

## Interview with Dr. Katherine O'Brien | Module 1

[00:00:10] Hello and welcome to the first video segment in our unfolding MOOC "Covering the COVID-19 vaccine: What journalists need to know."

[00:00:20] I'm Maryn McKenna, your chief instructor. And I'm here today with Dr. Katherine O'Brien, who's a physician and epidemiologist and director of the Department of Immunization Vaccines and Biologicals at the World Health Organization.

[00:00:38] Dr. O'Brien, thank you for joining this course.

[00:00:40] I am so pleased to be with you.

[00:00:43] So, let me get right to my questions. Could you please explain the role that the WHO has played in vaccine development for COVID?

[00:00:53] Sure. There are quite a number of roles that WHO is responsible for. Beginning first from defining what the target product profile is for vaccines. What are we aiming to develop? What were the characteristics that we wanted a vaccine to meet? What were those minimum characteristics and what would be the ideal characteristics?

[00:01:13] And this is a really important part of vaccine development. Because, with so many developers out there, we need to be clear what we're aiming for in terms of what we want a vaccine to actually do; what age group we wanted in; what kind of safety profile is needed; what sort of delivery characteristics; how many doses we're aiming for. All of the elements of describing what we want designed as a vaccine.

[00:01:43] So, the second thing is really convening people around the world. Because so many of the parts of vaccine development require agreements among different people in different constituencies, to all agree, for instance, on how we will test the vaccines; what kind of animal models will be used. Because we need to compare between one vaccine and another vaccine, or one part of a vaccine made by one company and another part of a vaccine made by another company.

[00:02:14] So, those kind of leadership convenings to have a place where those conversations can happen and agreements can take place. Including sharing of reagents and sharing of knowledge.

[00:02:26] And then, the third thing that does in vaccine development is set the standards for what the protocols need to look like.

[00:02:37] What we've seen is that we need to know what the case definitions are for outcomes and clinical trials. When we're using clinical trials to test for either severe disease, mild disease, moderate disease. What do we mean by those words? And can we agree what those definitions are?

[00:02:56] Because vaccines do change. The performance of vaccines, varies according to the definition that we use of what is considered a disease endpoint.

[00:03:06] So, those are all sort of what we refer to as norms and guidance. Having a place where those conversations to take place, using our expertise and convening expertise from around the world to come to agreements on those things.

[00:03:20] And then when vaccines are tested, we also need to have regulatory processes. And the manufacturing site of a vaccine, the country in which it's manufactured, is the primary country where a vaccine is registered for its use and an assessment is done by regulators.

[00:03:38] But it's really very burdensome for manufacturers to then have to go to every country in the world to get authorization for a vaccine.

[00:03:47] And so, there is a process through WHO, that brings together the evidence from a manufacturer, looks at that evidence, looks at the quality of the manufacturing, the safety information of the vaccine, the efficacy of the vaccine. And can go through, what's referred to as, a pre qualification process or an emergency use listing process.

[00:04:09] When WHO has looked at the evidence and gives either emergency use listing or pre-qualification, any other regulator in the world can rely on that, can use that authorization as a means for them to go very quickly for their own national authorization.

[00:04:29] And then finally, in the vaccine development and authorization sort of space, is developing policies for how you use a vaccine. So, the regulatory step tells you whether a vaccine is efficacious, safe and manufactured with quality. It says it can be used, but it doesn't say how to use it.

[00:04:51] And so, the policy process, WHO convenes again to provide a global recommendation on vaccines, is convened and looks at each of the vaccines to provide a recommendation on the number of doses; the age groups that a product should be used in; should it be a universally used vaccine or their subpopulations in whom it should or should not be used.

[00:05:15] So, all of the decisions about how to use a vaccine is what the policy process does. And we have a strategic advisory group of experts on immunizations that provides advice to an expert review of the kind of evidence that's needed for a policy formulation.

[00:05:32] So, that really takes us from the early stages of the idea of a vaccine all the way through to that regulatory part and the policy part. And then, of course, we can talk also about actually delivering vaccines in countries and the work that WHO does to support and assure that vaccines can roll out in every country around the world.

[00:05:53] So, we'll talk about that in just a minute. Thank you for that incredibly cogent explanation. So quick and just so, so precise.

[00:06:01] One thing that I wanted to follow up with, because as you probably know, many of the members of this course are coming from developing economies. Am I right to think that WHO does all this work in part to take the burden off whatever national agencies or ministries they have? That they may not have a drug development authority with the muscle of the FDA or the equivalents in India or in China. And so, those countries can trust that the WHO has done the vetting for them?

