

Clary Mole: Hello, everyone, thank you for joining us today for the EMS Focus Webinar. My name is Clary Mole. I'm an EMS specialist with the NHTSA's Office of EMS at the Department of Transportation.

Clary Mole: I'm going to serve as your moderator today.

Clary Mole: Clearly, if you hear

Clary Mole: you know that.

Clary Mole: I think I'm going a little fast here.

Clary Mole: Stand by, folks. Okay, clearly, if you're here, you know that we do have the EMS Focus Webinar series. But I did want to remind you that we produce one of these webinars each quarter to bring information about EMS system improvements from NHTSA, from the Office of EMS and from other members of the Federal Interagency Committee on Emergency Medical Services, also known as FICEMS. We address a variety of topics

Clary Mole: and encourage you to register for the upcoming Webinars topics and sign up for those announcements via email. So they'll come to your inbox and your email

Clary Mole: if you sign up for them. You can sign up for them by going to [ems.gov](https://www.ems.gov)

Clary Mole: couple of zoom housekeeping items. I want to go for. Go over first

Clary Mole: You've got a Q&A button in your operation panel. If you have a question as it comes up during the webinar, please feel free to submit it as soon as it comes to you, our facilitators will capture those questions and save them for the Q&A session that we'll be doing at the end of the webinar.

Clary Mole: You can also have a show captions. Button that you can click, and you'll be able to view the captions. As they're coming up on screen out after they come out of the Speaker's mouth.

Clary Mole: for the Office of EMS. Just wanna kind of review with you a couple of

Clary Mole: things from our office.

Clary Mole: our office. Ha! Houses the National EMS & 911 program, and both the Office of EMS and the National 911

Clary Mole: programs support the improvement of patient care in the out of hospital setting on a national level. We do that in 3 ways. We bring together available data and industry experts to identify the most critical issues facing the profession.

Clary Mole: we tackle those issues through collaboration with our partners, including those federal partners at the national ems. Organizations excuse me at other Federal agencies and at other national organizations.

Clary Mole: We also provide awareness and education about best practices and evidence-based guidelines.

Clary Mole: One of the things I'd also like to bring to your attention is the National Roadway safety Strategy or NRSS.

Clary Mole: The NRSS. Uses safe system approach to guide specific activities.

Clary Mole: So some of the principles under the NRSS

Clary Mole: include death, and serious injuries are unacceptable.

Clary Mole: While

Clary Mole: no crashes are desirable, the Safe System Approaches. Prior Safe System Approach, prioritizes the elimination of crashes

Clary Mole: that result in death and injury.

Clary Mole: No one should have to experience either using the transportation systems.

Clary Mole: Another is, humans make mistakes.

Clary Mole: People will inevitably make mistakes and decisions that lead or contribute to crashes.

Clary Mole: But the the transportation system can be designed and operated

Clary Mole: to accommodate certain types and level of human mistakes, to avoid death and injury

Clary Mole: or serious injury when a crash occurs. Another item to keep in mind is, humans are vulnerable. People have physical limits for tolerating crashes for crash forces

Clary Mole: before death and serious injury occur. Therefore it is critical to design the operating and operate a transportation system

Clary Mole: that is, human centric and accommodates physical human vulnerabilities.

Clary Mole: Responsibilities should be shared. All stakeholders, including government, all levels, industry, nonprofit and advocacy organizations, researchers and the public are vital to preventing fatalities and serious injuries on a roadway.

Clary Mole: Safety is proactive. Proactive tools should be used to

Clary Mole: identify and address safety issues in the transportation system rather than waiting for them to occur and then reacting thereafter.

Clary Mole: Redundancy is is important and crucial.

Clary Mole: Reducing risk requires that all parts of the transportation system be strengthened.

Clary Mole: so that if one part fails, the other parts still protect people.

Clary Mole: some of the objectives and approaches to implementing the national roadway. Safety strategy

Clary Mole: and the safe system approach includes safer people.

Clary Mole: safe and under safe for people safe for people safe.

Clary Mole: responsible

Clary Mole: behavior by people who use the roadways should be encouraged and conditions that prioritize

Clary Mole: their ability to reach their destination unharmed should be created

Clary Mole: under safer roads. Roadway environments should be designed to mitigate human error

Clary Mole: and human mistakes, and account for injury. Intolerances to encourage safer behaviors and to facilitate safe travel to the most vulnerable users.

Clary Mole: Safer vehicles, availability of safe systems should be expanded so as should the features that help to prevent crashes and minimize the impact of crashes have on both occupants and non occupants. Safer speeds, safer speeds on all roadway conditions. Excuse me, roadway environment should be promoted through the combination of thoughtful

Clary Mole: text, appropriate roadway design, targeted education and outreach campaigns and enforcement, and finally, post crash care, survivability of crashes should be enhanced through the expedient access of emergency medical care. But while also creating a safe work environment for those vital 1st responders on scene and preventing secondary crashes through robust traffic incident management practices.

Clary Mole: One of the ways

Clary Mole: the goals of the Office of EMS are supported is through sharing of and storing resources to help EMS leaders and clinicians access information. They need.

Clary Mole: [ems.gov](https://www.ems.gov)

Clary Mole: updated resource hub

Clary Mole: makes it easy for you to search for browse and download any of a wide variety of documents, reports, and guidelines created by

Clary Mole: NHTSA's Office of EMS, our partners, and our other stakeholders

Clary Mole: from the EMS agenda to the future

Clary Mole: to the clinical guidelines and reports.

Clary Mole: These resources can help advance the profession

Clary Mole: nationwide.

Clary Mole: There's a QR code on your screen. You should be able to use that to access Dms resource page. You can also use this QR code to check for updates and future webinars and watch recordings of archive webinars. From.

Clary Mole: So now let's go ahead and get into today's topic.

Clary Mole: Today's topic is navigating

Clary Mole: impacts. The latest updates and strategies for Ems clinicians.

Clary Mole: Today's webinar will explore the latest updates on Mpox

Clary Mole: and the outbreak and the potential impacts for Ems operations. We'll 1st hear from Dr. Bryan Christensen. Dr. Christensen is the Associate, Director of Preparedness

Clary Mole: and response in the division of high consequence, pathology and pathogens within the National Center

Clary Mole: for emerging and zoonotic infectious disease at the Center for disease control and prevention or CDC.

