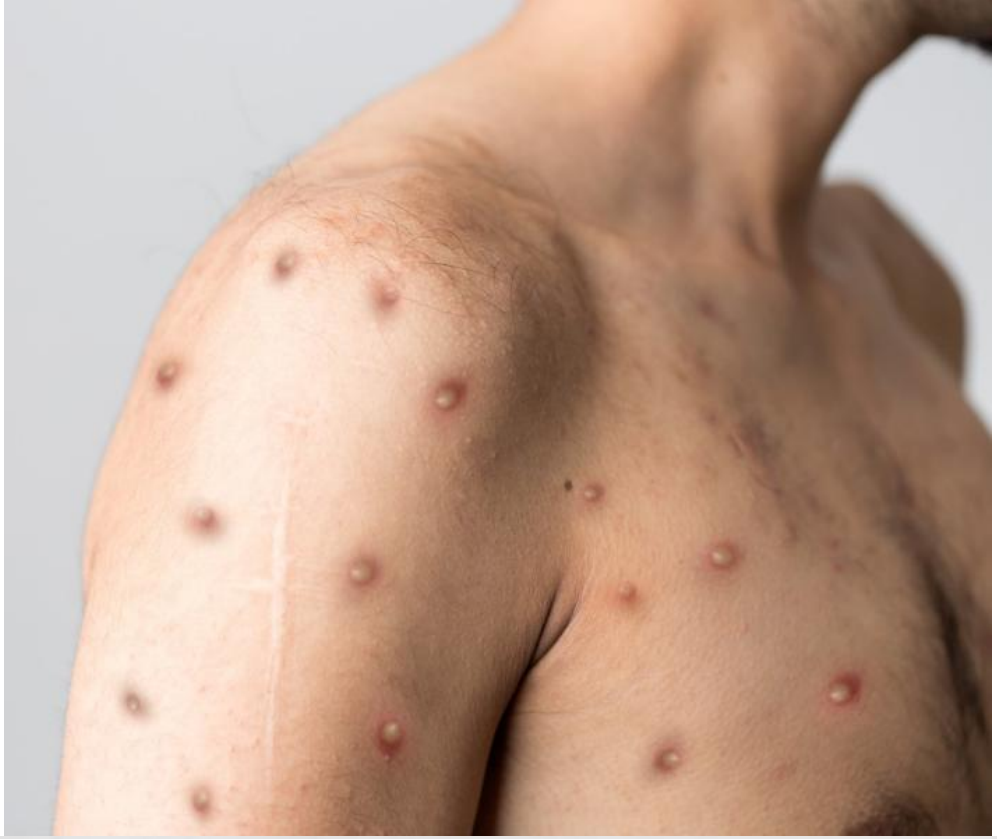
INFECTION VIA CUTANEOUS INOCULATION

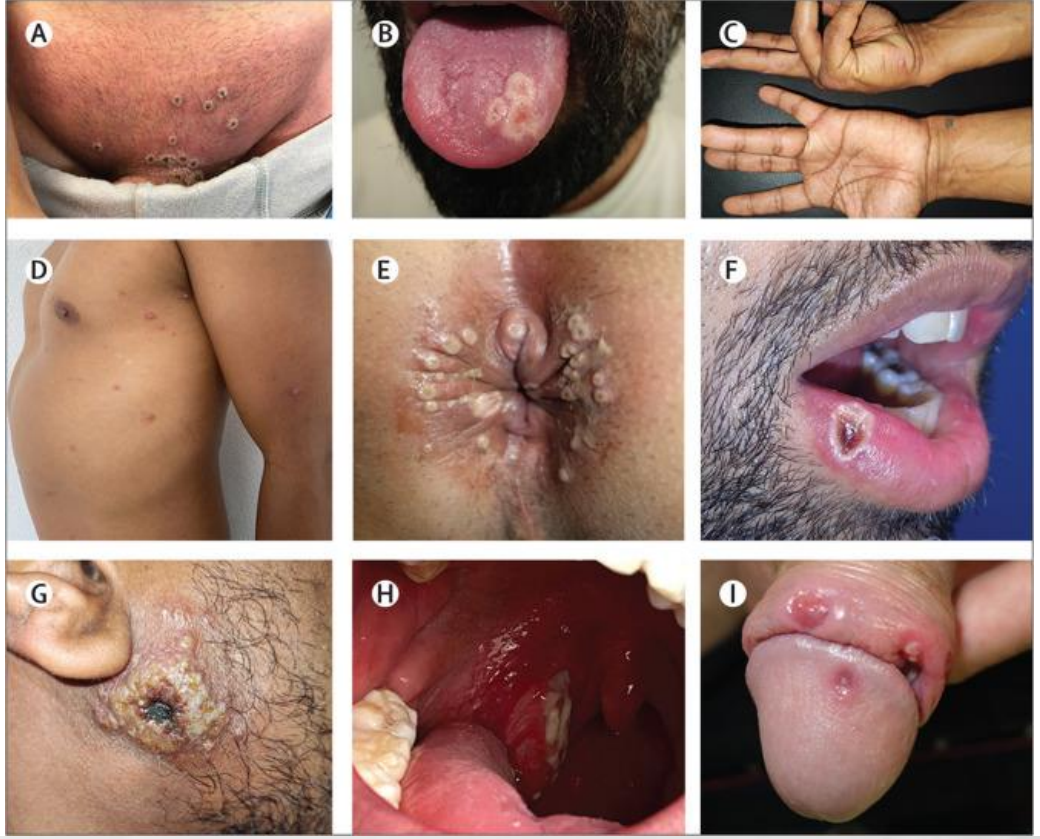
- MONKEYPOX VIRUSES CAN ENTER THE HUMAN HOST VIA MICROABRASIONS IN THE SKIN. THESE INFECTIONS TEND TO BE LOCALIZED WHILE INTRANASAL INOCULATION TENDS TO LEAD TO DIFFUSE VIRAL REPLICATION THROUGHOUT THE BODY, INCLUDING LUNGS.

