
بسم الله الرحمن الرحیم

دانشگاه علوم پزشکی و خدمات بهداشتی درمانی تهران

معاونت بهداشت

وبینار تشخیص ، درمان و مراقبت بیماری Monkey pox (آبله میمونی)

مدرسین :

آقای دکتر ابراهیم قادری

رئیس اداره مراقبت مرکز مدیریت بیماری های واگیر وزارت بهداشت

آقای دکتر بهزاد امیری (متخصص بیماری های عفونی)

رئیس اداره بیماری های قابل انتقال بین انسان وحیوان (زئونوز) وزارت بهداشت

آقای دکتر علی نیک فرجام

مدیرگروه تخصصی پیشگیری از بیماری های واگیر معاونت بهداشت دانشگاه تهران

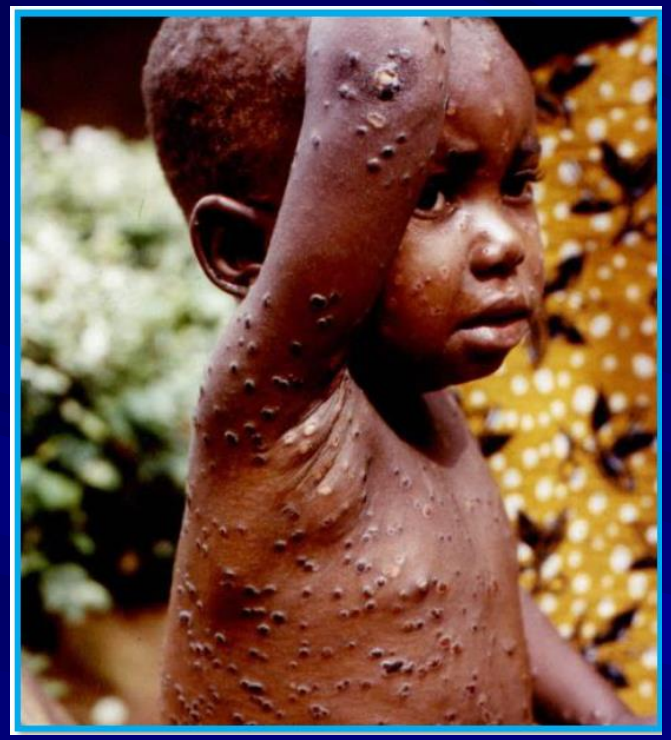
دوشنبه مورخ ۱۴۰۱/۳/۱۶ ساعت ۲۱ الی ۲۲:۳۰

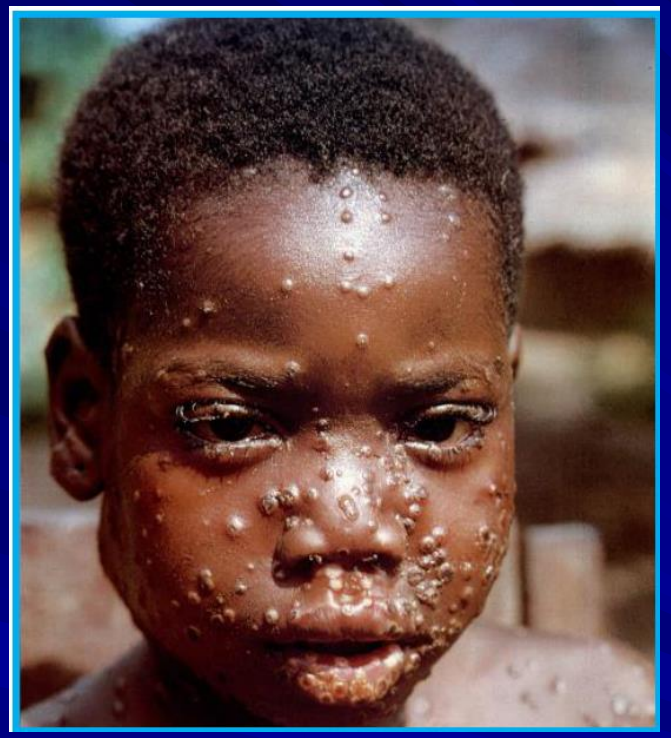
لینک ورود به جلسه :