Clary Mole: Dr. Christensen will review with us the current Mpox epidemiological data

Clary Mole: and offer essential guidance for emergency responders.

Clary Mole: We'll also hear from Dr. Alex Isakov. Dr. Isakov is a professor of Emergency Medicine, and the director of the Pre-hospital and Disaster Medicine Section at Emory University School of Medicine in Atlanta, Georgia.

Clary Mole: He is also the chair of the EMS. Biosafety Transport, Consortium and Work Group at the National Emergency Special

Clary Mole: Pathogen Training and Education Center are NETEC.

Clary Mole: Dr. Isakov discussed vaccine eligibility strategies to prevent further spread and the available treatments and therapeutics

Clary Mole: again, once we've completed presentations from our speakers, we'll have a Q&A session, and we'll answer those questions from that point in the discussion

Clary Mole: at this time. I'll turn it over to Bryan to go ahead and begin his discussion.

Bryan Christensen, CDC: Clary everything look good.

Clary Mole: Looks great. I can see everything.

Clary Mole: Let me see your slide.

Bryan Christensen, CDC: Thank you. So I'm gonna give a brief overview of the

Bryan Christensen, CDC: U.S. CDC Clade One Mpox response

Bryan Christensen, CDC: and I'm gonna cover some of the highlights would be the

Bryan Christensen, CDC: the global response that we're supporting in the Democratic Republic of Congo or DRC. Preparedness in the United States vaccines, testing and surveillance, and also clinical and public health management.

Bryan Christensen, CDC: and then Dr. Isakov will get a little bit more into the clinical management, and particularly how that focuses on EMS providers.

Bryan Christensen, CDC: So looking at the global response, the 1st thing we want to do is that.

Bryan Christensen, CDC: you know, highlight, and really emphasize that this time there are no sustained transmission of Cleveland, monkeypox virus occurring outside of Africa.

Bryan Christensen, CDC: There have been travel associated cases to Thailand, India.

Bryan Christensen, CDC: and Sweden, but no ongoing transmission chains after that.

Bryan Christensen, CDC: And so here's the updated case counts for DRC. And so as of

Bryan Christensen, CDC: Epi week 38. So last week there were 27,487 suspected cases.

Bryan Christensen, CDC: 5,812 have been lab confirmed, and 859 suspected deaths.

Bryan Christensen, CDC: And you can see by looking back at the previous several years, that this is a huge increase, particularly the jump from 22, or, you know, tripled basically in 23,

Bryan Christensen, CDC: and then in 24. So this really is a big shift. And so that's when it really

Bryan Christensen, CDC: so end of 23, we started getting really concerned about this and around late fall early winter.

Bryan Christensen, CDC: But you know the suspected cases may not be mpox. So it's 1 thing to consider is that the case surveillance there, and case investigation

Bryan Christensen, CDC: has not been ideal, and they also have had some issues with getting appropriate lab confirmation as well.

Bryan Christensen, CDC: And so what could be presented as mpox is also varicella.

Bryan Christensen, CDC: measles, or other rash illnesses, such as syphilis. So we have seen where some of these cases been overlapping. There was in the early part of the outbreak, in 24 there was a

Bryan Christensen, CDC: ongoing outbreak of measles in the same area of DRC. Where the

Bryan Christensen, CDC: response really kind of kicked off.

Bryan Christensen, CDC: And so here's a map kind of highlighting the outbreak. And I think what I want to highlight here is that

Bryan Christensen, CDC: Early in the outbreak. Equator Province in the northwest part of DRC. Was really driving the outbreak, and that was actually clade one

Bryan Christensen, CDC: A, which is historically endemic to DRC, which is also more variant than clade one clade, 2 B, which is what had circulating globally since 2022. After that outbreak.

Bryan Christensen, CDC: and as you look at the map. You can also see the darker orange and red is where the outbreak now is really surging in north and South Kivu.

Bryan Christensen, CDC: And one thing to keep in mind there is that is actually clade one b so clade one b has the deletion in it that makes it actually less virulent than clade one A, and it actually

Bryan Christensen, CDC: has transmissibility characteristics and variants very similar to clade two B. And so that's why the outbreak is spreading at such a rapid rate.

Bryan Christensen, CDC: and also the transition dynamics are much different. So in Equator it was driven by zoonotic spillover and household transmission, whereas the clay tubi in north and South Kivo and Kinshasa, and some of the other areas, and also in the regional countries that is actually driven through sexual contact and also household transmission. Very little concern.

Bryan Christensen, CDC: zoonotic spillover of Clade One B.

Bryan Christensen, CDC: What we've seen is that

Bryan Christensen, CDC: it's now in provinces without historical cases.

Bryan Christensen, CDC: and then it it is also linked to the sex worker,

Bryan Christensen, CDC: industry or profession in

Bryan Christensen, CDC: DRC, so that's why it's affecting both genders for terms of sexual contact. And the other piece of this that's really important is, children under 15 have been most affected, part of that is driven by the early outbreak in Ecuador.

Bryan Christensen, CDC: but also do the from zoonotic, trans. Zoonotic and household transmission, but also household and community transmission within, within, North and South Kivu still makes the numbers high.

Bryan Christensen, CDC: So cases have been detected outside of DRC. Central African Republic of

Bryan Christensen, CDC: and Republic of Congo are endemic for clade one. They do have cases ongoing in those countries. They've kind of come in a few waves.

Bryan Christensen, CDC: So we've been, you know, providing support there.

Bryan Christensen, CDC: We've also seen Clade one cases which are clade one B spilled over to Uganda, Rwanda, Burundi, and Kenya.

Bryan Christensen, CDC: which are all non endemic for

Bryan Christensen, CDC: clade one Mpox.

Bryan Christensen, CDC: So what is CDC. Doing? We continue to engage with our domestic and international public health partners and other

Bryan Christensen, CDC: U.S. Government agencies.

Bryan Christensen, CDC: We have CDC. Staff in DRC. Providing technical assistance and funding. So the DC. DRC. Ministry of Health and Work, with the U.S. Agency of International Development or USAID plus the World Health organization as well as international organization for migration of IOM.

Bryan Christensen, CDC: And we also have other partner teams on the ground to help manage the outbreaks. We're also collaborating with public health officials in several countries bordering DRC. To assess the needs and identify USG support.

Bryan Christensen, CDC: We continue to work with Ministries of Health and in country partners across the region, focusing on disease, surveillance, lab capacity.