INFECTION VIA RESPIRATORY ROUTE

SPREADS FROM BRONCHIOLES AND ALVEOLI TO REGIONAL LYMPH NODES AND THEN TO RETICULOENDOTHELIAL SYSTEM BY DAY 6. TONSILS, SPLEEN, LIVER, AND COLON.

REPLICATION OCCURS AND REACHES PEAK CONCENTRATION BY DAY 10 WHICH CORRELATES WITH SYMPTOMS.





CLINICAL MANIFESTATIONS

TRADITIONALLY CAUSED SYSTEMIC ILLNESS INCLUDING FEVERS, CHILLS, MYALGIAS, AND CHARACTERISTIC VESICULAR RASH.

2022 PATIENTS PRESENTING WITH ORAL, GENITAL, AND ANAL LESIONS WITHOUT SYSTEMIC DISEASE

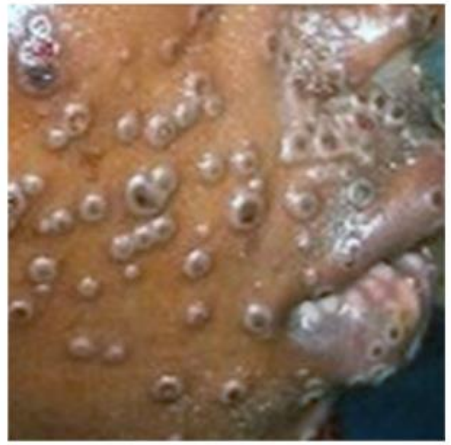
INCUBATION PERIOD

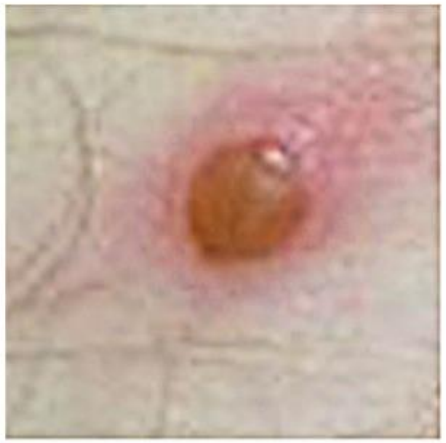
★

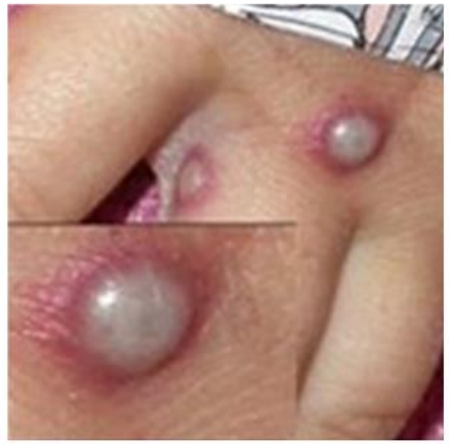
5-13 DAYS BUT CAN RANGE FROM 4-21 DAYS.