https://www.skyroom.online/ch/tums3/ vagir

گروه هدف پزشکان ، پرستاران و مراقبین سلامت

Monkeypox





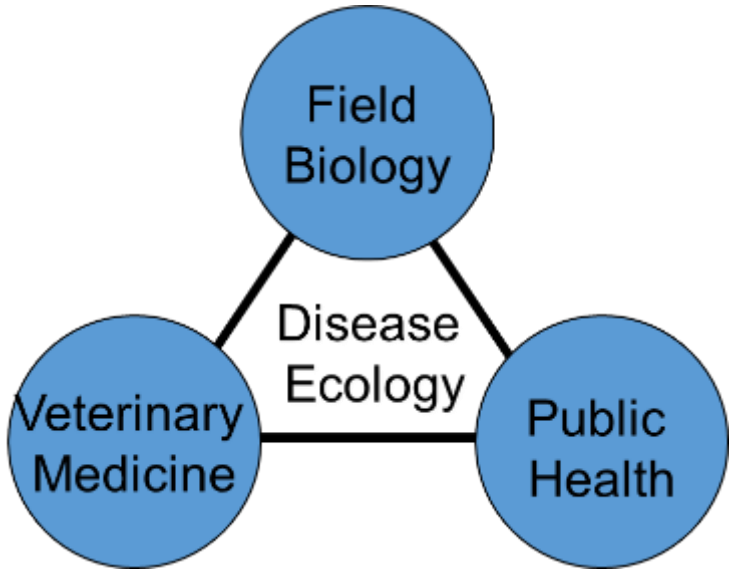
Dr Behzad Amiri

MD, MPH, Infectious Diseases Specialist

Head of the Department of Zoonotic Diseases

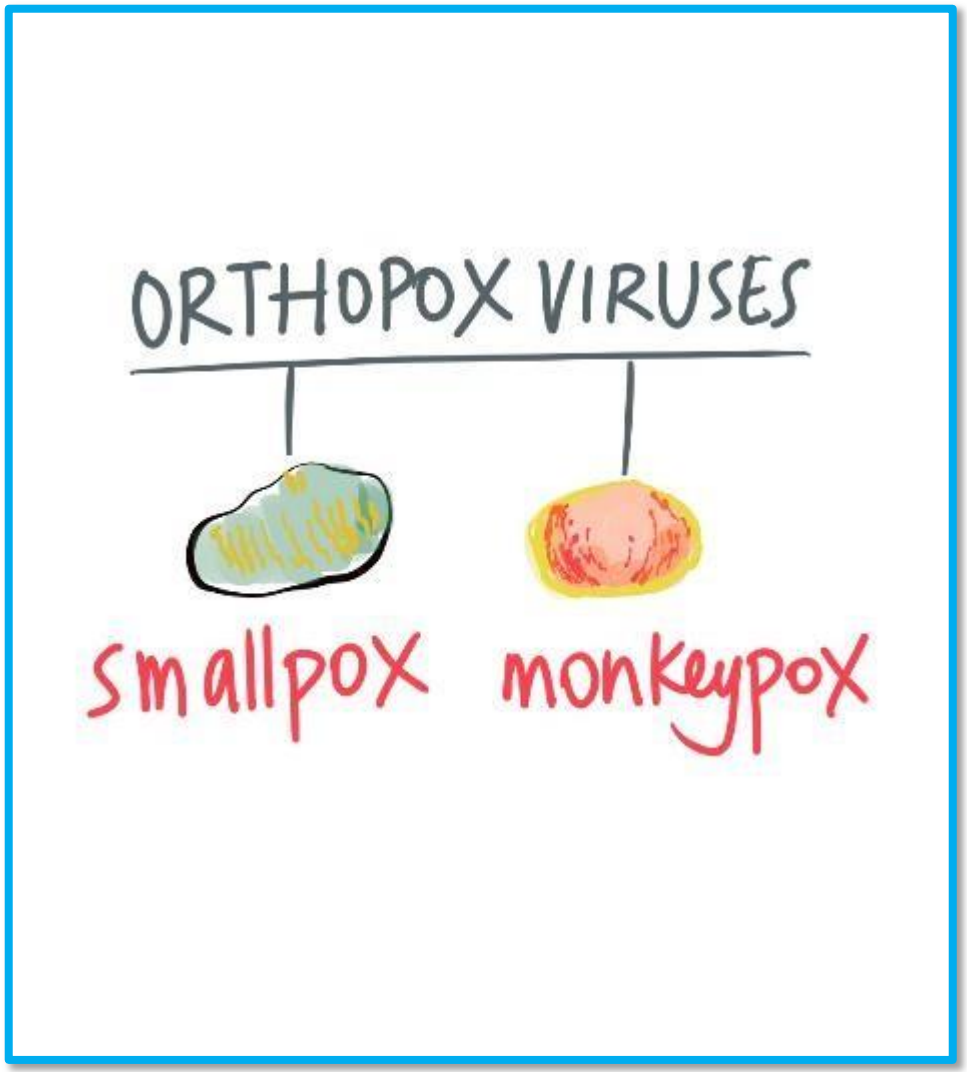
Center for Communicable Diseases Control & Prevention

Monkeypox: Zoonotic transmission



- Monkeypox occurs primarily around rainforests of West and Central Africa.
- The natural host of monkeypox is not known.
- Many species of small rodents and non-human primates are susceptible to monkeypox virus.
- Following the eradication of smallpox, monkeypox virus emerged as the most significant orthopoxvirus in humans.

Monkeypox: The orthopoxviruses

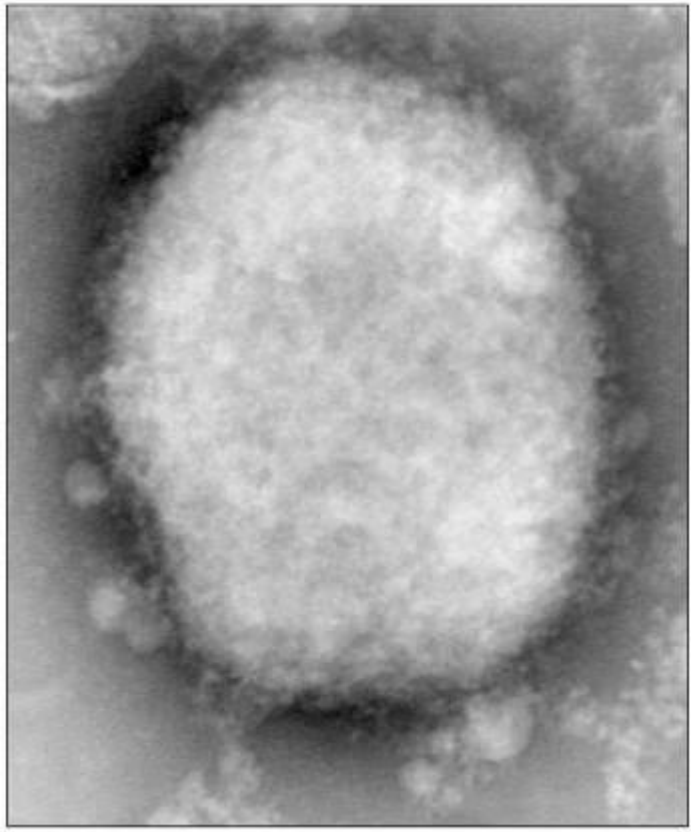


- Like cowpox virus and variola virus (which causes smallpox), the monkeypox virus is a species of the genus *Orthopoxvirus* in the family *Poxviridae.*
- Monkeypox is a zoonosis (transmitted to humans from animals) with symptoms similar to smallpox, although less severe.
- Smallpox was eradicated in 1980 and vaccination ceased.
- Waning immunity may be a factor in the emergence of monkeypox.

