Podcast Transcript

Mpox: A Review of the Poxvirus Previously Known as Monkeypox

The following transcript has been lightly edited for clarity. Elite Learning does not warrant the accuracy or totality of audio transcriptions provided by an independent contractor resulting from inaudible passages or transcription error. An occasional transcription error may occur.

Listen, Learn, and Earn CE Hours with this podcast course. Available on Apple, Spotify, and other podcast apps.

Guest

Daniel Griffin, PhD, MD

- Board-certified in internal medicine and infectious disease
- Expertise in global health, tropical medicine, parasitology, and virology
- International speaker for organizations such as the University of Glasgow, the University of Minnesota, the Peace Corps, the Foundation for International Medical Relief for Children, Floating Doctors, and Remote Care Education
- Podcast co-host of "This Week in Virology" and "This Week in Parasitism"
- Co-author, *Parasitic Diseases*, 7th edition

Host

Leana McGuire, BS, RN

Leana McGuire has extensive experience with leadership development and executive coaching, and a background in content development, visual performance, speaking, and podcast hosting.

Content Reviewer

Maria Morales, MSN, RN, CLNC

Maria Morales is a nurse planner for Colibri Healthcare and a certified legal nurse consultant. She is a quality-focused, results-driven nursing education professional. As a continuing education leader with nurse executive experience in developing interprofessional educational programs, she supports healthcare workers with educational activities to help increase communication within the healthcare team.

Transcript

Episode 1 – An Update on Mpox

SOUNDBITE OF MUSIC

LEANA MCGUIRE, HOST: Hello, and welcome to our discussion on monkeypox. This will be an interesting conversation. I'm Leana McGuire, your host for this Elite Learning podcast. And our guest is Dr. Daniel Griffin. Dr. Griffin is a physician scientist, board-certified in internal medicine and infectious disease with expertise in global health, tropical medicine, parasitology and virology, including SARS-CoV-2 or COVID-19. Welcome, Dr. Griffin.

DR. DANIEL GRIFFIN, GUEST: Oh, thank you so much, and welcome, everyone, to today's session.

MCGUIRE: Yes, this will be interesting. Can we start from the very beginning? What exactly is monkeypox?

GRIFFIN: Yeah. So, you know, I think people first ask, you know, what is this? What's this name? What's this all about? So, so first off, this is a viral disease. So, it's a virus. It's transmitted through contact. It's described as one of the pox diseases. We actually see these, these pox, these vesicles. And, and the name, the name is historical. The name is changing, but it gets this name, because back in the 1950s was actually recognized in a, in a colony in monkeys in Copenhagen, in Denmark. We didn't actually see the first cases in humans until about 1970 or probably the better is to say, "We didn't recognize cases in humans till about 1970." So, it has this historical name.

It's now ... WHO has suggested, and I'm going to sort of agree with them, renaming it mpox, sort of getting rid of what they are concerned is, is a racist, stigmatizing name. So, you know, so there'll be a transition period. A lot of the literature, right?, still will have the term monkeypox in there. But over time, this will become mpox.

But yeah, that's what it is. It's a virus disease. It's an infectious disease. It's a disease that is predominantly transmitted through contact that manifests as these pox, these vesicles, these pustules.

MCGUIRE: So originally it was a transfer from monkeys to humans, is what you're saying? Or they, they saw it in monkeys at one point, just to clarify?

GRIFFIN: You know, that's a great question, because that really leads into so, "What's the reservoir?" Where is the, where's the mpox virus usually residing? So the suggestion is, it's probably in rodents, and the monkeys just like us, you know, as zoonoses is sort of interesting. You know, zoonoses, probably wrote it to monkey, wrote it to us. So, we don't necessarily think that people got this from monkeys.

The suggestion is that monkeys just like us, got it from rodents. And then there are probably these rodent reservoirs, and we've even run into that here in the United States. Actually, one of the introductions about 20 years ago was in the exotic pet trade, where an exotic pet, I guess you'll call it a pet, (laughter) a little rodent that someone was going to have as a pet was brought into the country, and we had an outbreak ... actually, actually got into a prairie dog population. And then we had that rodent prairie dog transfer to humans. So the reservoir, it's probably a rodent pox. So, a little bit of a misname. So, mpox is probably going to be a better referent going forward.

MCGUIRE: For sure. Yeah, that makes sense. But not everything can be transmitted from one species to another, correct?

GRIFFIN: No. And that's one of the challenges. You know, the viruses, the pathogens that come to attention are those that can. But, you know, most pathogens are not, as we say, promiscuous infectious disease. They're, they're kind of stuck within their, their particular host. But, you know, as we saw with SARS-CoV-2, as we've seen repeatedly with the mpox virus, it can actually infect several mammalian species.

MCGUIRE: It's really interesting. So, who should be concerned? Does this target any specific demographic, or is it whomever?

GRIFFIN: Yeah. So the timing of when we're recording this, I think is, is, is important to give a context here. So mpox is something that has been endemic in, in sub-Saharan Africa for well, since we recognized it in 1970. So you know, there continue to be cases, there continue to be outbreaks. There was a little girl whose care I was involved with prior to our outbreak in the U.S., in Ghana, little newborn girl just covered with the mpox pustules.

MCGUIRE: Aww, wow.

GRIFFIN: So, it's an ongoing thing in Sub-Saharan Africa. What we saw recently in Europe, the United States in the spring and into the summer of 2022 was an introduction, probably through a particular demographic. So, you know, men having sex with men, a number of these events, a number of these festivals. It started in that population. A large number of the diagnoses were in that population. But as I'll point out, not all the cases were in that population. So that was a group that had a lot of contact that we recognized and diagnosed and treated a number of cases.