Bryan Christensen, CDC: workforce development case investigation case management, infection Prevention control.

Bryan Christensen, CDC: Border health and risk communication

Bryan Christensen, CDC: in the Republic of Congo. We're also coordinating with the Ministry of Health and other partners enhance data management and analytics and merge the operations processes.

Bryan Christensen, CDC: and we're supporting IOM along the border DRC. To monitor points of entry for Mpox infections among people traveling between DRC. Rwanda and Burundi

Bryan Christensen, CDC: and other communities located along the border.

Bryan Christensen, CDC: See, USG has donated 50,000 doses of Genesis vaccine, which is in country now.

Bryan Christensen, CDC: and we're USG with other CDC. And other USG. Agencies working with the country, of working on a collaborative strategy to get the vaccines out into the

Bryan Christensen, CDC: and throughout DRC. As soon as possible. There are other donations that have been pledged, and are also another chunk of donations of already in country.

Bryan Christensen, CDC: So, looking at preparedness for the United States.

Bryan Christensen, CDC: so we've we at CDC. Have had more than 20 years of experience with Mpox and been prepared to respond. If an outbreak occurs

Bryan Christensen, CDC: to other countries or the Us. We've increased our capacity to

Bryan Christensen, CDC: look for cases of Mpox through existing surveillance systems which does include wastewater testing.

Bryan Christensen, CDC: We also can test for Mpox, including the type that is spreading in DRC. Provide vaccines and treatment to people who need them.

Bryan Christensen, CDC: And CDC and its partners are still responding to the global outbreak of clade two B. Mpox. That began May of 22

Bryan Christensen, CDC: U.S. Clinicians and state and local public health officials are now

Bryan Christensen, CDC: very experienced with how to recognize, test and report possible cases of Mpox.

Bryan Christensen, CDC: On August 7th CDC. Issued a updated level 2 health notice with information and travel recommendations for DRC. And numbering countries also on the same day released a health alert network which Mpox, caused by human-human transmission

Bryan Christensen, CDC: of monkey bugs virus in the DRC. Was spread to neighboring countries. This really urged clinicians to be aware of the possibility of clade one Mpox. In people who recently traveled to DRC. Or the neighboring countries.

Bryan Christensen, CDC: We are recommending sending specimens for clade specific testing for these patients to CDC for clade-specific testing

Bryan Christensen, CDC: or other partner labs.

Bryan Christensen, CDC: So evidence indicates that existing vaccines and diagnostics used during the 22 outbreak would be effective against Cleveland. Mpox.

Bryan Christensen, CDC: Data collected during the 22 outbreak shows that Jynneos vaccine is effective against monkeypox virus, and it's FDA approved for prevention of both clades of Mpox.

Bryan Christensen, CDC: They're ongoing clinical trials that determine how effective the treatment of tpox is against both clade one and clade two B

Bryan Christensen, CDC: shifting towards vaccination.

Bryan Christensen, CDC: The FDA approved vaccine is safe and effective in preventing or minimizing the severity of mpox clade two B. This will provide protection against both clades.

Bryan Christensen, CDC: as I previously mentioned, getting vaccinated to help protect people at risk for exposure to Mpox, whether from ongoing cases related to the 2022 global

Bryan Christensen, CDC: clade two B outbreak, or from clade one. If it were to be introduced into the U.S. Population.

Bryan Christensen, CDC: The Advisory Committee on Immunization Practices, or ACIP, recommended that people, 18 years or older, who are at risk

Bryan Christensen, CDC: potential risk for Mpox, received 2 doses of the Jynneos vaccine 28 days apart.

Bryan Christensen, CDC: We are still way way behind where we need the at-risk population to be vaccinated. We're still only one in 4 that have received both doses.

Bryan Christensen, CDC: and as of October of 23 acip also recommends Jynneos vaccine for people with certain sexual risk factors.

Bryan Christensen, CDC: we continue to collect and evaluate data that could influence future recommendations. This recommendation is part of ACIP's routine immunization schedule. Now for people 18 years of age and older.

Bryan Christensen, CDC: and so some of the criteria are

Bryan Christensen, CDC: are gay, bisexual or other men who have sex with men, or transgendered, or non-binary. When the past 6 months have had one of the following, a new diagnosis of

Bryan Christensen, CDC: one or more sexually transmitted diseases, more than one sex partner, sex at a commercial sex venue

Bryan Christensen, CDC: sex and associated large public event in a geographic area where mpox transmission is occurring

Bryan Christensen, CDC: also. Sexual partners of people with the risks described above, and people anticipate any experience, experience, any of the above.

Bryan Christensen, CDC: In addition.

Bryan Christensen, CDC: it can be also administered as a post-exposure prophylaxis.

Bryan Christensen, CDC: We need, we really need people to get both doses of vaccine for best protection. There's still quite a few people have only received one dose.

Bryan Christensen, CDC: and even if you don't have that one, it's really important to get it

Bryan Christensen, CDC: as well. So if it's beyond the 4 weeks or 28 days of the recommendation.

Bryan Christensen, CDC: they need to be encouraged to do so.

Bryan Christensen, CDC: Looking at testing and surveillance now.

Bryan Christensen, CDC: so CDC test is used to identify and diagnose infection caused by orthopoxviruses. Is FDA approved?

Bryan Christensen, CDC: Is wide use. Since 2022. It's more sensitive.

Bryan Christensen, CDC: then tests that look for a specific type

Bryan Christensen, CDC: test is highly accurate. Viral mutations have not resulted in a false negative.

Bryan Christensen, CDC: Where it's done is collect 2 swabs from the suspect Mpox lesion, so that the clade specific testing can be formed if necessary.

Bryan Christensen, CDC: Patients being evaluated. Front block should be tested for HIV and other stis,

including syphilis, gonorrhea, and chlamydia

Bryan Christensen, CDC: so our goal here is to identify clade, one monkeypox virus. If it is circulating in the Us. So patient care and infection prevention control does not change based upon the Mpox clade.

Bryan Christensen, CDC: Early cases. They require isolation, rigorous case, investigation and contact tracing.

Bryan Christensen, CDC: We continue to solicit all Mpox specimens from Labs using the CDC 510(K) cleared

Bryan Christensen, CDC: non-varial orthopoxvirus test to be forwarded to Cdc after initial diagnosis

Bryan Christensen, CDC: where we can perform clade specific PCR testing and then also sequencing to look for mutations.