Poxviruses that infect humans

Genus	Virus	Primary host(s)	Clinical features in humans
Orthopoxvirus	Variola	Man	Smallpox
	Vaccinia	Man	Vesicular vaccination lession
	Cowpox	Cattle, cats, rodents	Lesions on hands
	Monkeypox	Monkey, squirrels	Resembles smallpox
Parapoxvirus	Pseudocowpox	Cattle	Localized nodular lesions (milkers' nodes)
Yatapoxvirus	Orf	Sheep, goats	Localized vesiculo. Granulomatous lesions
	Tanpox	Monkeys	Vesicular skin lesions and febrile illness
	Yabapox	Monkeys	Human infections very rare and accidental; localized skin tumors
Molluscipoxvirus	Molluscum contagiosum	Man	Multiple small skin nodules

Monkeypox: Virus characteristics



Credit: The Centers for Disease Control and Prevention (CDC), USA

- Distinct virus subtypes group in two clades:
- The **Central African** clade, prevalent in the Central African Republic, the Democratic Republic of the Congo and other countries.
  - Clinically, virus in this clade causes more severe illness and case fatality up to 11%
- The **West African** clade, found in Nigeria, Côte d'Ivoire, Liberia and Sierra Leone.
  - This monkeypox virus causes less human-to-human transmission, less severe illness, and death in up to 6% of cases.

History of monkeypox

Credit: Exp Anim / C. Milhaud, et al., 1969

- Monkeypox was first identified as an illness of non-human primates. The virus is also found in rodents.
- Monkeypox in humans was first identified in 1970 in the Democratic Republic of Congo.
- Democratic Republic of the Congo routinely reports a high number of cases: more than 1,000 suspected cases per year since 2005.

Monkeypox : Animal-to-human transmission

Credit: 123rf

- Human infection has occurred from handling infected animals: giant poached rats, rope squirrels, and monkeys.
- Infection results from direct contact with the blood, bodily fluids, or external lesions of infected animals.
- Eating inadequately cooked meat of infected animals is a possible risk factor.
- For most human infections, the source is not known.

Animal species in Africa found to host monkeypox virus

Gambian pouched rat
Cricetomys gambianus *

Dwarf dormouse
Graphiurus murinus *

Sun squirrel
Heliosciurus* sp.

Rope squirrel
Funisciurus* sp.

Colobus monkey
Colobus sp. **

Sooty mangabey
Cercocebus atys **

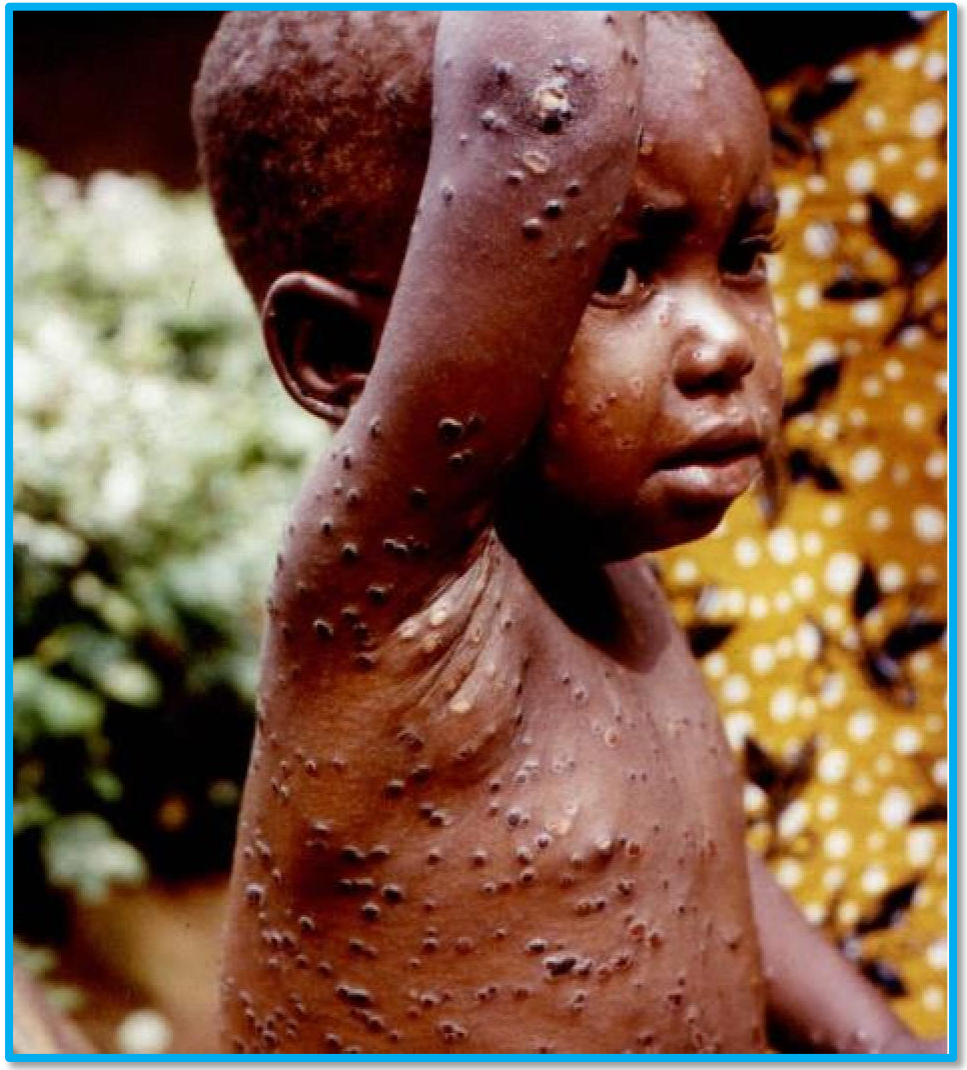
* Credit: The Centers for Disease Control and Prevention (CDC), USA
** Credit: 123rf

Monkeypox transmission: Human-to-human

- Human-to-human transmission results from close contact with infected respiratory droplets, skin lesions, or contaminated objects.
- Health care workers and household members of active cases are at higher risk of infection.
- As human-to-human transmission is limited, most outbreaks consist of only a few cases within families.