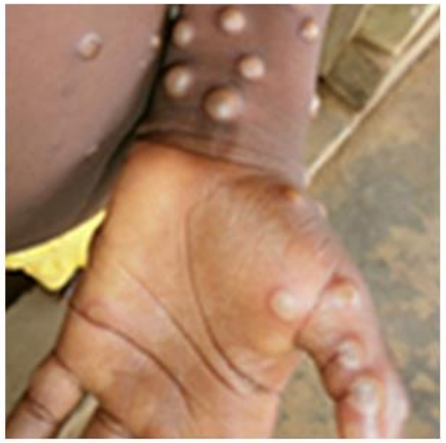
CLINICAL PRESENTATION

- PRODROMAL STAGE VERY SIMILAR OTHER VIRAL INFECTIONS WITH GENERALIZED FATIGUE, MYALGIAS, BACK PAIN, SORE THROAT, HEADACHE, AND FEVER.
- RASH APPEARS THREE TO FOUR DAYS AFTER ONSET OF SYMPTOMS AND WILL CONTINUE FOR TWO TO THREE WEEKS.









THE RASH

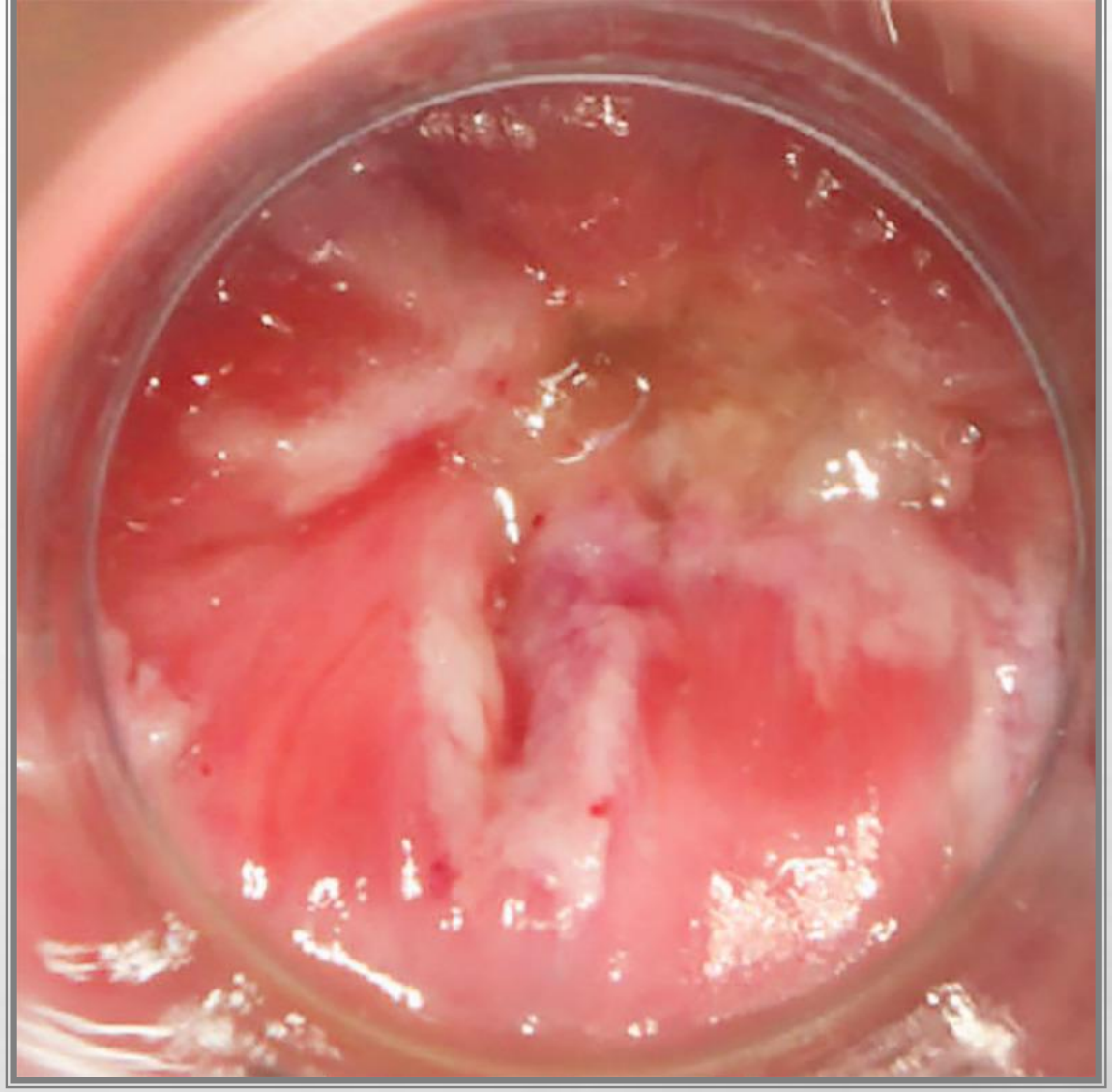
- Typically 2-5mm diameter macules
- Evolve to papules, vescicles, and pseudo-pustles (contain cell debris but are not infected)
- Well-circumscribed, deep-seated, and umbilicated
- Eventually they crust over, dry up, and fall off.
- Painful at first, becomes pruritic in convalescence

