



### **Season 4, Episode 1: Monkeypox: Should We Hit the Panic Button?**

#### **Maayan Hoffman:**

Hello and welcome to the latest edition of Hadassah on call. I'm your host Maayan Hoffman. By the time you're listening to this. Hopefully we'll hear that monkeypox is waning. It's the time of the Jewish holidays. For the last two years we were forced to host smaller dinners and smaller holiday events because of covid-19. I'm hoping and looking forward to a better year. A year in which my children are not nervous to take their mask off in school. A year in which my teens are not asking me difficult questions about why this or that virus is spreading.

The reality, however, is that infectious diseases were and likely always will be with us. And to talk about this and what we can do to stay healthy, we have with us Professor Allon Moses, International Infectious disease expert and immediate past director of Hadassah Medical organization's Department of clinical microbiology and infectious diseases. Welcome, Dr. Moses.

#### **Prof. Allon Moses**

Hello. It's very nice to see you.

#### **Maayan Hoffman:**

Thank you.

Now just as we thought that we've been plagued with enough covid-19 monkeypox started spreading, but if you look at the number of monkeypox cases since May 3rd, the first monkeypox case that was discovered outside of historically endemic African countries. It was discovered in London until now we're actually talking about around 35,000 cases.

Can you please put monkeypox into perspective for us?

**Prof. Allon Moses:**

I think it's very important to put it in perspective. We as infectious disease experts go along with many small outbreaks, large outbreaks, you know the past years we've had influenza, pandemic influenza and we've heard of Ebola and unfortunately the real pandemic we went through was covid-19, which was a true pandemic, millions of people were infected and died. And I think that in that perspective as you said monkey pox is a small disease, but we're very attuned to these diseases their spread and their treatment and their prevention treatment vaccine.

So, I think it's a very good idea to be aware of a new kid in the neighborhood and that knowing about monkeypox and putting it in the perspective of what we need to fear, and what we don't need to fear. I think it's a good idea.

**Maayan Hoffman**

Well speaking of what we need to fear. Maybe just explain for our listeners how monkeypox is spread.

**Prof. Allon Moses:**

Well monkey pox before I say anything about it spread is a virus and it's very similar to other viruses, especially the smallpox virus variola. And because of its similarity there's some fear that it may cause the disease that's similar to smallpox, but it's not.

Monkey pox has been known since the 1950s since the 1970s. It was described as causing a disease in Africa and even in the west and it was transferred by different animals, not only monkeys and so in the past until this new outbreak May 2022, the disease was known to be transferred from and animals to humans mostly in Africa. In Africa, we know that it was present in West Africa and Central Africa. The disease was a little bit different in these places. The central Africa disease was caused by a more virulent strain of monkeypox. And so, there were some deaths with it.

The other, we call it clade the other variety in the west and was the one that was seen in 2003 in the U.S. also transferred by animals, and it was a mild disease. There were no deaths, no mortality in the when there was this small outbreak in the United States and until May 2022 as we said there was no transfer bit from human to human.

**Maayan Hoffman:**

But that's what's really changed. I mean and what's interesting is you mentioned it was animal to human but now it's a kind of getting a stigma because monkeypox is spreading mostly among men having sex with other men.

First of all, you know, can you explain why it's spreading around this relatively contained population. And second, you know, what can we do to ensure proper prevention and treatments in a world that sometimes pretty judgmental.

**Prof. Allon Moses:**

I think it's important to look at viruses and infectious diseases in the larger perspective for a minute. Let's take flu, influenza virus. We know that there's human flu. We know that there's bird flu, avian flu. We know that there's swine flu and usually the strains of influenza virus stay at the species that it's related to. It's an unusual event for avian flu, bird flu to be transmitted to humans. But it happens if you're very close to birds when there's an outbreak of avian flu.

The next step even in the rare event that a person is infected with the bird flu, almost never has been has there been transfer from humans to humans of the avian flu. So there needs to be some kind of mutation in the virus for to be able to transfer from birds to humans, from pigs to humans and another genetic change mutation for it to be transferred from human to human.

**Maayan Hoffman:**

In other words, the monkey pox that we're seeing in humans is not the same monkey pox that we were seeing for example from monkey to human in Africa.

**Prof. Allon Moses:**

That's an excellent point and it's still an open question. We know from looking at the genetic analysis of the new outbreak in humans that it's different, a little bit different from clade one and two that we know from Africa.