Monkeypox: Incubation period

- The interval from infection to onset of symptoms is usually 6 to 13 days, but can range from 5 to 21 days.



WHO/ M. V. Szczeniowski

Monkeypox: Disease course

- The infection progresses in two phases:
  - the **invasion** period (0-5 days) characterized by fever, headache, lymphadenopathy (swelling of the lymph nodes), back pain, myalgia (muscle aches), and fatigue; and
  - A characteristic **rash** appearing in stages 1-3 days after the onset of fever, beginning on the face and spreading to the trunk and limbs.

Credit: Nigeria Centre for Disease Control

Monkeypox: An evolving rash

- The rash lesions evolve from macules (lesions with a flat base) to papules (raised firm lesions) to vesicles (filled with clear fluid) to pustules (filled with yellowish fluid), followed by crusts
- The rash affects
  - the face in 95% of cases,
  - the palms and soles of the feet (75%),
  - oral mucous membranes (70%),
  - genitalia (30%),
  - the conjunctivae and cornea (20%).
- It may take three weeks for crusts to disappear.

Credit: CDC/ B. W. J. Mahy

Monkeypox: Extent and duration of illness

- Lesions range from a few to several thousand and are often painful.
- Severe lymphadenopathy (swollen lymph nodes) is a distinctive feature of monkeypox and generally develops before the rash.
- Monkeypox usually lasts 3 to 4 weeks.
- Severe illness occurs more commonly in children.

Swollen lymph nodes

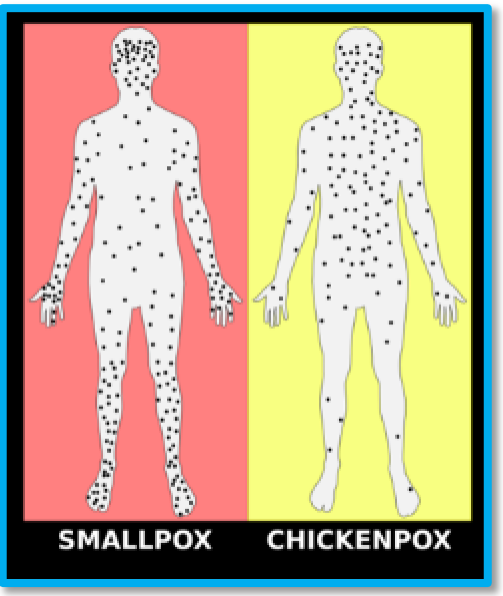
Credit: CDC/ B. W. J. Mahy

Monkeypox: Differential diagnosis

WHO/ M. V. Szczeniowski

- Monkeypox can resemble other infectious illnesses with fever and rash, such as:
  - varicella (chickenpox)
  - measles
  - smallpox (now eradicated).
- Other conditions to ruled out:
  - bacterial skin infections, scabies, syphilis and medication allergies
- Early considerations include other febrile illnesses
- Laboratory confirmation is necessary to make a definitive diagnosis.

Monkeypox: Clinical features



Symptoms	Monkeypox	Chickenpox	Measles
Fever	Fever > 38 °C Rash after 1-3 days	Fever to 39 °C Rash after 0-2 days	High fever to 40.5 °C, Rash after 2-4 days
Rash appearance	Macules, papules, vesicles, pustules present at the same stage on any area	Macules, papules, vesicles, present in several stages	Non-vesicular rash in different stages
Rash development	Slow, 3-4 weeks	Rapid, appear in crops over several days	Rapid, 5-7 days
Rash distribution	Starts on head; more dense on face and limbs; appears on palms and soles	Starts on head; more dense on body; absent on palms and soles	Starts on head and spreads; may reach hands and feet
Classic feature	Lymphadenopathy	Itchy rash	Koplik spots
Death	Up to 11%	Rare	Varies widely

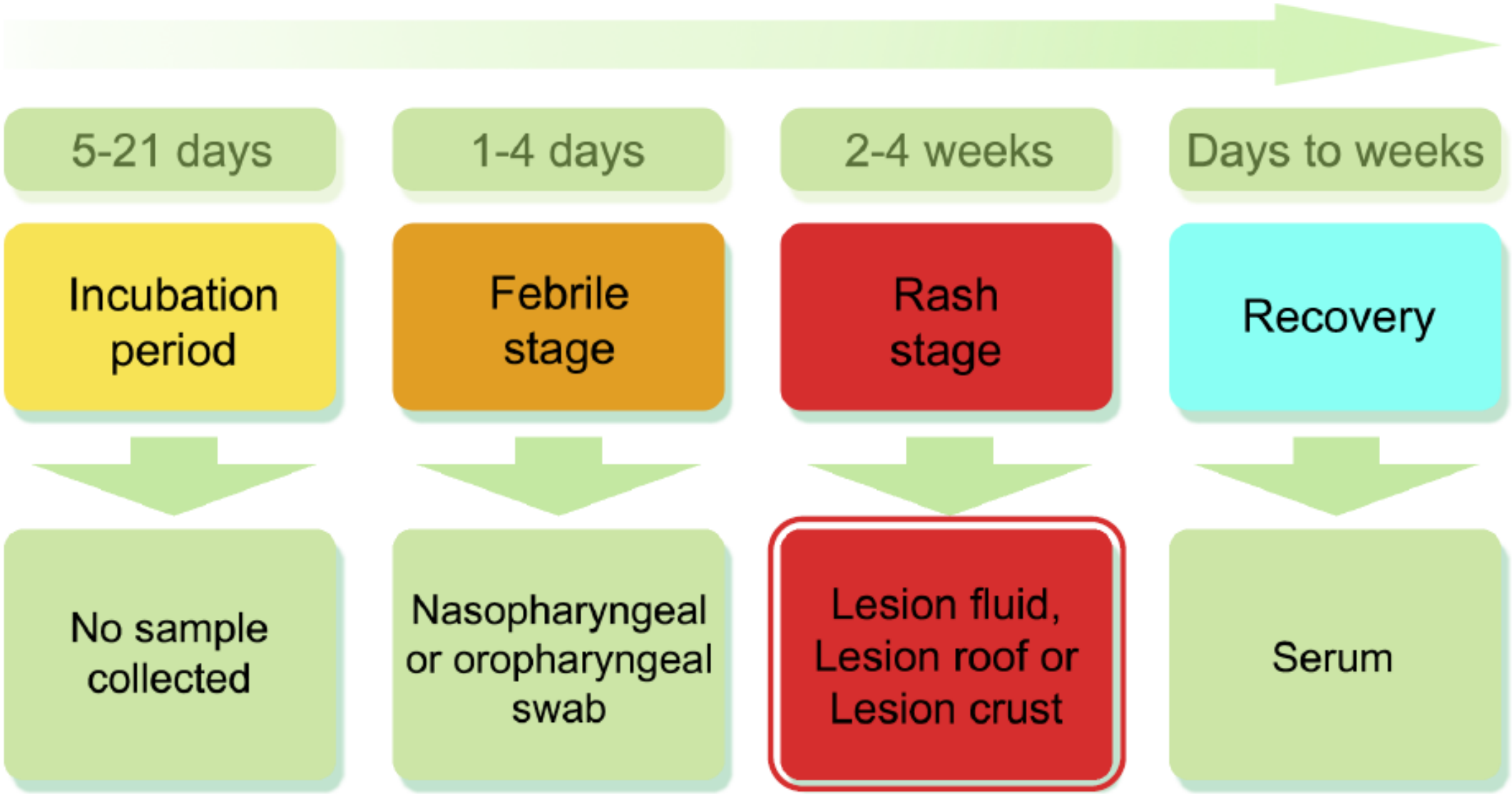
Note: Smallpox was eradicated in 1980. Clinically, smallpox was very similar to monkeypox. However, lymphadenopathy was not present in smallpox. Smallpox was more contagious and more often fatal.