LOCATION

- DURING THE 2022 OUTBREAK, PATIENTS PRIMARILY PRESENTED WITH ANOGENITAL LESIONS AND PERIORAL AREAS ALONE WITH A SMALL NUMBER OF LESIONS ON THE TRUNK
  - GENITAL LESIONS TEND TO SOLITARY LESIONS ON THE PENIS BUT CAN ALSO AFFECT SCROTUM AND PUBIS. ASSOCIATED WITH INCREASED EDEMA CAUSING PARAPHIMOSIS.
  - PERIANAL LESIONS INVOLVE THE BUTTOCK, ANAL MARGIN, AND PERIANAL SKIN. MAY BE ASSOCIATED WIH RECTAL PAIN OR PAIN ON DEFECATION
  - PERIORAL LESIONS INCLUDE LESIONS OF THE TONGUE WHICH ARE CIRCULAR, WHITE, CENTRALLY DEPRESSED

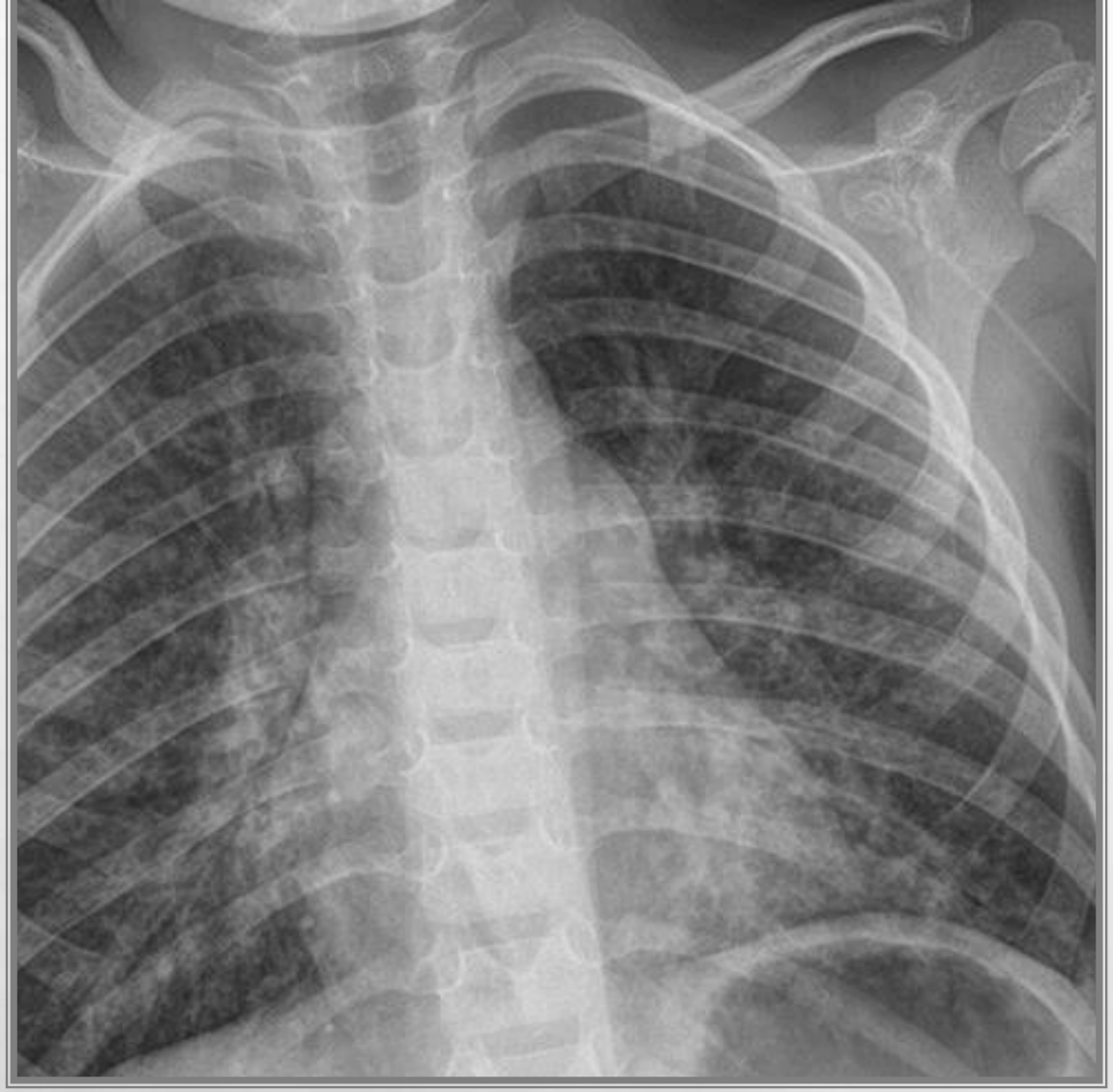
UNIQUE LOCATIONS IN 2022

- PROCTITIS-PATIENTS PRESENT WITH ANORECTAL PAIN, TENESMUS, AND PURULENT DISCHARGE. VESICULAR AND PUSTULAR LESIONS