Bryan Christensen, CDC: We continue to expand clade specific testings to support laboratories are able and willing to bring up

Bryan Christensen, CDC: plate specific testing.

Bryan Christensen, CDC: And these laboratories also perform testing that can flag a high likelihood of clade one.

Bryan Christensen, CDC: These laboratories. They will also include those that can sequence virus and also perform clade two. Testing and NVO test the multiplex.

Bryan Christensen, CDC: So continue to use existing surveillance system, including wastewater testing and communities and select airports to detect

Bryan Christensen, CDC: Cleveland.

Bryan Christensen, CDC: And finally, some of the general overarching recommendations for initial cases of clade one in the U.S. So clinical management should be based on severity, diagnosis, and potential to develop complications. This is the exact same recommendations we also give for clade two B. So it's driven by

Bryan Christensen, CDC: severity, not by

Bryan Christensen, CDC: clade.

Bryan Christensen, CDC: Rapid clade. Specific testing of Mpox patients, travel history to DRC and neighboring countries. So if they do have a travel history, it's really critical to get this clade specific clade specific testing completed.

Bryan Christensen, CDC: Additional public health measures are recommended to prevent further transmission, such as isolation of possible clade, one patients, including pending clade, specific testing results, active monitoring of all high and some intermediate risk exposure contacts.

Bryan Christensen, CDC: close clinical State Local Health Department and CDC. Collaboration to monitor clinical course of patients with clade one Mpox where possible. This monitoring also helped increase understanding

Bryan Christensen, CDC: of the clinical severity and transmission patterns of Cleveland MPox in the United States.

Bryan Christensen, CDC: As my final slide.

Alex Isakov, MD, MPH, NETEC/Emory: Thanks, Bryan.

Alex Isakov, MD, MPH, NETEC/Emory: We'll wait for my slide deck to come up just as a reminder. I'm Alex Isakov. I'm a professor of emergency medicine and EMS physician

Alex Isakov, MD, MPH, NETEC/Emory: at Emory University, and, as Clary described before, I'm the chair of NETEC's EMS Biosafety Transport Consortium and Work group, NETEC, while they're pulling up my slides

Alex Isakov, MD, MPH, NETEC/Emory: for those of you who don't know is a collaborative that developed after the Ebola outbreak in West Africa.

Alex Isakov, MD, MPH, NETEC/Emory: The collaborative in the United States that's co-led by Emory University, Nebraska, Medicine, New York, Health and Hospitals at Bellevue.

Alex Isakov, MD, MPH, NETEC/Emory: To address high consequence, infectious diseases, preparedness, education and training, readiness metrics in the United States.

Alex Isakov, MD, MPH, NETEC/Emory: And I'm going to focus now on EMS readiness for Mpox in the United States, and I'm going to do it

Alex Isakov, MD, MPH, NETEC/Emory: largely through the lens of identify, isolate, and inform, which I think many of you have heard before that paradigm, but we're going to review it again and discuss Mpox through that lens.

Alex Isakov, MD, MPH, NETEC/Emory: Let me see if I can advance my slides. I sure can.

Alex Isakov, MD, MPH, NETEC/Emory: All right.

Alex Isakov, MD, MPH, NETEC/Emory: Well, as my colleague, Bryan Christensen, at CDC indicated the who has declared a global health emergency over this particular Mpox outbreak in the Democratic Republic of Congo.

Alex Isakov, MD, MPH, NETEC/Emory: largely because it's a fairly remarkable event. And there's a risk for transmission to other countries, and may require some international coordination

Alex Isakov, MD, MPH, NETEC/Emory: to facilitate a response. And as he'd also mentioned

Alex Isakov, MD, MPH, NETEC/Emory: and and this is often true when you have a large outbreak in of a disease that's more typically

Alex Isakov, MD, MPH, NETEC/Emory: geographically isolated like blade one mpox has been

Alex Isakov, MD, MPH, NETEC/Emory: when you have travelers to that part of the world they could come in contact with somebody who's ill. They could get infected, but not yet sick. And then, while that virus is incubating in their body.

Alex Isakov, MD, MPH, NETEC/Emory: you know, return home. And so we've seen cases of this particular clade of Mpox identified, as Bryan said in Sweden, in India and Thailand, not yet in the United States

Alex Isakov, MD, MPH, NETEC/Emory: so identifies inform is is useful as a tool for all frontline healthcare personnel, including EMS clinicians.

Alex Isakov, MD, MPH, NETEC/Emory: to achieve a number of things on the identify piece. It's to give

EMS personnel a tool to recognize that a patient that they're assessing might have a high consequence, infectious disease like Mpox, and then to take steps to protect themselves and others

Alex Isakov, MD, MPH, NETEC/Emory: that gets to the isolate piece. Isolate is to implement measures to protect personnel from exposure, to potentially infectious bodily fluids and then inform is communicate with system partners about this risk, and that could mean other responders. It could mean the hospital that you're transporting the patient to it could mean the public health authority in your service area

Alex Isakov, MD, MPH, NETEC/Emory: and identifies latent form is useful for Mpox identification, and it's been used previously, and I'd say, was largely developed in response to trying to have a tool for ready identification of a patient with Ebola virus disease

Alex Isakov, MD, MPH, NETEC/Emory: in the United States during the epidemic in West Africa during 2013, through 2016.

Alex Isakov, MD, MPH, NETEC/Emory: So on the identify piece for EMS personnel, the question is, what's the likelihood that this patient has mpox

Alex Isakov, MD, MPH, NETEC/Emory: and and coming to

Alex Isakov, MD, MPH, NETEC/Emory: a determination or answer that question has in part to do with well, what signs and symptoms does the patient have?

Alex Isakov, MD, MPH, NETEC/Emory: What exposure history might they have to other people that maybe were also suspected to have an Mpox infection, or confirmed to have an Mpox infection or exposed to other people. That also had a rash that maybe is, you know, not yet diagnosed and under

Alex Isakov, MD, MPH, NETEC/Emory: investigation that looks like the rash that we're going to show a picture of in the next slide.