But we also saw cases in women who are not men having sex with men. We saw cases in children. And actually what we realized with some recent literature is we've probably missed thousands of cases outside of that, that demographic, the men having sex with men. And in the most recent study of women who got monkeypox or mpox, about a third of them, there was no obvious sexual contact. It was, it was not sexually transmitted. It was a contact transmission. And the children, again, those were contact transmission cases.

So, there was a population that saw the bulk of it. That population actually had the highest rate of, you know, early prompt diagnoses. But who should worry about this? Well, no one should worry about this, but I think we should be aware. We should be alert. In the United States, in Europe, the number of new diagnoses is really dropped down to about a dozen, about ten or so per day. ... so really tremendous compared to seeing that many every single day in New York City in the early days.

MCGUIRE: Right.

GRIFFIN: You know, for the entire country that really dropping down. But no, it's, it's, it's important to realize that it's not restricted to a certain population.

MCGUIRE: That's good to know, because we do hear a lot of "Oh, I don't need to worry about that, because it's only gay men" ... was a popular misconception. And so, it's contact; you said is how it's spread.

GRIFFIN: It is primarily contact. And I think this is, this is important. And you know, very few things in the world are strict binaries. You know, the ...

MCGUIRE: Sure.

GRIFFIN: ... that's funny, this is this circular, you know, where you say, you know nothing is 100%. And I'm claiming that that statement is true. But, you know, (laughter) 99% of the time, you know, we, we believe that the transmission is through pretty significant direct contact.

There are certain circumstances where there may have been some sort of respiratory transmission. So, we tend to be incredibly careful when these individuals are in the hospital or other settings to really prevent that that low likelihood of that, but that possible event.

MCGUIRE: Gotcha. Okay. So, you're saying approximately ten per, ten per day. Did you say?

GRIFFIN: Yeah, we're down to about that. I mean we, we have about 30,000 diagnoses so far, confirmed diagnosis in the United States of, of mpox, and that was really peaking early in the summer, summer of 2022. And that really has dropped down. We continue to see a few cases diagnosed per day, you know, and and we do suggest that we're not diagnosing every single case.

And we'll talk a little bit about that, because, you know, some cases, you know, hit you over the head like I described that young girl just covered with these umbilicated pustules. So, pustules (almost looks like they have a belly button, each one of them, you know?) to what can just be a painful rash, maybe in the groin area and not even sure what that is. Some of these young men, you know, suggesting that they now have adult onset acne in their thirties, which they don't have. So, there really can be quite a, quite a spectrum here. Some very obvious, some quickly diagnosed, some maybe because of, of bias, the diagnosis is significantly delayed.

MCGUIRE: What are the other symptoms aside from the pustules?

GRIFFIN: Yeah. I mean one of the things about this introduction into the U.S. and Western Europe is we saw a, a broader range of presentations, right? So the initial idea was that you started off with a febrile illness, then you would start to develop a rash, and it was really this, this defined progression. We actually saw, in this case, half the people didn't have that fever. Half the people started to have a rash first before they had any systemic issues. So, you can have fever, yes or no? You can feel sick, or not. You can have enlarged lymph nodes, or not.

MCGUIRE: Hmm.

GRIFFIN: You can have a rash. I mean, the rash is almost uniform, because that's how we think of it and diagnose it. So, there may be manifestations without an obvious rash, but typically there's that rash. And then the rash, you know, we had said before this, that it would go through various stages of development, but that it would actually be some of them at the same time.

So chickenpox, you get vesicles, they're all at the same time, all in the stage of development. And then they would scab over. You know, classically what we had said about mpox is that you might have vesicles and pustules at the same time, but the reverse is true. With mpox, you can have all vesicles, all pustules all at the same time as well. So that the manifestations are so broad ...

MCGUIRE: Mm Hmm.

GRIFFIN: ... that really the takeaway that we've said to clinicians is if it's a vesicular rash, if it's anywhere in your differential, you gotta test, because that's the only way to tell whether or not it's, it's mpox. And, you know, gotta throw this in (and you know you can have more than one thing) ...

MCGUIRE: Right!

GRIFFIN: ... and about 30% of people that were diagnosed with mpox had something else also. So, this approach of like, "Oh, I will find out that it's, you know, that's HSV, and then I'm done." Well, the fact that it's HSV does not tell you that it's not also monkeypox or mpox.

MCGUIRE: Interesting! I can see how it was misdiagnosed for sure. So how, how is it tested for now?

GRIFFIN: Yeah. So, there's basically a way to test it. I'm going to say there's two ways that this could be procured, but we're using swabs. So, these are those non cotton, large tips that we use. You rub the lesion to unroof it. Early on there was a suggestion that you might use a needle to unroof it to get at that fluid. We've said, "Stop doing that," because there's been some issues where people have poked themselves with those needles. So, no sharp objects.

It's recommended that you use two of these. You're going to rub those lesions, get that fluid. Once you've unroofed it. And, this is a little bit of a challenge, because those roofs can be a little bit thicker on an mpox vesicle pustule than they would be on some of the other viral rashes. And then you're going to put those into the liquid viral transport medium.

And the split here, which I think is really nice, is they looked at, "Can people do this, patients do this?" Do you need a board-certified, you know, infectious disease? No, you do not need a board-certified infectious disease physician. Patients can actually swab the lesion themselves, drop it into the, the liquid for you, as same sensitivity. That specimen is then sent off for PCR, which I think we've all gotten familiar with, and that PCR is very sensitive, very specific for this diagnosis.

MCGUIRE: Do you see home testing in the future?