MAY BE PRESENT. RISK FACTOR IS RECEPTIVE ANAL INTERCOURSE. PATIENTS OFTEN HAVE EARLIER SYSTEMIC SYMPTOMS BEFORE DEVELOPING LESIONS
    - DIFFICULT TO DISTINGUISH FROM OTHER INFECTIONS SUCH AS LGV, HSV, OR SYPHILIS
- ULCERATIVE PHARYNGITIS/TONSILLITIS-PATIENTS OFTEN PRESENT WITH ODYNOPHAGIA OR DYSPHAGIA WITH ULCERATIVE LESIONS ON THE PALATINE TONSILS OR PHARYNX



TRADITIONAL FINDINGS

- RASH-TYPICALLY ON FACE, TRUNK, ARMS, PALMS, LEGS, AND SOLES OF THE FEET.
- FEVER
- PRURITIS
- HEADACHE
- GENERALIZED LYMPHADENOPATHY



CONCERNING COMPLICATIONS

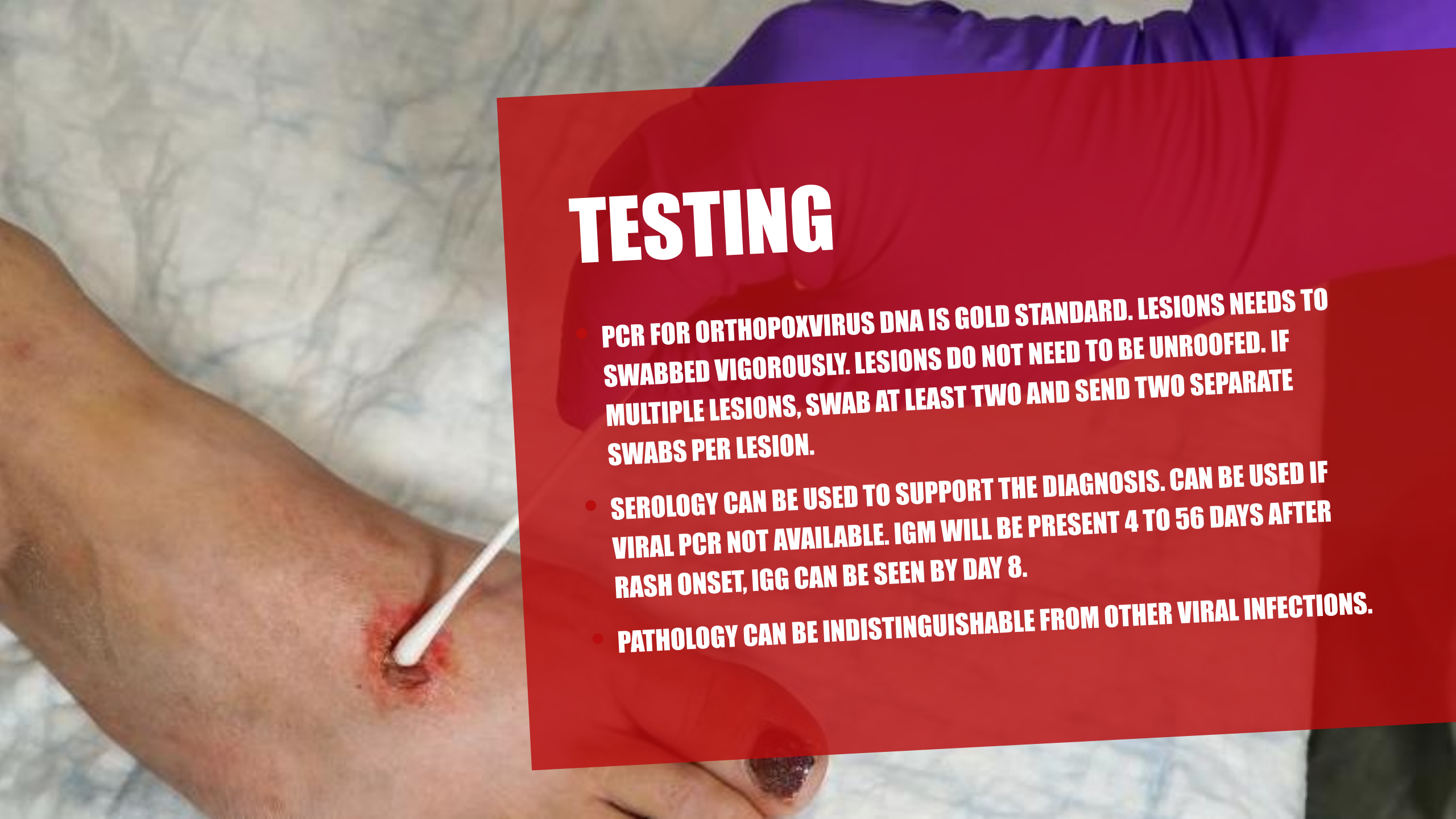
- BRONCHOPHENUMIA
- SEPSIS
- ENCEPHALITIS
- MYOCARDITIS
- CORNEAL SCARRING LEADING TO BLINDNESS
- RECTAL WALL PERFORATION