Alex Isakov, MD, MPH, NETEC/Emory: And then for this particular clade of Mpox that

Alex Isakov, MD, MPH, NETEC/Emory: that Bryan was describing, the travel history is still very important. So, having a travel history within the period of of 21 days, or the incubation period of the virus

Alex Isakov, MD, MPH, NETEC/Emory: is important also travel history to an area that has widespread outbreak, like Democratic Republic of Congo

Alex Isakov, MD, MPH, NETEC/Emory: within the last 21 days, can also help in combination with the signs and symptoms help you determine that there's some risk. This person might have Mpox.

Alex Isakov, MD, MPH, NETEC/Emory: and, as it relates to you know, having some suspicion about that

Alex Isakov, MD, MPH, NETEC/Emory: about the Mpox disease. Here's a typical description of Mpox. As we've sort of classically been trained and educated to recognize it. You know a disease that 5 to 21 days after you've been exposed to the virus, probably most likely because of contact with another person that had these vesicles, these lesions, and the

Alex Isakov, MD, MPH, NETEC/Emory: the fluid from those vesicles got into a break in your skin or on your mucous membranes, and you became infected, and 5 to 21 days later, typically 7 to 14 days you'd start to develop the illness.

Alex Isakov, MD, MPH, NETEC/Emory: and and that is, it starts with very nonspecific, you know, signs

and symptoms of illness fever. I feel tired. I have a headache.

Alex Isakov, MD, MPH, NETEC/Emory: muscle aches, swollen lymph nodes, or lymph adenopathy, and then about one to 3 days after those symptoms and signs start you develop this rash that starts as a maculule, which is kind of a flat area of redness and then gets raised, which is a papule.

Alex Isakov, MD, MPH, NETEC/Emory: develops into a vesicle which is like a, you know, bubble filled with fluid, and then a pustule. That fluid becomes cloudy and more typically when you have, like typical clade one or typical clade, one A or one B Mpox. I'm going to get to this definition of clade here just in a second.

Alex Isakov, MD, MPH, NETEC/Emory: You know it looks like this. You typically have a head to toe rash, which starts on your face and arms and legs, but then progresses to include your torso.

Alex Isakov, MD, MPH, NETEC/Emory: It could be a head to toe rash. And you know again, more typically you'd have these, these swollen lymph nodes and fever.

Alex Isakov, MD, MPH, NETEC/Emory: but you know. It turns out that these clades and clade is just. It's a kind of a fancy term for a virus or a group of viruses that share a common ancestor, you know. Maybe it wouldn't be technically correct, and you know Bryan will come back and correct me on this. But it would be like saying, Oh, a strain

Alex Isakov, MD, MPH, NETEC/Emory: clade one or clade one B. Clade two, and clade two B. Monkeypox, resulting in an Mpox infection.

Alex Isakov, MD, MPH, NETEC/Emory: and these historically, like clade one and clade. 2 were, you know, previously recognized as like being geographically isolated or endemic to in clade, one like the African Congo Basin, or Central Africa. Clade two in West Africa.

Alex Isakov, MD, MPH, NETEC/Emory: the clade one b. That Dr. Christensen's been described earlier, and then clade two B, which caused that worldwide outbreak in 2022. Each of these clades, or strains of monkeypox, resulting in Mpox infection, have different severity of illness associated with them.

Alex Isakov, MD, MPH, NETEC/Emory: you know, with at least in patients managed in Central Africa for clade, one having case, fatality rates meaning the percentage of people confirmed to have the disease that die. You know, as high as 10% or very, very low case. Fatality rates like we see with the clade two B,

Alex Isakov, MD, MPH, NETEC/Emory: which resulted in the 2022 global epidemic.

Alex Isakov, MD, MPH, NETEC/Emory: And the case fatality rate for this clade one B, which is largely what we're talking about today, that's, you know, caused this, who declaration of a of a public health emergency, you know, centered in in Central Africa.

Alex Isakov, MD, MPH, NETEC/Emory: you know, part of what makes that one, maybe more unique or special is how maybe better tuned, it is for human to human transmission, and the fact that it has also been associated with sexual transmission, and the virulence of that virus is much higher than what we saw with clade two B in 2022. And we are still seeing those cases today globally, although far fewer than

Alex Isakov, MD, MPH, NETEC/Emory: we saw in 2022. So when we talk about these clades, one of the significant areas around this is, well, how sick does that virus make you? And and how does it present? And whether or not a travel history is actually important for identifying.

Alex Isakov, MD, MPH, NETEC/Emory: So this is a good time. I think Bryan had these pictures on a different slide. But you know these are, this is an example of clade two B, which was the cause of the 2022

Alex Isakov, MD, MPH, NETEC/Emory: global outbreak, and you remember what you were taught about this is that it can present atypically, you don't necessarily get a total head to toe rash. You don't necessarily have fever, and you don't necessarily have swollen lymph nodes associated with this clade. 2 b presentation. But instead, you might see localized lesions on your fingers or in your, on your mouth or lips.

Alex Isakov, MD, MPH, NETEC/Emory: or in your genital area, and in many cases that probably resulted in people not presenting, you know, for an evaluation of care, it might have contributed to increased transmission and spread because people kind of tried to ignore. You know this lesion that they had, and they weren't as clinically ill as you know the cases that we saw, maybe with Clade one

Alex Isakov, MD, MPH, NETEC/Emory: Mpox. And so they had this atypical presentations. And and they could have, you know, multiple contacts and and share share the virus. And this has been mentioned. There's a, you know, particular group like epidemiologically, that was disproportionately affected by this, and it was people that had multiple sexual partners, or

Alex Isakov, MD, MPH, NETEC/Emory: also patients or men having sex with men. That was a group that was disproportionately affected by this anybody could contract the illness, but that was a group that was disproportionately affected and recognized to be high risk. So you know what this means, I think, for the EMS community is that there are different forms of Mpox that you might encounter during your work

Alex Isakov, MD, MPH, NETEC/Emory: in the field. You may be much more likely to see clade two B cases in the United States. They're not as virulent as concerning now, clade one B.

Alex Isakov, MD, MPH, NETEC/Emory: That's causing the big outbreak in Central Africa.

Alex Isakov, MD, MPH, NETEC/Emory: But you know what it means on the identity portion of this is, you need to be vigilant about unusual rashes. You need to be vigilant about travel to Central Africa in the case of clade one B, and you should consider other risk factors that would make you think, oh, this patient might have Mpox.