GRIFFIN: Um probably not quite yet. There is, there is some development, antigen testing, right?, which would would be amenable to that. Swabbing those, putting them in a liquid, dropping them onto a lateral flow like those home COVID tests. I'm a huge fan of people, you know, able to test themselves. We'll see. We'll see. And part of the, part of the challenge, right?, is that this is dropping to low numbers in the U.S., dropping off to low numbers in Europe. When diseases start to drop to low numbers in high resource countries, we start to lose the focus on those limited resource areas that are still in the middle, that are, continue to be, in the middle of mpox spread.

MCGUIRE: Interesting. Any issues or concerns about mortality related to this?

GRIFFIN: That was one of the good things, I will say, about the mpox spread. There were very few deaths. You know, less than, less than ten, maybe about a half a dozen that were, you know, people that, that died either with or from mpox, tended to be immunocompromised individuals. But no, by and large, though, this can be a horrible disease as far as pain and suffering, sometimes the pain and suffering being so severe that people need to be hospitalized, people are requiring narcotics. They may not even be able to eat or drink, but your chance of dying from mpox is very low.

MCGUIRE: Okay. And the pain from the pustules, or is it joint pain, or what is the, where is the pain originating?

GRIFFIN: So, the pain is, is most often where the rash, where the skin lesions are. So sometimes if that's like in a rectal area, it can be horribly painful. Sometimes on the face, you know, and not only can it be horrible pain, horribly painful, but the inflammation can be so deep it can actually lead to scarring of these areas.

MCGUIRE: Wow. Ouch! Are we aware if there are any long-term effects of this that we should be aware of?

GRIFFIN: Yeah, is there a, is there a long mpox? Is there a post-mpox syndrome? You know, you would think we would know, right? As I mentioned, first described, 1970, in Africa, a number of recognitions since then. We should have really good data on this. Unfortunately, we don't.

MCGUIRE: Hmm.

GRIFFIN: So in the next, you know, months to years, we'll be following a lot of these individuals seeing if there's a post-infectious sequelae syndrome.

MCGUIRE: Okay. Interesting. Okay. So the presentation, it's not typical. Everyone doesn't present with the same thing initially. Like you said, some will have fever first or ….

GRIFFIN: Yeah, I think that's really critical, right?

MCGUIRE: Sure.

GRIFFIN: And maybe we've learned that from COVID-19. You know, the way that you tell what viral syndrome, what viral infection you have is by testing. There, there are many more atypical presentations … that the virus doesn't read the textbook! (laughter) So, we need to continue to be aware. And that's one of the challenges, right?

As you drop to lower numbers, it's another test. Do I really need to think about this? And yes, because, you know, if we don't, the suggestion is that this is something that's going to be around, that's going to periodically spike maybe during summers when there's more contact, you know. And if we're not ready for it, then it'll get ahead of us, and we'll start to see this spread.

MCGUIRE: Okay. Now, would this be something that is routinely, not routine, but tested in the ER? For example, would they be doing that with people that present with any kind of related symptoms, or is it just not enough cases to make that a routine?

GRIFFIN: You know, there was a time there when, when it was really, say, rampant here in the tri-state area, seeing lots of cases, that I would do weekly discussions with our urgent care centers. And it still continues to be part of our workup for someone who comes in with a vesicular rash. And, and I would suggest that should continue.

Will it continue, will it continue in busy emergency rooms once the, the case numbers have dropped really low? Probably not. You know, there will be questions about how cost effective that is, but that's going to be the challenge going forward. We don't want to miss cases and then have that individual spread it to family members, spread friends, family, other contacts.

MCGUIRE: Okay. Is there a vaccine? Will there be a vaccine? I know we all ….

GRIFFIN: There are vaccines.

MCGUIRE: Okay.

GRIFFIN: A couple you know, the traditional smallpox vaccine. But there's also this Ankara JYNNEOS vaccine, also out of Denmark. So interesting enough, and it's actually quite well-tolerated. Over a million doses has been, have been given out in the United States. It's a two-dose vaccine. And we are getting a pretty good data on efficacy here. It looks like there's effectiveness at preventing disease.

It also looks like there's really good B-cell memory response here. So, there may be a durability. So, we're hoping that this continues to be an effective tool. It looks like it's an effective tool. But yes, there is what we think is a, a safe, effective vaccine. We now do not have vaccine shortages. There is plenty, plenty of supply. We should be ready for what we describe as a ring vaccination. You know, for when we see the next number of cases.

MCGUIRE: Okay. So, it would be in the presence of …. Do you see it as being something that children are vaccinated for, like chickenpox, or would that be Cpox?

GRIFFIN: So, I think that's a great question. … is where does this fit in? Is this going to become a routine childhood vaccine? At this, at this point, the thought is no. Is this something that all healthcare workers will get? Well, with ten cases in the entire country per year, maybe not. Now, the other reason why this is not so essential as a routine vaccination is you can get vaccinated post-exposure.

So, if you take care of an individual and it comes in, they test positive, you can always get/start your vaccination series at that point, and it looks to be efficacious. So, we still have that as an option. And that actually happened several times this last summer when healthcare workers were exposed. They would start their vaccination series. Either they would have no, no manifestations of the mpox, or they would actually get a very mild, maybe a single lesion.

MCGUIRE: Now, um, so we talked about how people present. What are the treatments once they've been diagnosed with monkeypox? Where do we go from there?

GRIFFIN: Yeah. So, there was a, were a number of treatments that we thought would potentially be effective. And the treatment that we really went forward was tecovirimat, and this TPOXX® treatment can be oral, mostly oral, can also be done IV. And, it actually it looks to be effective. We're waiting for the results of the, the STOMP TPOXX® trial where we'll actually get a little more data.