We call it the clade 3. Still not clear if the genetic change has actually been such that now it can easily be transferred from human to human. But in fact, we know that it is transferred, so it's transferred by close contact, physical contact such close contact as we know happens in sexual activities. So, you need to have it's not the sexual intercourse that causes the transfer but the closeness skin to skin. And we know that you know an open wound, pox we call it, the small lesion that the virus causes on the skin has a lot of viruses in it. And if it's close to skin of another person it can be transferred. That's the main way of transfer. It's been seen initially in men having sex with men 98% of the current outbreak cases were in men but, it's also been shown that occasionally it can be transferred in household members. So, it's not necessarily the you know, the stigma of men having sex with men.

**Maayan Hoffman:**

But percentage wise, I mean if you look at Israel for example to date, we've had about 200 cases and they are all male. So how do you explain that?

**Prof. Allon Moses:**

I think the explanation as I said, you need contact with a person who's had the skin lesions and you need close contact. If a person with the skin lesions will be in close contact with another person, even children, women it can be transferred. To date it is has not been transferred and I think there are a few other interesting points about the virus spread which may have helped to minimize the spread.

Other viral diseases are known to be transferred in the time of incubation when the patient is asymptomatic. It appears that with monkeypox transmission is only in a patient who has symptoms. So that you know the time of spread when someone doesn't have symptoms is not relevant to this disease and most other viral illnesses, influenza, varicella ...

**Maayan Hoffman:**

covid-19

**Prof. Allon Moses:**

covid-19, the spread of disease happens before the patient develops symptoms in covid-19 you know, the symptomatic patients are often only the tip of the iceberg. So, there are many others asymptomatic patients who spread the disease. This apparently does not happen with monkeypox. And I think we're fortunate to that so that someone who has lesions is able to be careful. And now that we've identified the outbreak it's more much more easy to contain. We'll talk about, you know, the way to contain you to be put in isolation not to be contact in contact with other people. We know that the virus can spread for 21 days.

**Maayan Hoffman:**

Do you have to quarantine then for 21 days?

**Prof. Allon Moses:**

You have to we have to talk about two and two types of isolation quarantines. Quarantine as you probably remember is putting a person in a quarantine until he develops this so someone who came in contact with an ill person can develop the disease within 21 days. That's the time from contact to the development of the of the disease. So yes, the patient has to be in quarantine. Now, the quarantine is not quarantine like smallpox or plague because if the patient doesn't have any lesions, he doesn't need to be in complete isolation. You just has to monitor himself or if it develops lesions and he has to be careful because as I said, it takes 21 days.

**Maayan Hoffman:**

So careful not to touch people for example, but it's because it's spread you said through touch and not through airborne for

**Prof. Allon Moses:**

That's not completely accurate. Most of the spread is through touch but probably again, I think the data is mediocre. But according to guidelines there is an option that the virus is transferred via large droplets. So, but you need to be in close proximity less than two meters 6 feet for at least three hours to contact the disease. I think that's a small part of the way the diseases spread. It's mostly by close skin contact.

**Maayan Hoffman:**

Interesting now looking at Israel, you know, we mentioned a little bit ago how we have just about 200 cases here. It's actually 244 a very small number and when you think about it and so far we've of as of now, we've vaccinated around 2,000 patients with the goal of exiting up to 10,000 by the end of September. Why do you think we have such low numbers here in Israel?

**Prof. Allon Moses:**

The low numbers are related to and to social events to how people are careful. And we must also remember that it's just the beginning, you know, if you look at the countries, I think the recent numbers over 40,000. 15,000 in the US. The next place is Spain with 6,000 and then there are few countries Brazil, France, Great Britain with around 3,000. So, you know, if you look at the relative numbers, we're not very different compared to the population. But we are less.

We also if you look at the you know HIV in Israel, we have relatively few cases compared to other places in the world. So, I think it's a behavioral, social, reason, I don't know the exact reason. I don't know if we can tell what the exact reason is. You spoke of the vaccine? And I think we can elaborate on that.

As I said in the beginning the virus the monkeypox viruses from the same family as smallpox variola and it's also from the same family as vaccine the cowpox, which is the vaccine used against smallpox, you know. In 1700 and 90 something, Jenner discovered this fantastic idea that you can use the lesions from cowpox to vaccinate children, and they will not develop smallpox. So, because of the similarity of virus in late 1970s, you know that the world was freed from smallpox. It was eradicated The WHO announced the eradication of smallpox and since 1980. The human population is not vaccinated against smallpox.