Alex Isakov, MD, MPH, NETEC/Emory: and if you come to that, then the question is, once you've identified somebody that you suspect might have Mpox. Then the question is, Well, how can you take measures to protect yourself and other responders at the scene from exposure to potentially infectious bodily fluids, and and those potentially infectious bodily fluids could be again the fluid that's in those vesicles, or it could be from respiratory droplets, could be in your saliva, and there's some concern, although transmission is

Alex Isakov, MD, MPH, NETEC/Emory: certainly not as great via the aerosol, or airborne, rather airborne route via Suspended drop of the nuclear. But there's some concern. It can be transmitted that way, and that informs our implementation of a hierarchy of controls to protect ourselves and others, and it informs the personal, protective ensemble that we would wear in caring for a patient who, we suspect, has mpox.

Alex Isakov, MD, MPH, NETEC/Emory: and in this case that is implementing standard precautions which EMS personal do on every call

Alex Isakov, MD, MPH, NETEC/Emory: plus contact plus airborne, which in the United States means a niosh approved fit, tested N95. Respirator and eye protection. So standard plus contact plus airborne plus eye protection.

Alex Isakov, MD, MPH, NETEC/Emory: And there's 1 more bullet on this slide that I think worth mentioning, and that's that people that are infected with this virus and have this rash. They're infectious until that last lesion crusts off. And that's pretty significant, too, as it relates to a patient or person's need to be isolated for some period of time from exposure to others to prevent transmission

of the illness.

Alex Isakov, MD, MPH, NETEC/Emory: And that's true. Whichever of the Clades you get, you know the most serious ones in terms of virulence, or or those that are less virulent and causing less serious illness.

Alex Isakov, MD, MPH, NETEC/Emory: There's some additional hierarchy of controls that are important for ems personnel to be aware of, so they can implement them to protect themselves from exposure to potentially infectious bodily fluids from patients that they are interacting with, that they suspect had Mpox. One of those is source control. You've heard source control before during the Covid pandemic, you know. Part of that is put a mask on the patient

Alex Isakov, MD, MPH, NETEC/Emory: to protect from having heavy droplets, you know, being expelled when they talk, cough, breathe whatever

Alex Isakov, MD, MPH, NETEC/Emory: so surgical mask on the patient for source control, also applying barrier sheets as tolerated on the patient. So if the patient has a rash in an area that's exposed to prevent you, as you know, EMS personnel, when you're interacting with the patient from getting exposed to

Alex Isakov, MD, MPH, NETEC/Emory: those blisters, those vesicles, the fluid that's in them try to use barrier sheets as much as the patient can tolerate it. To create a barrier between you and the potentially infectious bodily fluids. The Ppe ensemble that anyone that makes patient contact should wear is, as we've described gloves gown, N95, respirator and face shield.

Alex Isakov, MD, MPH, NETEC/Emory: We also recommend limiting the number of personnel making making patient contact to the minimum required to care for the patient and transport the patient safely

Alex Isakov, MD, MPH, NETEC/Emory: because of the risk or the concern about airborne transmission. Also consider caution with aerosol generating procedures. We do a lot of aerosol generating procedures in the EMS community, suctioning a patient, non-invasive, positive pressure ventilation. CPR endotracheal intubation are examples

Alex Isakov, MD, MPH, NETEC/Emory: and we also because of that risk of airborne isolation or of airborne transmission, even though it's small.

Alex Isakov, MD, MPH, NETEC/Emory: We try to introduce fresh air into both the driver and patient compartment of an ambulance, and we recommend turning the exhaust fan on high of the patient compartment. If it, if it's equipped with an exhaust fan to try and just get some air turnover air exchanges in the back of the ambulance

Alex Isakov, MD, MPH, NETEC/Emory: which is trying to replicate what would happen in a hospital when a patient's put in an airborne isolation room, which has, you know, but because of the engineering control, 6 to 12 air exchanges per hour.

Alex Isakov, MD, MPH, NETEC/Emory: you know, further on, isolate meaning again, protecting you and others from potential infectious bodily fluids, is the importance of after the patient's care has been transferred to the hospital. If the patient's transported by by your service is the cleaning disinfection and waste management.

Alex Isakov, MD, MPH, NETEC/Emory: And you know, we know, as a you know, when we speak in generalities, right? The EMS community isn't the most, you know, fastidious or ardent about, you know, cleaning and wiping down all surfaces of the ambulance after every patient transport, though it's certainly good practice to do that, and it's certainly recommended. But in this case, because the mpox is potentially

Alex Isakov, MD, MPH, NETEC/Emory: a much more virulent virus than you'll, you know, encounter, maybe during routine operations, especially if we're talking about Clade one B, the cleaning and disinfection is really important. So using an EPA registered hospital grade disinfectant.

Alex Isakov, MD, MPH, NETEC/Emory: we recommend use of wipes and ensuring that the disinfectant you're using has claims against viruses like mpox or other emerging pathogens.

Alex Isakov, MD, MPH, NETEC/Emory: ensuring the appropriate contact time for that disinfectant and ensuring that the disinfectant that you're using hasn't expired because it's been sitting on a shelf for so long is important. And then all

Alex Isakov, MD, MPH, NETEC/Emory: waste from clinical waste generated in managing Mpx patient is considered category B, which is typical medical waste that EMS community is familiar with managing. You may have heard previously about category A, a waste which is

Alex Isakov, MD, MPH, NETEC/Emory: an example of managing patients and generating category A, ways to be managing a patient with Ebola virus disease or Marburg virus disease, and historically, there was some consideration about management of patients with clade one mpox needing to

Alex Isakov, MD, MPH, NETEC/Emory: regulate waste this category A waste. But that's been more recently clarified. The classification of waste for management of Mpx patients is category B, which is good and much easier to facilitate.

Alex Isakov, MD, MPH, NETEC/Emory: Who do you inform, identify, isolate, and inform. Who do you inform? Well, other responding personnel, that you know, because of the history that you've taken from the patient about travel to an endemic area, like the Democratic Republic of Congo, within the last 21 days, and then the presentation of a rash, for example, might raise concerns about Mpx infection. You got to let other responding personnel know, so that in case they're making patient contact, they can also take the appropriate

Alex Isakov, MD, MPH, NETEC/Emory: measures and apply the right PPE ensemble, and you want to let local and state public health authorities know, you know, per your standard operating procedure in some communities. Again, there's no clade one Mpx cases in the United States. But if you were to report a clade one Mpx suspected case, it's possible that public health could have

Alex Isakov, MD, MPH, NETEC/Emory: particular procedures that they wanted to follow, even around where that patient might be transported to, and how that patient might be transported. So it's good to get public health involved early by informing them. Of course you want to inform your supervisory personnel, and in any case, where you're going to transport the patient.