Monkeypox: Laboratory diagnosis

Credit: Am. J. Trop. Med. Hyg. / McCollum, 2017

- Monkeypox can be confirmed in the laboratory.
- The best specimens are from lesions (fluid, roof and crust).
- The virus can be best identified with nucleic acid tests by PCR. Antigen and antibody detection methods are not specific
- Specimens from persons and animals should be handled by trained staff, wearing personal protective equipment and working in suitably equipped laboratories.
- Procedures for safe storage and transport of samples must be followed.

Monkeypox: Which specimens to collect and when?



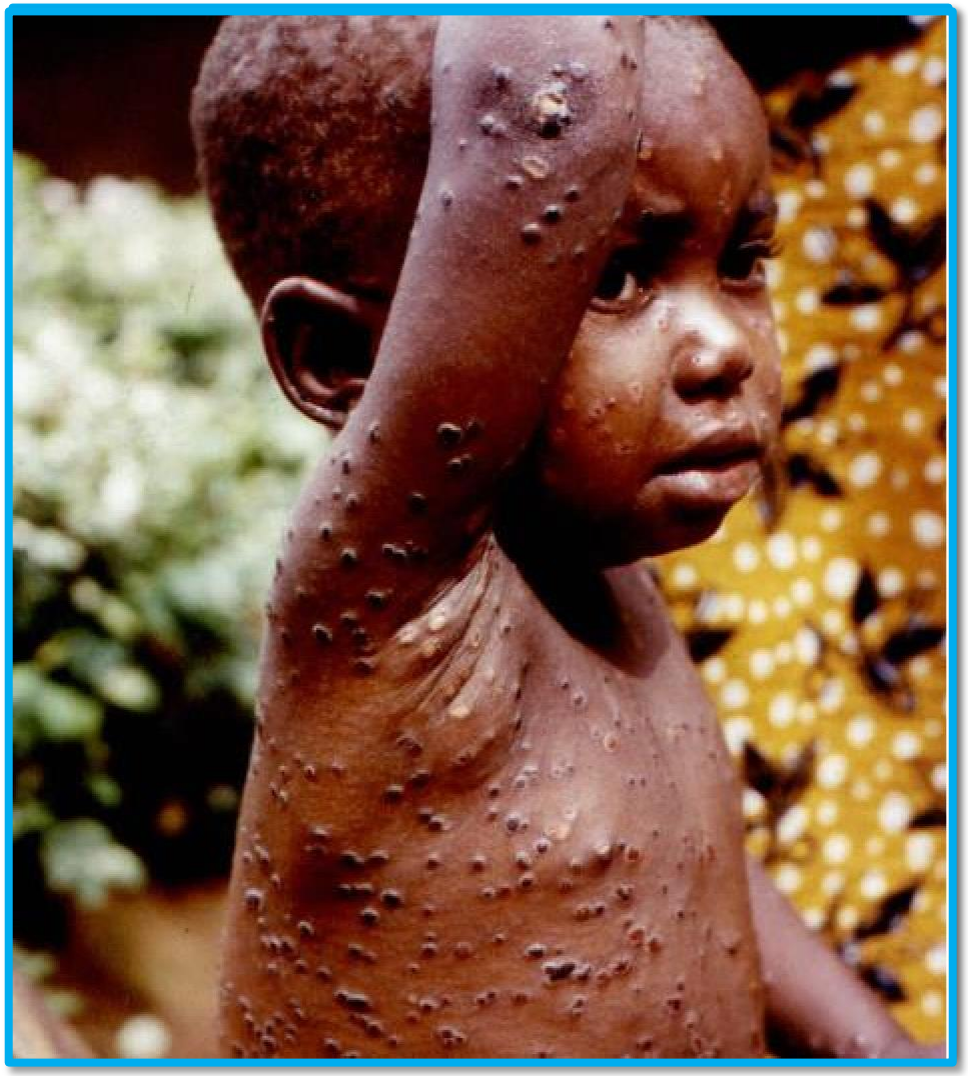
Monkeypox: Infection prevention and control

- Health care workers caring for patients or handling specimens must take standard, contact and droplet precautions:
  - wash hands before and after caring for a patient, touching surroundings or handling specimens
  - wear appropriate personal protective equipment including gowns, gloves, masks, goggles and boots
  - ensure isolation of the patient in hospital or at home
  - ensure proper waste disposal and environmental decontamination
  - ensure safe and dignified burial.