We know that the vaccine, Vaccinia against smallpox is very effective against monkeypox. So those who were born before the vaccination was stopped and received the smallpox vaccine have an 80% protective, protection from monkeypox.

**Maayan Hoffman:**

Oh, that's amazing

**Prof. Allon Moses:**

Now this means that we have the vaccine now the vaccine for monkeypox for smallpox is available. We just need to get it out of our freezer or at least to start manufacturing it in a larger quantities. If you remember there was in the 2001 there was a threat of smallpox. Maybe it was spread so they started making new vaccines. And now we have three generations of vaccines. The most advanced is a vaccine which consists of virus the same vaccinia virus that is attenuated.

The first vaccine was just a wild-type virus, you know, since it doesn't cause disease in humans, but now there's a new vaccine. It's called VMA and this vaccine. Is now available it is

attenuated. It doesn't replicate in human. So, it's very safe doesn't have any side effects. And in fact, it's available now and the company which makes it they're two companies which make it have started making large scale and we can, and we can give it to persons at risk. At this point the persons at risk were defined, you know, there's a definition of the CDC and the Ministry of Health in Israel made a little bit different but similar decisions, so that patient people at risk can be vaccinated and it gives them at least 80% you know.

We don't have data yet as to exact protection rate of the new vaccine. But if the old vaccine gave 80% most probably it will have a better effect even.

**Maayan Hoffman:**

So interesting now, I mean for our listeners, of course here, we're on the Hadassah podcast and I know we said that monkeypox especially in Israel is predominantly spreading among males, but I think some of our listeners want to know about the impact for example on pregnant women.

Are pregnant women at more increased risk for adverse pregnancy outcomes, if they would develop monkeypox and also could the virus if a woman did catch it be spread from the woman to the fetus?

**Prof. Allon Moses:**

The data is limited. There's no data about this outbreak. The data comes from Africa. We know that it can be transmitted for from mother to fetus. The few cases I think there was one adverse case in the fetus. But you know, it's very difficult to compare Africa to the West. I think that right now there's a recommendation, you know the vaccine we give on the one hand like I said to people at risk and others it's possible also to give what we call post exposure as post exposure prophylaxis.

If someone at risk comes into contact with a with an infected person, we can consider giving him early a vaccine and it can protect him from developing the disease pregnant women are being considered as part of that. I think that each case needs to be considered separately in you know, there is an option because the virus is so safe there is a theoretical option to immunize woman with this new monkeypox vaccine

**Maayan Hoffman:**

Really interesting. Is there anything particular that had Hadassah is doing to protect the local population. What has been Hadassah's involvement today?

**Prof. Allon Moses:**

We have been alerting the our staff, you know, the first cases could have been missed if we did not give out information and go around the wards and explain what the symptoms are how to make the diagnosis what the what the

lesions look like how to take a sample from lesion, you know, there's a differential diagnosis of the lesions of monkeypox varicella and even syphilis and herpes simplex can all cause skin lesions which can be mistaken as not being monkeypox.

So, one of our tasks was to increase the awareness of the possibility that the disease is around since most of the patients we've seen were very mildly affected.

We did not want to admit them to the hospital. So, most cases were made in the emergency room. I myself made one of the first diagnosis and we decided was very clear that the patient is doing.

He was a tourist who came from abroad. Initially, the diagnosis wasn't made because you know, I had this rash but then the minute we realized that it's very high on the list as being monkeypox. We sent them to back to his hotel. We noted the authorities the Ministry of Health and they took care to be aware that he needs to be isolated and his linen from in the hotel needed to be

taken care of carefully so as not to spread the disease. So it's really a human and Public Health important issue and we are in very good contact with the Ministry of Health in that sense.

#### **Maayan Hoffman:**

It's great. I want us to remove as over a little bit from monkeypox specifically to diseases that are spread from animals to humans in general. You know, we know that that likely covid-19 was spread from bat to human. We're talking about monkey to human here and these zoonotic diseases seem to be becoming much more prevalent. In fact, I was just reading recently. How about 60% of known infectious diseases and 75% of emerging infectious diseases are in fact zoonotic. I was wondering if you could first for our listeners to find what zoonotic means and also why do you think the situation is becoming so acute?

#### **Prof. Allon Moses:**

Okay, so zoonotic diseases is the disease that is transferred from an animal to humans. Now the animal can sometimes be the reservoir for the disease.