Alex Isakov, MD, MPH, NETEC/Emory: you know, to a hospital or some receiving facility. You certainly want them to be informed that you suspect that the patient may have Mpx, so they can also be prepared for the patient's arrival, where if they have an airborne isolation room ideally, they would place the patient there at a minimum. They would want to place the patient in a private room, and their personnel in that are receiving the patient would also want to be implementing standard plus contact plus airborne precautions and a face shield for their safety.

Alex Isakov, MD, MPH, NETEC/Emory: medical therapy for Mpx. It's important for EMS personnel to know what medical therapy is available, so you have more confidence about managing these patients, and should you inadvertently become exposed to potentially infectious bodily fluids.

Alex Isakov, MD, MPH, NETEC/Emory: that you have some idea about what options you know would be available for you. Should you develop the disease. The primary means of managing patients with Mpx is supportive therapy, supportive care. So that means, you know, good wound care or skin care where these lesions are, and replacing

Alex Isakov, MD, MPH, NETEC/Emory: IV Fluids as is needed, and managing a patient's pain, which,

depending on where these lesions are, could be, it could be very painful and managing any other complications that might come from the disease which people that, let's say, are immunocompromised would be at greater risk for developing than those that are otherwise healthy.

Alex Isakov, MD, MPH, NETEC/Emory: and know that antivirals that have been used to treat smallpox like Tecovirimat

Alex Isakov, MD, MPH, NETEC/Emory: have been recommended for use in management of patients, for example, with severe

Alex Isakov, MD, MPH, NETEC/Emory: mpox disease, and there are studies that are ongoing now to assess the effectiveness of the use of Tecovirimat as an antiviral medication in the management of patients that are infected with both clade, one or clade two mpox.

Alex Isakov, MD, MPH, NETEC/Emory: and as Bryan had alluded, there's vaccines available, and in the Us. There are recommendations for who should be eligible for vaccines. The Jynneos vaccine or Imvanex vaccine is licensed to prevent monkeypox infection and smallpox infection.

Alex Isakov, MD, MPH, NETEC/Emory: And this is a this is a vaccine that is effective most effective after 2 doses 4 weeks apart.

Alex Isakov, MD, MPH, NETEC/Emory: You know, subcutaneous injection, which is different than the other vaccine that you see listed here the ACAM 2000

Alex Isakov, MD, MPH, NETEC/Emory: which is very similar to the smallpox vaccine that you might ever have heard about where you use a bifurcated needle.

Alex Isakov, MD, MPH, NETEC/Emory: and you introduce this attenuated live virus. Vaccine doesn't have monkeypox in it doesn't have smallpox in it, but has another virus called vaccinia. That elicits an immune response. So acam 2,000 is a possibility for vaccination, and Jynneos would be preferred just because it's a little bit different in how it's developed. It's also based on the vaccinia.

Alex Isakov, MD, MPH, NETEC/Emory: But the vaccine it can't replicate. So the safety profile is very, very good for that, and there are far fewer contraindications to the use of that vaccine for ems personnel. Maybe most important to know that while you know, pre exposure, prophylaxis with the vaccine is, is always ideal.

Alex Isakov, MD, MPH, NETEC/Emory: But there's value in post exposure vaccination also, and there's evidence that if you are vaccinated even as late as 4 days post exposure

Alex Isakov, MD, MPH, NETEC/Emory: you could benefit from some immune response and maybe

Alex Isakov, MD, MPH, NETEC/Emory: avoid getting the illness, or, if you were to develop the illness, develop a milder form of it.

Alex Isakov, MD, MPH, NETEC/Emory: There's a few resources that NETEC has worked with partners to develop and to maintain.

Alex Isakov, MD, MPH, NETEC/Emory: Here's 1 that you may have heard of the Ems infectious disease playbook. There's EMS subject matter experts that collaborated with partners at ASPR TRACIE to publish the 1st version of this in 2017. It's since been updated in June of 2023, and then you all know, if you have a document that you'd like to have well referenced, and you're trying to provide active

Alex Isakov, MD, MPH, NETEC/Emory: hyperlinks in that document that needs constant maintenance and kudos to our partners at Asper Tracy for maintaining that document. So the Urls are up to date. Neatch also likes to maintain blogs for the EMS community. So here's a QR code will bring

you to a blog on

Alex Isakov, MD, MPH, NETEC/Emory: on Mpox, and we'll remind you about the implementation of a hierarchy of controls to keep you and your colleagues safe when you suspect a patient has Mpox, and you have need to transport and manage them.

Alex Isakov, MD, MPH, NETEC/Emory: So in summary from my portion of the talk, be alert about suspicious rashes.

Alex Isakov, MD, MPH, NETEC/Emory: Think about how to use this, identify, isolate, and inform paradigm, you know again, be alert to a patient that you might find that has a rash. That isn't explained, especially if there's travel history to an endemic part of the world. And

Alex Isakov, MD, MPH, NETEC/Emory: the reason to have this webinar is because of the really unprecedented outbreak of Clade, one B. Monkeypox in the DRC. And and some of its neighboring countries.

Alex Isakov, MD, MPH, NETEC/Emory: and remember about good personal, protective ensemble to protect yourself from potentially infectious bodily fluids, to include gown, gloves. NIOSH, approved. N 95. Respirator and face shield, and then just know that there are vaccines available for post exposure and

Alex Isakov, MD, MPH, NETEC/Emory: and pre-exposure prophylaxis. They would be administered with under the guidance of the public health authority, your State, and with the help of guidance from CDC.

Alex Isakov, MD, MPH, NETEC/Emory: And that's what I have, Clary.

Clary Mole: Thank you both doctors, for sharing your information that you've

Clary Mole: provided today. We really do appreciate that, and we also appreciate your time.

Clary Mole: It's time to address some of the questions that we received as a reminder to the participants on the webinar, and you can continue to submit your questions, using the Q&A chat function in the zoom panel.

Clary Mole: We'll answer those questions as time permits, but if we don't have time to get through all the questions. We will during this portion of the live webinar. We will correlate the questions and create a document that will be available.