PROGNOSIS

- FOR MOST, INFECTION IS SELF-LIMITED AND SYMPTOMS CAN LAST FROM TWO TO FOUR WEEKS
- CURRENT OUTBREAK HAS SEEN VERY FEW HOSPITALIZATIONS. MOST WERE FOR ISOLATION, PAIN MANAGEMENT, OR FOR TREATMENT OF SECONDARY INFECTIONS
- MORTALITY VARIES BASED ON STRAIN. IN AFRICA, UP TO 10%. CURRENT OUTBREAK, TWO REPORTED DEATHS (AS OF SEPTEMBER 2022) FROM ENCEPHALITIS.
- SEVERE DISEASE MORE LIKELY IN THOSE WITH UNDERLYING IMMUNE DEFICIENCIES, UNTREATED HIV INFECTION, OR IN CHILDREN.

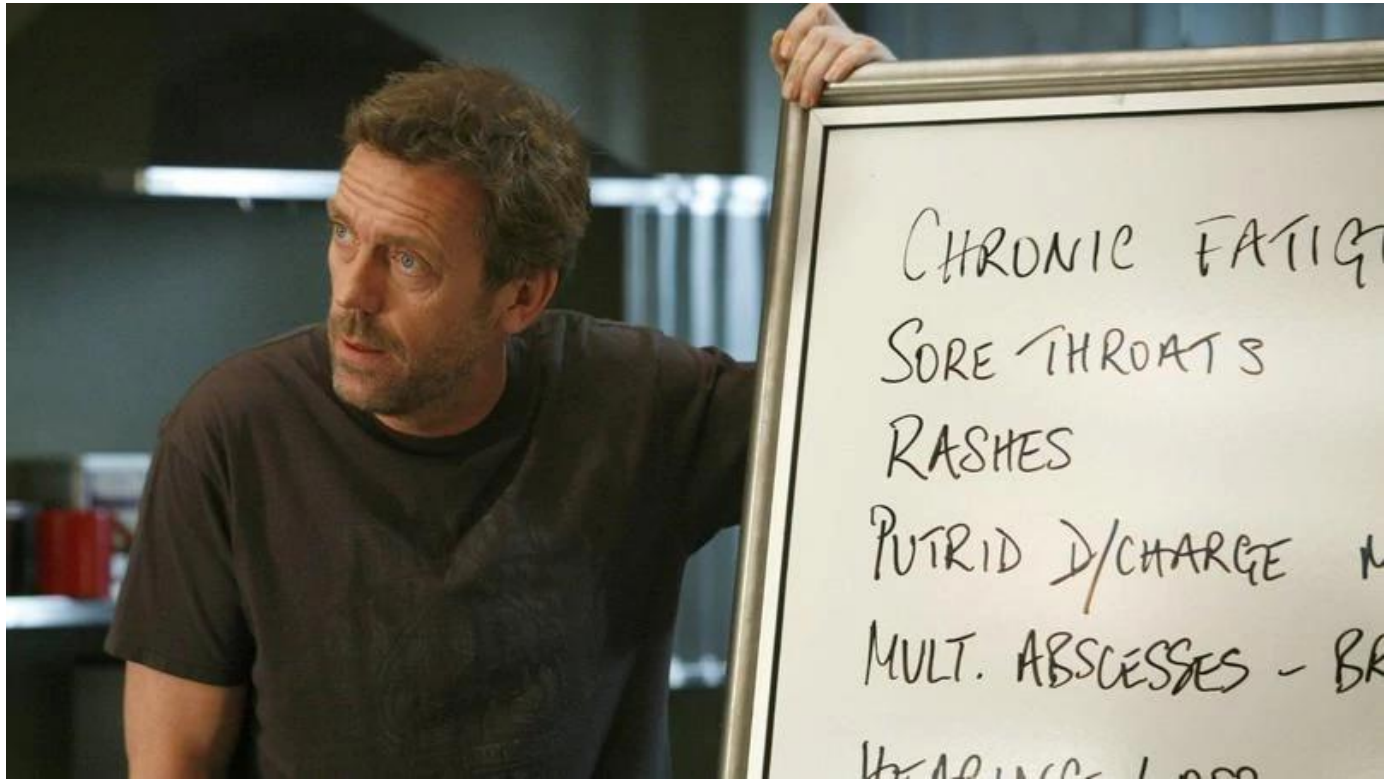
EVALUATION AND DIAGNOSIS

- PATIENTS PRESENTING WITH A RASH AND OTHER SYMPTOMS (I.E. PROCTITIS) AND HAVE EPIDEMIOLOGIC RISK FACTORS FOR INFECTION
  - CLOSE OR INTIMATE CONTACT WITH A PERSON OR PERSONS INFECTED WITH MONKEYPOX
  - PART OF A SOCIAL NETWORK OR COMMUNITY EXPERIENCING INCREASED INCIDENCE OF MONKEYPOX
  - RECENT TRAVEL TO CENTRAL OR WEST AFRICA



TESTING

- PCR FOR ORTHOPOXVIRUS DNA IS GOLD STANDARD. LESIONS NEEDS TO SWABBED VIGOROUSLY. LESIONS DO NOT NEED TO BE UNROOFED. IF MULTIPLE LESIONS, SWAB AT LEAST TWO AND SEND TWO SEPARATE SWABS PER LESION.
- SEROLOGY CAN BE USED TO SUPPORT THE DIAGNOSIS. CAN BE USED IF VIRAL PCR NOT AVAILABLE. IGM WILL BE PRESENT 4 TO 56 DAYS AFTER RASH ONSET, IGG CAN BE SEEN BY DAY 8.