Does it work only in severe? Does it work in severe? Does it work in milder cases? It looks like it works. But at this point, you know, it's hard to sort out, you know, positive experiences, a pile of anecdotes versus the results of that randomized controlled trial. One of the things I'll say was promising is that we only saw two reported resistant viruses in all the thousands of cases that we saw.

MCGUIRE: Wow. Okay. All right. So, I'm assuming, maybe I shouldn't, you know what they say about assuming, but I'm assuming that people with more comorbidities or immunocompromise are more susceptible or suffer more from mpox than others, or am I just going off down a rabbit hole?

GRIFFIN: No, no, I think you're right there, and it makes sense. And it's what we saw is, you know, a compromised immune system is not something great to have with any infection. And we saw some of the worst manifestations in those with compromised immune systems. So, thinking about a demographic that there were a lot of cases, men having sex with men, we had some HIV positive individuals, particularly with significant immune compromise, really low CD4 counts, maybe uncontrolled viral loads.

Some of those individuals had really severe cases. So, you know, we are worried about individuals who are pregnant. We're worried about children. We're worried about individuals, you know, advanced age. And we're very worried about individuals that do not have an intact, functional, robust immune system.

MCGUIRE: Right. Are people getting scarring?

GRIFFIN: So that's a problem. Yes. Some of the severe cases have, have led to scarring. There was a lot of experience before I came to the U.S. with scarring of the eye. So, you know, permanent damage to the eye right now, something you can quickly fix. And so, individuals that have any disease that's close to potentially spreading to the eye would be promptly put on therapy. But some of the areas where the scarring is so bad, we've actually had individuals require reconstructive plastic surgery, because the scarring can be that devastating.

MCGUIRE: Wow. Is … if someone is hospitalized, are they on isolation or do we need to go that far?

GRIFFIN: They are. They're, they're on contact, they're on droplet, they're on airborne. So, it's really the, the, the full nine yards when, when they're there. And, you know, as I mentioned, even though this is really predominantly contact, you know, we have studies where the airplane full of people: One person with active mpox; no one else gets it. You know, it doesn't spread easily, but you certainly don't want this spreading in a hospital setting.

So, when we've had patients hospitalized, they're in a private room. It's a negative pressure room such as we would use for tuberculosis, measles. Now at a lot of centers for COVID-19, everyone is wearing gowns and gloves and all the rest. You know, and the contact transmission is the main concern. So, you really want to be properly donning and doffing that personal protective equipment.

MCGUIRE: Sure. Yeah. What percentage of people or even an estimated percentage of people are hospitalized, do you think?

GRIFFIN: You know, it was a larger percent than we initially thought would end up hospitalized, maybe about 20% of individuals who were diagnosed, right? We're only diagnosing, you know, sort of the more obvious. So, so the actual you know, the actual number of infections relative to hospitalization may be a little bit lower. But when you actually look in a lot of these series, about 20% of the individuals that are recognized, diagnosed end up in the hospital. It's quite a, quite a chunk.

MCGUIRE: Yeah, it is. And if they are sent home, are they instructed to isolate at home like those who have gotten COVID and had to isolate at home? … because I would think families would be susceptible.

GRIFFIN: Yeah, the isolation recommendations are going to apply to those who end up in the hospital, also those who don't end up in the hospital. And it's really quite an onerous isolation period. So just to go through the details. So we are recommending that they continue to isolate not until the lesions are just scabbed over, but until the lesions are completely healed with a new layer of skin. So, for some individuals this really can represent 3 to 4 weeks of isolation, which is really quite a challenge, right? So, you know, a lot of individuals will basically say, I can't, you know, how am I going to eat? How am I going to get groceries? You know, fortunately, we have a lot of delivery options, but that's the recommendation you continue to, to isolate for that period of time, whether it's three, four, or five weeks.

I had one individual. And before those lesions fully heal and, and skin, not just scab, but skin over, if that individual is going to go out during that period of time, we're recommending that they wear masks, that they wear gloves, that they do everything they can to prevent spread. You know, even though we say this is not as easily transmitted as other pathogens, even though this is predominantly significant contact, skin to skin contact in general, there can be fomite transmission and other situations. So, we really want to prevent that from spreading and pretty, pretty strict isolation recommendations.

MCGUIRE: Boy, that's got to be tough. I mean, kids, for example, you said that some children have had it, correct?

GRIFFIN: Yeah, some children have had it. We've had some children here in the local area and, “Oh, my!”

MCGUIRE: Yeah.

GRIFFIN: This is really difficult for them. You know, a lot of telehealth visits or glad we have telehealth now, because you really don't want these people traveling about, you know. But yeah, checking in with them, making sure it's going okay. It can be psychologically difficult to isolate that long.

MCGUIRE: Sure. Absolutely! It would be. Thankfully, a lot of people get to work from home now, which is … not everyone, though, that that's really tough.

SOUNDBITE OF MUSIC

MCGUIRE: All right. We have covered a lot of information here in episode one. It's very informative. We've talked about mpox that was first noticed to be spreading in humans, symptoms besides the classic rash, testing, and treatment. And thankfully there is a low mortality rate. That is good news!

So, let's continue our conversation with Dr. Griffin. We plan to keep the questions and answers flowing and also later discuss interprofessional collaboration within the healthcare team. Remember, the healthcare team includes the patient. So, we will see you in episode two. This is Leana McGuire for Elite Learning by Colibri Healthcare.

SOUNDBITE OF MUSIC

Episode 2 – Mpox: Presentation and the Benefit of Interprofessional Collaboration

SOUNDBITE OF MUSIC

MCGUIRE: Welcome to our continuing discussion on mpox or monkeypox, as many people are familiar with. I'm Leana McGuire, your host for this Elite Learning podcast series, and our guest is Dr. Daniel Griffin. Dr. Griffin is a, a physician scientist board-certified in internal medicine and infectious disease with expertise in global health, tropical medicine, parasitology and virology, including SARS-CoV-2, or COVID-19 as we know it. Welcome again, Dr. Griffin!