Monkeypox: Reducing human-to-human transmission

- Any person in contact with or taking care of a person with monkeypox should:
  - avoid close contact
  - wear gloves and other protective equipment
  - always wash hands before and after caring for or visiting sick persons.

Monkeypox: Prevention and treatment



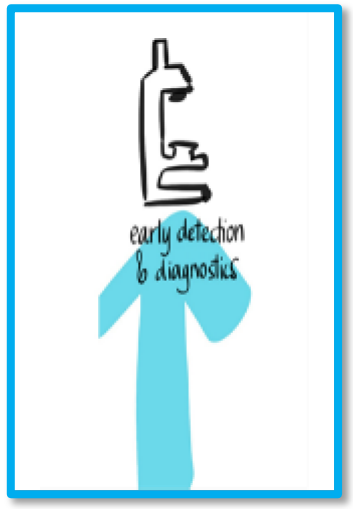
WHO/ M. V. Szczeniowski

- Case management is based on symptom-specific, supportive care.
- First generation vaccinia vaccines used to prevent smallpox also largely protected vaccinees from monkeypox.
- In 2019, a newer vaccinia vaccine for smallpox was also approved for prevention of monkeypox in adults.
- Further vaccination and treatment studies are underway.

Monkeypox: Surveillance

- Countries at risk should include monkeypox in their integrated disease surveillance and response system
- The goal is to detect and immediately respond to any suspected case of monkeypox
- Develop case definitions: e.g. a suspected case may be
  - an acute illness with fever > 38 °C, intense headache, lymphadenopathy, back pain, myalgia, and intense fatigue followed one to three days later by a progressively developing rash on the face and spreading to the body, palms of hands and soles of feet.
- Safely collect patient information and lesion samples from every suspected case for laboratory testing.

Monkeypox: Outbreak response



- Each suspected or confirmed case of monkeypox requires immediate response.
- Report all case information to health authorities.
- Initiate outbreak coordination.
- Put in place laboratory confirmation, contact tracing, active search, rumour tracking, and enhance surveillance.
- Initiate community education and risk communication.
- Institute infection prevention and control measures in all situations.

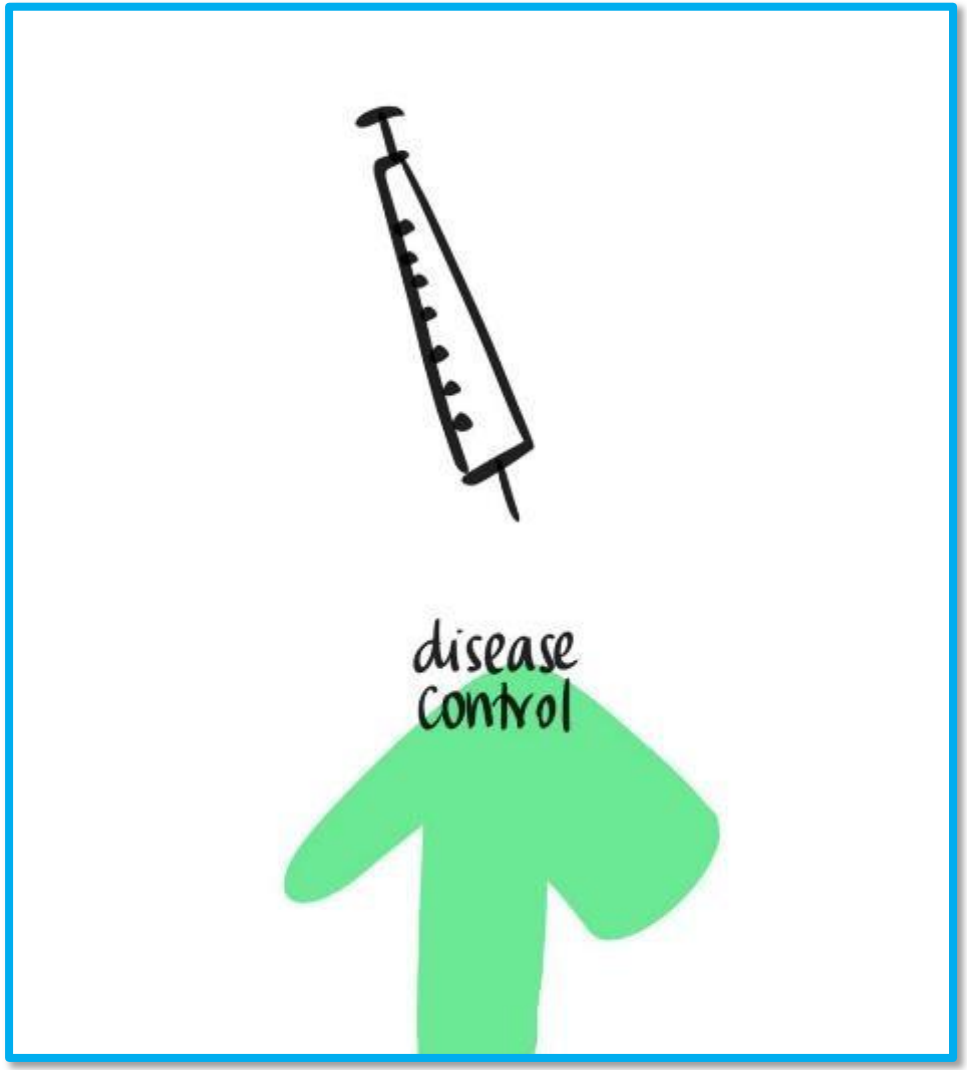
Monkeypox: Prevention

Focus health education on measures to reduce exposure:

- understand the risk of handling or consuming wild animals and avoid contact.
- wear gloves and other protective clothing to handle or slaughter animals.
- avoid close contact with patients during human monkeypox outbreaks.