- PATHOLOGY CAN BE INDISTINGUISHABLE FROM OTHER VIRAL INFECTIONS.



DIFFERENTIAL DIAGNOSIS

- VARICELLA
- HSV/ZOSTER
- SYPHILIS
- LGV/CHLAMYDIA
- GONORRHEA
- IMPETIGO
- MOLLUSCUM CONTAGIOSUM
- SMALLPOX
- VACCINA VIRUS

- MOSTLY SUPPORTIVE CARE
  - PAIN CONTROL
  - STOOL SOFTENERS
  - TOPICAL ANALGESICS, I.E. LIDOCAINE
  - SITZ BATHS
  - IVF FOR SEVERE DEHYDRATION FROM NAUSEA/VOMITING/DYSPHAGIA/TONSILLITIS
- ANTIVIRAL THERAPY

TREATMENT

ANTIVIRALS

- TREATMENT OF CHOICE IS TECOVIRIMAT
  - POTENT ORTHOPOXVIRUS PROTEIN INHIBITOR
  - FDA APPROVED FOR SMALLPOX, EUA FOR MONKEYPOX
  - ONLY AVAILABLE THROUGH CDC VIA EXPANDED ACCESS
  - INDICATED FOR SEVERE INFECTIONS, THOSE AT SERIOUS RISK FOR SEVERE INFECTION, IMMUNOCOMPROMISED PATIENTS
- CIDOFOVIR/BRINCIDOFOVIR (LIMITED DATA)
- TRIFLURIDINE AND VIDARABINE EYE DROPS/OINTMENTS

INFECTION PREVENTION AND CONTROL

- IDENTIFY, ISOLATE, AND INFORM
- HEALTH CARE SETTINGS
  - PLACE PATIENT IN A PRIVATE ROOM. IF ALREADY IN SHARED ROOM, MASK BOTH PATIENTS AND PROVIDE SEPARATE COMMODES
  - AIRBORNE ISOLATIONS IN NEGATIVE PRESSURE ROOM OR AT LEAST A PRIVATE ROOM
  - PPE TO INCLUDE GOWN, GLOVES, EYE PROTECTION, N-95 MASK
- COMMUNITY SETTINGS
  - COVER LESIONS
  - PROPER HAND HYGIENE
  - USE OF DISPOSABLE GLOVES WHEN IN DIRECT CONTACT WITH LESIONS