GRIFFIN: Oh, thank you.

MCGUIRE: And this is part two of our discussion on mpox, and we've had some really interesting information thus far. Can we talk about mpox and is it endemic or pandemic?

GRIFFIN: So certainly, I think a lot of people are asking this question. Is it over? Will this go to zero? Is it gone? Or, are we, we're going to always have a slow number of cases, and then it will bubble up with these periodic increases? And, and, you know, time will tell. But the suggestion is that this is probably here to stay.

And why do we say that? What makes it now endemic, something that is here, something that is going to be at a low level that we'll periodically see cases? One of the, one of the things is just how many cases we had, 30,000 cases across the country! (widespread across the country) So that's one thing, that the virus is widespread across our country. So that's number one.

Number two is it's not always that easy to diagnose. It can present with these less than classic manifestations, can go unrecognized, can actually spread to others before we get a handle on it. Another is the long incubation period. You can get exposed and not actually get sick for 1, 2, 3 weeks. So, there can be a period of time when you're not seeing cases and then all of a sudden you see a case, and then that person may have actually spread to others, because they didn't know what it was.

Another feature, and this is a little bit troubling is that this virus does not restrict itself just to human beings … can actually affect other mammalian species, so rodents. We talked about the prairie dogs on the prior episode. So, there's always that concern that it may not be in humans, it may get into one of these other reservoirs and

then may spill back. So that really a number of features here that, that suggest that the most likely outcome is for this to become endemic.

MCGUIRE: Okay. Now, will this morph at any point or will it basically stay as is?

GRIFFIN: Yeah, no, I mean, that's, that's a great question. And, you know, one thing that hopefully people have learned over the last three years is viruses mutate that, that's what they do. And so, this virus. Yeah, the way we could tell exactly where it came from, the way we could track a lot of the spread is that this virus is constantly mutating.

There's no one monkeypox or mpox virus. There are several. There's already 2 different clades as far as different areas of Africa. There's also different variations as far as the virus itself that we're seeing in certain areas. So, yeah, monkeypox, like every other virus, will continue to have small changes. If there are fitness advantages, that fitness advantage variant will circulate.

So yeah, there, there, there is the expectation that there'll be changes over time. And then as that happens, we'll have to make new recommendations.

MCGUIRE: Can you clarify the fitness piece?

GRIFFIN: Sure. I mean, this is something we've, we've hopefully learned a lot about with, with COVID-19, with the SARS-CoV-2 virus. ... is that the virus is, is basically competing against other variants for spread through the community. And so, if it has the ability to more quickly go from infection to manifesting disease, if it has the ability to instead of infecting just three people, it can infect six people, if it has the ability to have higher inoculum up in the upper airways and spread .... Now move to monkeypox. Same principle. If you can end up with more virus in that rash, if you can have a higher rate of transmission instead of just 10% of household contacts, if a change allows 20% of household contacts to get infected, you're going to start to see that more fit virus outcompete the other.

MCGUIRE: Interesting. It's very interesting. So, when they do morph, will the vaccine have to morph?

GRIFFIN: So not necessarily. That's something we can keep track of. And part of that, that barrier to, to infection, that barrier to disease, which is really what our vaccines protect us against. Part of it is the antibodies. Right? And that's easier for things to escape. But the other side is our T-cell response, our T-cell protection. So if that's robust, if that continues to protect us here, we may actually be able to stick with the original vaccines that we've been using. And I have to say, maybe I'm being optimistic, but most scientists would suggest that this is a virus where that probably will be the case.

MCGUIRE: We've had a drastic reduction in well, not drastic, but we've had a reduction in the number of cases across the country. What do you attest that or what do you, what's the reason for that?

GRIFFIN: Yeah, no, I think dramatic, drastic. I think those are all the right reference.

MCGUIRE: Okay.

GRIFFIN: I mean, this really shot up, you know, thousands of cases, and now we're down to, you know, less than a dozen cases per day. There were a number of factors that allowed this to get under control. So, number one, actually, I have to say the target population was not falling victim to misinformation, the anti-science campaigns. This was a population that was well aware of the power of science. And so, they were very quick and proactive to get, get tested, to get diagnosed. We really had a lot of scenarios where the patient would go

to a center, and even the clinicians would sort of laugh it off. You don't need to be tested for that. They would really be proactive. They would get that diagnosis. So that was one thing: Getting that diagnosis.

Two, once they had the diagnosis, very interested in what does the science tell me as far as what I should do at this point, as far as my own care, which I do at this point, as far as protecting others.

We also did have effective vaccines. Now, a little bit of a bump in the road there, but they were rolled out. Now over a million effective vaccines were distributed and given to a population that that really was making sure and proactive about getting that protection. I think that there were a number of factors that really helped us in this situation. Maybe these are lessons of a more successful control than, than has happened in other situations.

MCGUIRE: Right. Right. Very interesting. You talked about the incubation period and how they could be spreading it to others during those first three weeks for example. Do they have to have the, the lesions or pustules on them in order to do that? Or could they not even be aware that they have it and have contact and spread it?

GRIFFIN: So, this is great. I think you sort of bring me right into my, my terminology primer. And so, there's a couple things to think about here. So, an individual is exposed, and now they're in this incubation period. And we think that until they actually get sick, until they actually have active lesions, they're not contagious to others. Um that is probably true 99% of the time. And that period of time can be five days out to three weeks. Right? So, it can be a pretty long period of time. Then the individual starts to develop a rash. They start to have the viral-laden vesicles, and they might continue to be contagious to others for 4 to 5 weeks, so really a pretty long period of time here.