Monkeypox: Implications for global preparedness and disease control

- WHO and partners are working to improve understanding and control of monkeypox
  - One Health approach
- Early detection and diagnostics:
  - clinical knowledge;
  - laboratory capacity.
- Better capacity for disease control:
  - coordinating global expertise
  - vaccines and treatments.



Treatment of Monkeypox

- Currently there is no specific treatment approved for monkeypox virus infections.
- Tecovirimat is an antiviral medication that is approved by the United States Food and Drug Administration (FDA) pdf icon[PDF – 24 pages]external icon for the treatment of human smallpox disease in adults and pediatric patients weighing at least 3 kg.
- CDC allows for the use of Tecovirimat for the treatment of non-variola orthopoxviruses (including monkeypox) in an outbreak.

Treatment of Monkeypox

- Cidofovir is an antiviral medication that is approved by the FDA for the treatment of cytomegalovirus (CMV) retinitis in patients with Acquired Immunodeficiency Syndrome (AIDS).
- CDC allows for the use of Cidofovir for the treatment of orthopoxviruses (including monkeypox) in an outbreak.

Treatment of Monkeypox

- Vaccinia Immune Globulin Intravenous (VIGIV) is licensed by FDAexternal icon for the treatment of complications due to vaccinia vaccination including eczema vaccinatum, progressive vaccinia, severe generalized vaccinia, vaccinia infections in individuals who have skin conditions, and aberrant infections induced by vaccinia virus (except in cases of isolated keratitis).
- CDC allows the use of VIGIV for the treatment of orthopoxviruses (including monkeypox) in an outbreak.

تعریف موارد (Case Definitions):

1. **مورد مشکوک: (Suspected case)**
   1. در کشورهای غیر آندمیک بیماری آبله میمونی هر فرد در هر سنی با بثورات پوستی حاد غیر قابل توضیح
   2. به همراه یک یا چند مورد از نشانه‌ها و یا علائم زیر، از ۱۵ مارس ۲۰۲۲ (۲۴ اسفند ۱۴۰۰)

- سردرد
- تب حاد(۳۸ و بالاتر)
- لنفادنوپاتی(تورم غدد لنفاوی)
- درد عضلانی
- کمر درد
- ضعف شدید
- و
- **علل شایع بروز بثورات حاد (موارد زیر) توجیه کننده علائم بالینی بیمار نباشد:**

علل شایع بروز بثورات حاد (موارد زیر) توجیه کننده علائم بالینی بیمار نباشد:

- آبله مرغان(واریسلا زوستر)
- هرپس زوستر
- سرخک
- زیکا
- دانگ
- چیکونگونیا Chikungunya
  - Herpes simplex

- عفونت باکتریایی پوستی
- عفونت گنوکوکی منتشر
- سیفیلیس اولیه یا ثانویه
- شانکروئید
- لنفوگرانولوم ونروم Lymphogranuloma venereum
- گرانولوم اینگوینال Granuloma inguinale
- مولوسکوم کونتاژیوزوم
- واکنش آلرژی
- هر نوع علل شایع محلی بثورات یا راش وزیکولر(تاولی)

مورد محتمل (Probable case)

1. موردی که تعریف بالینی بیماری (مورد مشکوک) را داشته باشد **و**
2. دارای یک یا بیشتر از موارد زیر باشد:
3. ارتباط اپیدمیولوژیک (مواجهه چهره به چهره از جمله پرسنل بهداشت و درمان بدون تجهیزات حفاظت فردی چشم و تنفسی)، تماس مستقیم با پوست یا ضایعات پوستی، از جمله تماس جنسی، یا تماس با وسایل آلوده از جمله لباس، ملحفه، حوله و وسایل مصرفی مورد محتمل یا قطعی آبله میمونی ظرف ۲۱ روز قبل از شروع علائم
4. سابقه سفر به کشور آندمی آبله میمونی در ۲۱ روز قبل بروز علائم یا تماس نزدیک با افراد مسافر از کشورهای آندمیک در ۲۱ روز گذشته
5. دارا بودن شریک جنسی متعدد یا مجهول در 21 روز قبل از شروع علائم
6. نتیجه مثبت آزمایشگاهی سرولوژی ارتوپاکس orthopox در صورت عدم وجود واکسیناسیون یا سایر مواجهات شناخته شده ویروس ارتوپاکس orthopox
7. بستری در بیمارستان به علت بیماری

(از موارد محتمل لازم است نمونه گیری جهت بررسی به عمل آید)

مورد قطعی:

- موردی که طبق تعریف، محتمل باشد و از نظر آزمایشگاهی نیز نتیجه مثبت تایید (قطعی) شود.
- **معیارهای آزمایشگاهی شامل موارد زیر است:**

- تایید DNA ویروس آبله میمونی در نمونه های بالینی فرد مشکوک از طریق آزمایش PCR (روش ارجح)

یا

- سکانس ویروس (تعریف جدید سازمان جهانی بهداشت. ۲۱ May 2022)

Indications for Transmission-Based Precautions
Syndromes (Before Pathogen Identification)

CONTACT PRECAUTIONS	DROPLET PRECAUTIONS	AIRBORNE PRECAUTIONS
Acute diarrhea with likely infectious cause Vesicular rash* Respiratory tract infection in infants and young children* History of infection or colonization with MDRO† SSTI or UTI with recent stay in a facility where MDROs† are prevalent Abscess or draining wound that cannot be covered Cough, fever, any pulmonary infiltrate, and recent travel to regions with outbreaks of SARS or avian influenza*	Meningitis Petechial or ecchymotic rash with fever Paroxysmal or severe persistent cough during periods of pertussis activity Respiratory tract infection in infants and young children*	Vesicular rash* Maculopapular rash with cough, coryza, and fever Cough, fever, upper lobe pulmonary infiltrate Cough, fever, any pulmonary infiltrate in an HIV-infected patient (or at high risk for HIV infection) Cough, fever, any pulmonary infiltrate, recent travel to regions with outbreaks of SARS or avian influenza*