INFECTION PREVENTION

- WHEN TO DISCONTINUE ISOLATION
  - PERSON CONSIDERED INFECTIOUS UNTIL ALL LESIONS HAVE CRUSTED OVER AND FALLEN OFFF
- PRECAUTIONS AFTER RECOVERY
  - RECOMMEND CONSISTENT CONDOM USE FOR 12 WEEKS AFTER RECOVERY AS MONKEYPOX CAN BE FOUND IN SEMEN AND VAGINAL FLUIDS

POST-EXPOSURE MANAGEMENT

- EXPOSURE DEFINITION AND RISK STRATIFICATION
  - COMMUNITY VS. HEALTH CARE SETTING
  - HIGH, INTERMEDIATE, AND LOWER RISK
- MONITORING AFTER EXPOSURE
  - ALL PATIENTS SHOULD BE MONITORED FOR 21 DAYS REGARDLESS OF RISK LEVEL
- POST-EXPOSURE PROPHYLAXIS
  - HIGHER AND INTERMEDIATE RISK PATIENTS MAY RECEIVE ORTHOPOXVIRUS VACCINE
  - BEST GIVEN WITHIN 4 DAYS OF EXPOSURE, CAN BE CONSIDERED UP TO 14 DAYS AFTER AN EXPOSURE

VACCINES

- MODIFIED VACCINA ANKARA (MVA) VACCINE- JYNNEOS
  - HIGHLY ATTENUATED, NONREPLICATING VACCINA VIRUS
  - GIVEN AS TWO DOSES SQ FOUR WEEKS APART
- ACAM2000
  - REPLICATION-COMPETENT SMALLPOX VACCINE
  - USED FOR MONKEYPOX UNDER EXPANDED ACCESS

PRE-EXPOSURE PROPHYLAXIS

- HIGH RISK WORKERS IN HEALTH CARE OR CLINICAL LABORATORIES HANDLING VIRAL SPECIMENS
- PERSONS LIVING IN AN AREA WITH HIGH INFECTION PREVALENCE
- PERSONS WITH SEXUAL PARTNERS FROM INFECTION PREVALENT AREEA

- PREGNANT WOMEN
  - MFM CONSULTATION RECOMMENDED
  - CAN SPREAD TO FETUS IN UTERO RECOMMEND MONTHLY FETAL SURVEILLANCE
  - CESAREAN DELIVERY RECOMMENDED IF PATIENT HAS GENITAL LESIONS
  - UNINFECTED NEWBORNS NEED TO BE ISOLATED FROM OTHER NEWBORNS AND INFECTED MOTHER
  - MVA VACCINE CAN BE OFFERED
- CHILDREN
  - DATA IS LIMITED
  - MVA VACCINE CAN BE GIVEN FOR THOSE >6 MONTHS OF AGE
  - ACAM2000 CAN BE USED IN PATIENTS >12 MONTHS OF AGED
- PERSONS LIVING WITH HIV
  - IF HIV SUPPRESSED, NO DIFFERENCES. CD4 >350
  - MVA CAN BE GIVEN
  - ACAM2000 CAN BE GIVEN IF CD4> 500

SPECIAL POPULATIONS


ARE INFECTED
itain threaten
gay virus plag
S, Medical Correspondent
AIDS virus is
ding at the rate
00 cases a day in
one.
imate that as many
'Killer blood' tests ordered at donor centres
New curb on
AIDS peril
Eyes
down
for the
BIG
one!
Have
you won
The
Sun's
GAYS IN
FEAR
They dread revenge
after attack on boy
LET'S TALK ABOUT STIGMA

MONKEYPOX IS NOT AN STI..BUT...

- MONKEYPOX STARTED TO SPREAD AFTER A PERSON FROM AN ENDEMIC AREA TRAVELLED TO GRAN CANARIA TO A PRIDE EVENT
- WARMER WEATHER, INCREASED DESIRE FOR TRAVEL AFTER COVID PANDEMIC, AND THE MONTH OF JUNE WITH SEVERAL PRIDE EVENTS WORLDWIDE LEAD TO AN INCREASED MODE OF TRANSMISSION

OUR WORDS MATTER

- BE HONEST, BUT AVOID OVEREMPHASIZING ONE GROUP'S RISK OVER ANOTHER
- DON'T OVEREMPHASIZE SEX
- KNOW YOUR AUDIENCE
- REMIND PEOPLE OF THE PROACTIVE STEPS THEY CAN TAKE


GAYS 'CONSPIRED TO INFECT SOCIETY'

By DAVID BROWN

A RADICAL group deliberately set out to contaminate society by donating AIDS-infected blood, according to [illegible] new claims.

Call for homosexual to spot gay clients

By Medical Reporter KATE CRAWFORD

GAYS ACCUSED OF SABOTAGE

THANK YOU!