MCGUIRE: Are they itchy?

GRIFFIN: More pain actually, more of a burning. A lot of people describe it as feeling like the area was burned.

MCGUIRE: Is it similar to a shingles sensation? Or ...?

GRIFFIN: You know, interesting, think of it as really bad shingles. Yeah, the pain, you know, the pain can be really severe, as I think people are aware with, with shingles. The pain here is, is like the worst case of shingles you've ever had.

MCGUIRE: Oh, yeah, that doesn't sound pleasant at all. So obviously, in diagnosis, it's not going to be on one side of the body with mpox. You're going to get it wherever?

GRIFFIN: Yeah, no, actually, and that is helpful to be thinking about it. Right? We always have these you know, these clues, diagnostic clues. Our shingles, you know, zoster rash is going to be a dermatomal spread. It's going to be only on one side of the body. The, the, the mpox rash can be all over the place, you know, so ....

MCGUIRE: But does it spread across the body, or it will, you may have it on the forearm? I know you mentioned some on the face in our last episode.

GRIFFIN: Yeah. No, this is great. So, it doesn't tend to have that spreading description. It tends to have little areas crop up all over the place. So there probably is a hematogenous spread to different areas. I mean, it's a lot of discussion. You know, the first lesion ... is that where you were inoculated? Is that where you were exposed? Probably but not necessarily.

MCGUIRE: Pox by themselves are pretty interesting. So how does this differ from chickenpox?

GRIFFIN: Yes, so it differs in a number of ways, but chickenpox is actually a good, good referent, a good thing to think about. So, the pox viruses in general present as this pox rash. You know, there's a pox group of viruses, but we recognize them clinically as the, the vesicles ultimately leading to these pox lesions. Chickenpox, right?, predominately something we saw younger individuals get. Chickenpox parties when I was a kid .... (laughter)

Vaccines now. Sort of glad that we moved on to that. One of my early childish childhood memories was my mom having me play with the girl in the duplex who had a rash. And a week later I had a rash, and I knew something was up there. (laughter) So, the chickenpox then is in the system. It stays dormant, and then later it can erupt again.

If it is a childhood, it's usually, usually contact. One of the things we talk about is there's respiratory, pretty significant respiratory with, with chickenpox. With the mpox virus here, it is mostly contact. You see more pustules than you tend to see with chickenpox. But don't use that, you know, as a, as a hard, fast rule.

MCGUIRE: Sure.

GRIFFIN: With the chickenpox, all of the vesicles tend to be in the same stage of development, where with the smallpox or the mpox, we see vesicles, pustules, often different stages of ailment. But again, we've seen it where it looks for all the world like a chickenpox. And the other I think is, is the seriousness. You know, most of the, the chickenpox infections resolve without significant pain. You know we did used to lose about a hundred children a year before we had vaccines. So, higher mortality there interesting enough.

MCGUIRE: So, chickenpox, dormant chickenpox are actually what can lead to shingles, correct?

GRIFFIN: So that's exactly what it is. If you've never had chickenpox, you're never gonna have shingles.

MCGUIRE: Right. Is there a possibility of dormancy with mpox? And, you know, not shingles necessarily?

GRIFFIN: We don't. Yeah, we don't think that there's a dormant or a reactivation monkeypox.

MCGUIRE: Okay, good, good, good. And you said that it can be contact, and it can be airborne. That's interesting.

GRIFFIN: Yeah, it's, it's almost always contact and almost always significant amounts of contact. But maybe this is sort of a thing to think about. We'll sort of talk about our shingles as an example, right? Shingles. When the chickenpox virus erupts, a single dermatome, a healthy individual. Again, it's pretty much contact when they're in the hospital, the door can be open again. It's contact.

But if it starts to have multiple dermatomes, noncontiguous and immunocompromised person, you can get respiratory. So there, there is some concern, some evidence that there can be a, a respiratory spread to monkeypox as well, particularly in the immunocompromised host. So just considering the severity of this disease when hospitalized, we take all these precautions when that individual goes out into the world where having them wear a mask or having them do all the other things just to, you know, minimize as much as possible the chance of transmission.

MCGUIRE: Okay. And you did mention significant contact. If they're covered, for example, if I had it on my arm, and I have this shirt on or I have it covered with a bandage, still potential for spreading?

GRIFFIN: Really minimal. Minimal. So that's one of the things, you know, if, if an individual has a, has a lesion, has a rash, we'll have them cover that. I mean, that really minimizes the risk of transmission.

MCGUIRE: Now, do you have any examples or case studies that you could share with us related to mpox?

GRIFFIN: So, there are a couple, couple stories. And I, and I hope they're educational. I'm going to start with the first, which is a patient that was admitted to the, to the hospital. This was a woman, not a gay man, not a man having sex with men. And they, they had a number of skin lesions. They were umbilicated pustules.

So, they were admitted to the hospital. Initially, dermatology was involved, and the concern was molluscum contagiosum. This was summer of 2022. So, people can look back in retrospect and say, "Weren't they also considering something else?" Well, they weren't.

MCGUIRE: Right.

GRIFFIN: ... because this was a woman. They reported no, you know, sexual exposures to, to any men that were in a population. Initially came in with a few lesions and then rapidly progressed while in the hospital to have pustules over much of their body, actually really severe pustules and ulcerations in the mouth down into the throat. Dermatology quickly fled the scene, and a PCR came back confirming that this was a, a case of mpox in a woman! But because this was a woman, because they did not fall into that demographic, the diagnosis was delayed. And by the time this woman was started on treatment, they were unable to eat or drink. They required IV fluids. They required nutrition through a feeding tube.