For example, if we take a disease like West Nile fever. It is carried by birds, and it is transferred from birds to humans by mosquitoes. So usually there's a vector there's a reservoir and a vector which transmit the disease. I think it's also interesting that most, not all, but most zoonotic diseases are transferred from animals to humans, but not from humans to humans.

Let's look at the list.

For example, West Nile disease. The disease was not seen in the US until 15 years ago. And suddenly it appeared initially in New York and was transferred by migrating birds. In fact, they came from our area from Israel, you know in Israel most of the birds passed coming from Africa. And the diseases spread by mosquitoes taking the virus from birds.

**Maayan Hoffman:**

Meaning that the mosquitoes catch it from the birds and then transmitted to the humans.

**Prof. Allon Moses:**

And there's no human to human transmission.

Let's take a look at another disease that is endemic in Israel.

Brucellosis.

It's a bacteria not a virus transmitted through unpasteurized milk.

So, we see you know many cases here mostly in people from the West Bank the may drink unpasteurized milk but the disease is not transmitted from person to person. Leishmania and other disease which is a parasite that is the reservoir is in small wild rabbits. And there's a fly a sandfly which transmitted to humans, but humans do not transmit it to one another. Monkey pox is a little different and if you look at covid-19 the initial virus came from animals, bats probably but then the circle is only between humans.

**Maayan Hoffman:**

Because it mutated so much

**Prof. Allon Moses:**

Because it mutated and it was able to make the change.

**Maayan Hoffman:**

It's so fascinating and just in follow-up you were talking about the zoonotic diseases, and I wanted to still get the answer to um, why are we seeing so many more of them? Why is it becoming more acute?

**Prof. Allon Moses:**

Okay, so I think the several reasons. One is that we are closer to nature. In Israel, there was a large outbreak of leishmania, which is I said transferred from the wild rabbits through the Sandfly and we saw that when the city spread into the Jerusalem, its Northern parts spread into the desert. So, the animals were roused and moved and the humans were more close and there was an outbreak of leishmania. The other reason is travel.

We know that for example dengue which is another viral disease was moved from one continent to another through tires, which were sold. Used tires were sold, there was water in them. The mosquitoes were sitting in the tires the old tires and then they moved from one continent to another so we're moving around we're spreading more into nature, and I think this is why we are seeing an increased number of zoonotic diseases.



**Maayan Hoffman:**

Okay. I mean now there is this idea and I think what you were just describing is the concept of one health the idea that there's more interaction between people and animals plants and that all of this is connected are shared environment which leads to the spread of disease.

Can you talk a little bit about the concept of one health? And what are we doing if anything here in the Jewish state?

**Prof. Allon Moses:**

One health is an excellent concept. Unfortunately, I think we're not doing enough. The idea is that you need to have a multidisciplinary approach to stop diseases.

Now it's not only diseases, it's also water shortage and diseases which pass through sewage and the environment needs to be involved, politicians need to be involved, physicians need to be involved statisticians. So, without having a total understanding of how diseases are spread and understand how you can lower the numbers. It will be difficult to change the way the diseases spread, and one health is a way to approach this very intelligently. The W.H.O. has a strong force the is trying to do this I think Israel is a small country. I'm sure we can do more but you really need to work. I think that the doing this internationally will be more effective. You can use experts from many countries from different disciplines.

**Maayan Hoffman:**

Fascinating and just you know in finishing up, I think it's important for us to ask the question when we are talking about the spread of infectious diseases today monkeypox before covid really still covid and whatever ones are still to come. If people should be afraid, you know, is there anything we can do to protect ourselves from these infectious disease?

**Prof. Allon Moses:**

I think that we are limited in what we can do we have to be alert. I think being alert allows for early diagnosis, early diagnosis allows for being prepared. You know if there's an outbreak of infections caused by bacteria in food in the meat factory years ago an infection control nurse was aware of this outbreak and because of her awareness we were able to this was in the US to stop the outbreak. So, I think you need to be aware. You need to have sentinel clinics where the diseases are monitored and once you identify if you remember it was very quickly that the world prepared the vaccine against covid-19 through this collaboration of scientists of hospitals. We were able to sequence the virus and the vaccine was out within months. So, I think that working together is a major way to contribute to lowering the number of cases of new diseases amazing.

**Maayan Hoffman:**

Well, thank you so much for being with us today, Dr. Moses. This was I think very enlightening for our listeners certainly for me, and I hope that we don't have to circle back to talk about a new disease like this next year, but I really appreciate you taking the time today.

**Prof. Allon Moses:**

Thank you very much.