Clary Mole: With the archived recording of today's session on [ems.gov](https://www.ems.gov).

Clary Mole: hmm.

Clary Mole: or have any questions.

Clary Mole: earlier, we had a question come in about a clade. Can we just get both doctors.

Clary Mole: Definition of what clade actually means.

Alex Isakov, MD, MPH, NETEC/Emory: Bryan, I gave the best answer to definition. Clade, that emergency medicine trained in Ems could give. I'm happy to repeat it unless you have a more accurate definition.

Bryan Christensen, CDC: I think it's there's no real

Bryan Christensen, CDC: true definitions. But really it's just that it's a a grouping of it's a spur off the same ancestry of the virus.

Bryan Christensen, CDC: But it's a a grouping. So that's why there's a there's clade one and clade two, but there's also

Bryan Christensen, CDC: clade one a clade one B, so it starts to branch out, and so they follow different ancestry back. They're not

Bryan Christensen, CDC: a different strain. It's not a variant. It's just that it still links back to the original monkeypox virus and so

Bryan Christensen, CDC: that's you know, you gave a good definition of it. There's no

Bryan Christensen, CDC: it's not a clear. It's not clearly defined even in the literature that I can find so.

Alex Isakov, MD, MPH, NETEC/Emory: Yeah, thanks for that, Bryan. And so you know the way I've tried to honor some definition of a clade as a group of viruses that sort of share a common ancestor. But I think for the Ms. Community, while it might not be accurate.

Alex Isakov, MD, MPH, NETEC/Emory: you could consider Clade like a strain of the virus.

Alex Isakov, MD, MPH, NETEC/Emory: If that helps, you know, get your head around it better.

Alex Isakov, MD, MPH, NETEC/Emory: Actually.

Bryan Christensen, CDC: Cal. Cal

Bryan Christensen, CDC: looks like Cal Berkeley has a really unique I'll put it in the chat

Bryan Christensen, CDC: are good kind of

Bryan Christensen, CDC: Oh, I don't know how to send it across the board.

Bryan Christensen, CDC: I'll put it in what I whatever chat I have, and then maybe Molly or Meagan, you can send on to the group.

Bryan Christensen, CDC: But this actually helps define it because it's actually the visual of looking at what's constitutes a clay versus not is really helpful.

Bryan Christensen, CDC: There's a question about their mpox and monkeypox. So now the nomenclature has changed.

Bryan Christensen, CDC: Mpox refers to the disease, and monkeypox is specifically to the virus. So

Bryan Christensen, CDC: monkeypox virus, which is also usually now abbreviated MPXV and then Mpox is the actual disease.

Alex Isakov, MD, MPH, NETEC/Emory: There's also a question on the

Alex Isakov, MD, MPH, NETEC/Emory: 2 acronyms I used on one of my slides, PEP and PrEP. So PEP is post exposure, prophylaxis and PrEP is pre-exposure prophylaxis. So you know, as it related to use of vaccine.

Alex Isakov, MD, MPH, NETEC/Emory: If, for example, you were in a high risk group and determined that you needed protection from contracting the illness or getting infected with the virus in advance of exposure that would be considered pre-exposure prophylaxis. And then, if you were somebody who had had close contact with a patient.

Alex Isakov, MD, MPH, NETEC/Emory: that, or a person that had mpox disease, and you were, you were exposed to their potentially infectious bodily fluids, and

Alex Isakov, MD, MPH, NETEC/Emory: then, if we were to give you vaccine a day or 2 after that exposure that would be considered

Alex Isakov, MD, MPH, NETEC/Emory: PEP or post-exposure prophylaxis.

Bryan Christensen, CDC: I see there's a question about healthcare workers.

Bryan Christensen, CDC: the infection rate. It's actually extremely low. I'm only aware of within the Us.

Bryan Christensen, CDC: This is domestically, internationally, it's a little bit different. We don't have.

Bryan Christensen, CDC: We don't have enough case finding data to know

Bryan Christensen, CDC: what what percent are healthcare workers. We do know they are getting infected, but we also do not know.

Bryan Christensen, CDC: I

Bryan Christensen, CDC: what PPE, they're wearing, what they're instituting any sort of hierarchy of controls. We do know that

Bryan Christensen, CDC: IPC practices are pretty poor in DRC. And and most of that region.

Bryan Christensen, CDC: But in the U.S. I'm only really aware of 2 healthcare workers that I know of that received that had this none handled waste. And so that was actually part of the basis for the scientific rationale, for declassifying it from cat A to cat. B

Bryan Christensen, CDC: the two we one of them, we know, had a needle stick

Bryan Christensen, CDC: and then the other one had a not a needle stick, but we think of a breach in PP, so we're.

Bryan Christensen, CDC: you know. Usually this is a breach of some sort, I think maybe earlier in the clade two B outbreak. There was another

Bryan Christensen, CDC: needle stick injury as well. So you know, early on there were healthcare workers doing roofing of lesions, and we recommended not doing that.

Bryan Christensen, CDC: And so that is a high high risk for needle stick injuries.

Bryan Christensen, CDC: And how is impacts affecting children? I see that question domestically, we're not seeing

Bryan Christensen, CDC: issues with that very much. And then, really, here in the Us. It's driven by men who have sex with men, and

Bryan Christensen, CDC: also the other groups that I mentioned during the who is eligible for Jynneos. Vaccine

Bryan Christensen, CDC: are recommended for Jynneos vaccine in DRC. It's different because it's a very different transmission dynamic. So we have the zoonotic spillover

Bryan Christensen, CDC: because there are different animal reservoirs that do have it. And then we also have

Bryan Christensen, CDC: some other issues. There are some other risk factors like household transmission. And and DRC, that we're

Bryan Christensen, CDC: and sanitary conditions. And so there's a lot of things that kind of factor into that.

Clary Mole: Okay. Well, that rounds out

Clary Mole: about all the time that we have. Once again, I want to thank you, Dr. Christensen and Dr. Isakov, for joining us today and providing the information that you provided, and also thank you for your time.

Clary Mole: For anyone interested. Or if you enjoyed today's webinar or found it informational. Please share it with your friends.

Clary Mole: Go to [ems.gov](https://www.ems.gov) to sign up for both the newsletter, and you can also sign up for reminders about the webinars that we produce.

Clary Mole: Thank you all for joining us, and until next time take care.