MCGUIRE: Wow!

GRIFFIN: The tecovirimat actually had to be given IV, because they could not take pills. So, I think there's a couple lessons here. One was the, you know, don't just have your, your blinders on and say this only happens in one demographic. One thing I've been saying for a while, sort of updated you know, mpox. It's not an African disease. It's not a gay disease. It's an infectious disease.

MCGUIRE: Right.

GRIFFIN: So, you don't need to be in a target population. You don't need to have sex with an infected individual. You can get this if you're a woman. You can get this if you're a child, you can get this if you have contact with things. So, sort of a case here.

Now, the other side, which I think is really important, is in the hospital setting. The physicians are in and out of that room, putting on their PPE. But the nurses, the respiratory therapists, all the other individuals are going in and spending time taking care of this patient. So, it really becomes important for lines of communication to be open.

How is that person doing? Right? This, this isolation is going to go on for weeks. Not only are they isolated, but they're isolated, unable to eat, unable to drink, getting their IV fluids, getting their, their feeding tube. You know, in this case, this woman, you know, talking to the nurse, was just really desperate for magazines, something to read, something to occupy her. Not, not a TV watcher, You know, little things like that, communicating, finding out, finding out from someone who's spending time with the patient and making those connections can be really critical in helping these individuals through these tough times.

MCGUIRE: Really speaks to that interprofessional communication piece. And, you know, recognizing. I love that you brought that up, because that's such an important piece, we talked about this before but, that communication between professionals when you're collaborating on care. I did not realize that it could actually get inside your mouth. So, this is something that can go, I mean, any orifice it can enter the body as well?

GRIFFIN: Yeah, some our some of our, yeah, no, this is great, Leana. So, some of our worst cases, individuals who had lesions in their mouth preventing them from, from eating, drinking, the horrible pain there. Also some really severe cases as far as rectal, where every time they would have a bowel movement, just incredibly

painful, you know, and this is a great thing. You know, you're in the hospital, you can't eat or drink, you're in pain. Maybe every time you defecate (horribly painful), you know, the doctors come in for their short periods of time. You're not in a good mood, right?

MCGUIRE: No.

GRIFFIN: So, this is one of those times where we really see the nursing profession shine, really spending the time connecting, having that relationship to the patient, can tell them, "I'm in horrible pain every time I defecate." It just hurts so bad. So, that pain can be better assessed than just this, you know, once a day or twice a day rounding where you're checking a pain score. Really critical to have those lines of communication open.

MCGUIRE: Yes, absolutely. In this podcast, this information is, is just so valuable for, for everyone that's listening. You know, it's going to help with that communication and recognizing those signs. So, where do you think better teamwork or communication could have helped make a diagnosis earlier for the delayed, the delayed case that we talked about, the woman that came in that was covered with it?

GRIFFIN: Yeah, I mean, I think the first thing is that, you know, the provider should have been thinking outside the box. They should have said, "Wait, it's summer of 2022. We have admitted an individual with umbilicated pustules all over their body. This is a disease that spreads through contact." You know, we had already seen and reported cases in women and children. So that was, that was part of the issue.

I think also, you know, more communication when it became clear that these were spreading, that there was a significant amount of pain associated with that that might have prompted the, that the physicians to order that mpox PCR a little bit sooner. So again, you know, keep the lines of communication, talk, you know, always, always be questioning, "Do I have the right diagnosis here?"

MCGUIRE: So, it's interesting. I know I'm going back to this point again. When we talked, when I said I was surprised that it can go in the mouth or the rectum, etc. So, once it's on your skin, for example, if it's on your face, can it migrate into your mouth? Is that how this is happening?

GRIFFIN: So the suspicion is that it's getting into the blood system, and that it's cropping up in other areas. But, you know, as you describe, we see all these lesions in the mouth, all these lesions in the rectum. There probably is some local spread as well.

I don't know if I could throw another? If we have enough time for another story about a, call this the, the nurse practitioner who spent the time (laughter)?

MCGUIRE: Yes, please. Yeah.

GRIFFIN: Yeah, this is another, you know, and I think, you know …. The cases that I think are the most educational are the ones where, where the diagnosis was delayed. Right? We described, you know, a man having sex with men, goes into the urgent care center advocating for the testing, gets the diagnosis promptly. That's one scenario.

But another scenario that I remember quite well is we do these weekly urgent care calls, and there was a nurse practitioner on the line, and we had actually just talked the day before. And the story here was another woman, this is a woman in her, in her twenties, and she had gone to several, we'll say, other urgent care centers reporting a rash. Initially they said, "Oh, it's just herpes." No testing was done. She was sent away. … saw another urgent care where she was given some valacyclovir (Valtrex®), and then finally went to this nurse practitioner, and the nurse practitioner took the time and really realized that, you know, this has been going on for a couple weeks. These are quite painful. Took the time to look at the rash. It really … things did not seem

right. Went ahead, sent off that PCR, did the swabs, unroofed those lesions, got good samples, actually was an issue with the labs. You had to do it a second time, but then got the result back that this young lady had mpox.

But it took, it took taking the time, not just sort of getting through to see that next patient in a busy urgent care. And that allowed the diagnosis to be made. And then this woman that didn't go to spread it to her friends and family and partners and those with which she has contact. But sometimes it's, you know, it takes you know, it takes the time to get the story from the patient.

And it was also nice. That nurse practitioner then has my cell number, calls me up. We have a discussion. We can, we can work together and coordinate. What's the best thing? What happened with that first test that, that didn't come back with a result? How do we get that test done properly? And then once the test was done, does this individual meet criteria for treatment? Not every patient requires treatment. Not every patient is going to have a bad outcome.