Indications for Transmission-Based Precautions
Known or Suspected Pathogens or Infections

CONTACT PRECAUTIONS		
Adenovirus pneumonia*; conjunctivitis* *Burkholderia cepacia* pneumonia in cystic fibrosis *Clostridium difficile* infection Conjunctivitis, acute viral Decubitus ulcer, infected, drainage not contained Diarrhea, infectious, in diapered or incontinent patient Diphtheria, cutaneous Ectoparasites (lice, scabies) Enteroviral infections (infants, young children) Furunculosis (infants, young children)	Hepatitis A, E (diapered or incontinent patient) HSV (neonatal, disseminated, severe primary mucocutaneous) Human metapneumovirus Impetigo MDRO† infection or colonization MERS*† Monkeypox* Norovirus Parainfluenza infection (infants, children) Rhinovirus* Rotavirus RSV infection (infants, children, immunocompromised)	Rubella, congenital SARS* Smallpox* *Staphylococcus aureus* major SSTI Streptococcal (group A) major SSTI* Tuberculous draining lesion Vaccinia: fetal, generalized, progressive, eczema vaccinatum Varicella* Viral hemorrhagic fevers* Zoster (disseminated; immunocompromised until dissemination ruled out)*

Indications for Transmission-Based Precautions
Known or Suspected Pathogens or Infections

AIRBORNE PRECAUTIONS
Measles
MERS*†
Monkeypox*
Tuberculosis, pulmonary, laryngeal; draining lesion (e.g., from osteomyelitis)*
SARS*
Smallpox*
Varicella*
Zoster (disseminated; immunocompromised patient until dissemination ruled out)*

اقدامات انجام شده:

1. رصد فعال اطلاعات مرتبط با طغیان **Monkeypox** در جهان
2. مطالعه و رصد آخرین مطالب علمی آبله میمونی و آمار جهانی بیماری توسط تیم مرکز مدیریت بیماریها
3. تشکیل کمیته مدیریت مراقبت، پیشگیری و کنترل **Monkeypox** در مرکز مدیریت بیماری‌های واگیر
4. تعیین **Case Definition** موارد مشکوک، محتمل و قطعی
5. تعریف Indications for Transmission-Based Precautions Syndromes (Before Pathogen Identification)
6. Indications for Transmission-Based Precautions Known or Suspected Pathogens or Infections

اقدامات انجام شده:

1. تدوین پیش نویس راهنمای بالینی و دستورالعمل کشوری مراقبت، پیشگیری، درمان و کنترل آبله میمونی Monkeypox
2. هماهنگی با آزمایشگاه مرجع سلامت و انستیتو پاستور جهت راه‌اندازی انجام تست‌های تشخیصی Monkeypox و سندرم تب و بثورات پوستی وزیکولر
3. تدوین دستورالعمل نوع، نحوه انجام و انتقال امن و ایمن نمونه‌های آزمایشگاهی از سوی آزمایشگاه مرجع سلامت و انستیتو پاستور

اقدامات انجام شده:

1. ارسال دستورالعمل نوع، نحوه انجام و انتقال امن و ایمن نمونه‌های آزمایشگاهی به دانشگاه
2. هماهنگی با دانشگاه در خصوص سازماندهی فرآیند تایید موارد مورد نیاز نمونه گیری ، انجام و ارسال آن به انشتیتو پاستور
3. شناسایی موارد مشکوک و بررسی آزمایشگاهی موارد ارجاعی از دانشگاه ها
4. مکاتبه با دانشگاه ها جهت معرفی فوری فوکال پوینت عفونی آبله میمونی برای تایید انجام نمونه (به شماره ۳۷۷۶/د۳۰۴ مورخ ۹ خرداد ۱۴۰۱)

اقدامات انجام شده:

1. برگزاری وبینار آبله میمونی برای دانشگاه های علوم پزشکی در تاریخ ۱ خرداد ۱۴۰۱ با شرکت ۱۱۰۰ نفر
2. بررسی اولین موارد بیماری توسط تیم واکنش سریع CDC
3. هماهنگی تهیه پیش نویس راهنمای بهداشت محیطی آبله میمونی (در دست انجام)
4. تهیه نرم‌افزار ثبت و گزارش‌دهی اطلاعات بیماران مشکوک، محتمل و قطعی Monkeypox در سامانه پورتال مرکز مدیریت بیماریهای واگیر

اقدامات انجام شده:

1. نشست هم اندیشی دبیرخانه شورایعالی سلامت و امنیت غذایی با موضوع آبله میمونی در تاریخ ۲ خرداد ۱۴۰۱ (نامه به شماره ۲۰۶/۱۰۳/د مورخ ۰۲/۰۳/۱۴۰۱ به مقام عالی وزارت)
2. مکاتبه اقدامات احتیاطی با دانشگاه‌ها در کنترل و برخورد با آبله میمونی به شماره ۳۵۶۸/د۳۰۰ مورخ ۷ خرداد ۱۴۰۱
3. مکاتبه تشدید نظام مراقبت سندرمیک بویژه در مبادی مرزی برای شناسایی موارد مشکوک به بیماری با دانشگاه‌ها (به شماره ۳۴۳۶/۳۰۴د مورخ ۳ خرداد ۱۴۰۱)

اقدامات انجام شده:

1. برگزاری جلسات بین ادارت مختلف وزارت بهداشت برای هماهنگی بیشتر
2. اطلاع رسانی عمومی و تهیه مطلب برای آموزش عمومی و ارسال آن در شبکه های اطلاع رسانی پرسنل و سایر شبکه های اجتماعی
3. انجام مصاحبه ها و اطلاع رسانی های عمومی از طریق خبرگزاری ها و صدا و سیما
4. ارائه طریق به دانشگاه های علوم پزشکی در خصوص موارد مشکوک


photo-aks.com