And I think this is also a good example, right? I mean, we could have gone a different way, right? She, this young lady could have gone to another urgent care where they were primary care. They could have swabbed it. They could have made a diagnosis of herpes, and then said, “Now we know what it is and then been done with it.”

And as we saw about a third of the time, individuals would have something else also. So, if you just looked for, for herpes, if you just looked for shingles, if you just looked for a bacterial skin infection and found that, you might then stop. And as I always say, Hickam was not a physician. Or, it is Occam was not a physician.

MCGUIRE: Yes.

GRIFFIN: Yeah, that, that razor, that idea that you can only have one thing at a time, and, and patients can have more than one thing at a time. And I think our studies with mpox were really clear: About 30% of the time, something else was going on. So just because you find something else, don't stop there. Keep looking. Make sure that you're not missing something that you could treat.

MCGUIRE: Excellent. That example was perfect. When we talk about interprofessional and talking about health, health, health team communication, because patients are a part of that team. So, they took the time to have that conversation and also collaborated with you.

Can you tell us? You talked about recognizing the rash? We've talked a lot about mpox in this episode and the last one, obviously, but what do they look like, these lesions or pustules? How do they differ from another rash? Do they have like a white head? Are they red or any particular size? Just kind of a snapshot ...

GRIFFIN: Yeah, I mean, the classic lesions, you know, and what we saw, we saw a fair number of the classic lesions. Not everything was atypical, but the classic is starting off with a vesicle. So, this is a, think of it as a, blister, small, about half a, half an inch or smaller, starting off with fluid. One of the interesting things, they tend to have a thicker roof so than your, your classic chickenpox or herpes. Then, the fluid starts to turn to pus. So now, they turn white, and then often the pustules at this point will then umbilicate. So, they actually start to get a dimpling in at the top. So, and often we see that, particularly if you take time and follow an individual, you know, over several days. They may not come in initially with such an obvious presentation, but a large number of the individuals ....

I remember quite well one patient who unfortunately spent five weeks in isolation who had a lesion right, right on the tip of his nose. And so, we got to follow the evolution of that over time. First, starting when I saw him initially as a clear vesicle. This is not the one that was en route for the diagnosis. It was somewhere else. So, we got to watch the evolution go from clear to pustule to umbilicated, to finally rupture, to scabbed, to finally actually have new skin grow over that.

MCGUIRE: Wow. Wow. That is interesting. Well, that's good to know as well. When we're assessing from a nurse intervention standpoint, when we see someone come in and present like that. Has it ... when you talk misdiagnosed .... I know you just gave some examples of things that they thought it was when that young woman was going from urgent care to urgent care. Is there anything else that it has been misinterpreted as? Has it ...? Have they thought it was shingles at some point if it was on one side of the body or ...?

GRIFFIN: Yeah. So, no, there's a, there's a good list. I'll sort of just run through it. So, herpes seems to be the number one people think about. Shingles has also been brought up. Cellulitis.

MCGUIRE: Hmm!

GRIFFIN: You know, folliculitis. I thought it was quite ... I was joking with one of my colleagues about all the young men at Fire Island who were developing adult-onset acne. (laughter) So, there really is kind of a list of skin diseases that, that really people, you know, maybe they wanted it to be that and not be the mpox infection.

MCGUIRE: Sure!

GRIFFIN: And, sometimes it is that plus the mpox infection, and that's probably the most important lesson.

MCGUIRE: Oh right, right. Wow! That, that is tricky. Goodness sakes! Okay. So, this is going to be around for a while, as you said.

GRIFFIN: Unfortunately. And I think maybe that's a great place for us to close. It's going to be around for a while in the U.S., in Western Europe. But it has been around for a while in, in Africa. And so hopefully people won't just forget about the rest of the world. You know, I would say that, you know, no one's safe until everyone is safe.

So hopefully now that we've got it under control here, and we have vaccines, and we have medicines. You know, it's, it's time to reach out to the rest of the world. Otherwise, it's just gonna happen again. And even if it doesn't happen again, it's still a human tragedy that all these people are suffering when we have vaccines ...

MCGUIRE: Yes!

GRIFFIN: ... when we have effective therapies.

MCGUIRE: So, in countries like Africa, if you were traveling somewhere where there were a lot of cases, obviously, should you get vaccinated before you travel? Or, do they have it under control with vaccination? Or ...?

GRIFFIN: Yes. So, the risk for a traveler is quite low. I am heading to Uganda, well, in about an hour! And um, you know, there are cases there. But no, it's for, for a traveler, even for someone, myself, who will be in clinics and around patients, you know, the risk of transmission is low. So yeah, in general, we don't recommend or encourage vaccination. But there actually, we just heard, that South Korea is going to be donating vaccines. So, there is movement to get vaccines to areas that really could benefit from it.

MCGUIRE: Fantastic. Well, that's just great! This is really good information. I really appreciate ... we really appreciate you sharing your expertise with us on this topic. It's such valuable information. And thank you for being such an advocate for interprofessional communication.

SOUNDBITE OF MUSIC

That's huge. We love that! So, you've taken the time to educate us, and it's been excellent. The whole, the whole series has been really, really good. So, thank you so much for joining us and spending your time with us. We appreciate it.

GRIFFIN: Oh, thank you. And everyone, be safe.

MCGUIRE: Yes. And thanks to our listeners, thank you for coming in and listening to this interesting topic, very timely. And please check out all of the other courses that are available on EliteLearning.com. There is a wealth of information out there to help us with our practice. This is Leana McGuire for Elite Learning with Colibri Healthcare.

SOUNDBITE OF MUSIC