[00:06:33] So, WHO is really there to support all countries around the world. And clearly countries that have fewer resources at the national level, would lean more on the work that WHO does. But it's not really only about countries that have fewer resources.

[00:06:52] We do training per country staff, so that at any point in time, the ability and the capacity of countries to actually take on this work themselves in the future is ever more strength. And I mean, that's really the goal, is that countries have this capacity in their own national programs.

[00:07:14] So, it is both a reliance part, it's a training component. But even if we didn't need either of those things, there is still a need. If every country was of high capacity, we would still need WHO to do some of these things. Because there does need to be a place.

[00:07:31] There does need to be a convening. There does need to be a gathering place for people to have conversations that have to do with collaboration.

[00:07:40] And unless we are collaborating around the world, there simply aren't enough resources for any one country to do it alone.

[00:07:48] The knowledge, the information, the research. We do need to have ways of collaborating together, coming to agreements about what it is we're going to do, how we're going to measure things. So that we have standardization. And therefore, as a result of standardization we can make comparisons between a range of different products and the ways that they're being measured.

[00:08:11] If we're all off doing our own thing, deciding on how we're going to do a study, we just can't make any comparisons or come to adequate conclusions about what products actually do.

[00:08:23] So, at the point at which we're speaking, which is the first week of March, three vaccines have been authorized here in the United States, where I'm sitting. Others are in use already around the world. We are just about in the week when a global pandemic was declared by WHO a year ago.

[00:08:42] Are you surprised that things moved this fast?

[00:08:44] Oh, I think everybody is surprised. I think this was the hope that we had that the world would come together, would use every lever it has, would put all of the resources out there publicly in a collaborative fashion, in a coordinated way. So that we could get speed, quality and success, really.

[00:09:06] Those are three of the things that were essential. And then added to that, the fourth dimension is scale and access.

[00:09:15] And so, I think that the actual success of the development of the vaccines, is really just, we've said it so many times, but it just it bears repeating - it's extraordinary. It is unprecedented.

[00:09:30] The number of products that have come through clinical trials, the number of successful products and the pipeline continues. And the reason that's important is that, we need as much product as we can get our hands on. The world doesn't have enough vaccine to vaccinate everybody in the world who needs this vaccine.

[00:09:48] That being said, we don't actually know exactly what fraction of the population should be vaccinated. We're still learning just how far and wide we should be vaccinating.

But this has been absolutely unprecedented, extraordinary. And I think there's nobody who expected that we would be going this fast, this far, this wide and at this scale.

[00:10:11] So, we're already into distribution of vaccines around the world. What are the you mentioned distribution and WHO playing a moment ago. What are the challenges at this point for getting vaccine distributed?

[00:10:24] The biggest challenge we have right now is the equitable access to vaccines. We have a global facility, the COVAX facility, that was designed to be the clearinghouse for doses that are manufactured to be aggregated together and then to distribute them in a fair and equitable way to respond to the epidemiology of this pandemic, the needs of every country around the world who wanted to join the facility. So that, we would be able to distribute those vaccines with transparency at the least expense possible, in a fair and equitable way.

[00:11:05] The alternative to that, is that every country had to do it alone. Countries that had resources would be able to do bilateral deals, in size and scope of their liking. And with limited supply, when we're in a situation where there's constrained supply, that would mean that countries that were less able to pay would have less vaccine or less speed in accessing vaccine.

[00:11:29] And that's not a neither wise nor really morally justifiable way of distributing vaccines. And we're somewhere in the middle of those two sort of ends of the spectrum.

[00:11:43] We do have a global facility, the COVAX facility, that one hundred and ninety countries have become a part, countries or economies. And vaccines are rolling out through the COVAX facility now, and they do serve the ninety two countries with the least ability to pay. And those vaccines are being provided to countries without cost to the country.

[00:12:04] But we're also in a place where there are dozens and dozens of countries that have done one or more bilateral deals. And so we're in sort of a hybrid space right now, where we have both the global vision of how vaccines should be distributed. And we're on the other extreme, we also have a large number of bilateral deals with countries.

[00:12:29] Do you think there's a hope for encouraging the countries that have done their private deals to share what they've committed to with the rest of the world?

[00:12:37] So, a substantial number of countries have actually got more doses than they can really use. And the reason that that happened is that at the time when the deals were being done, nobody knew which of the clinical trials, that were testing products, which of them would actually reach success.

[00:12:55] With the large number of products that have reached the minimum measures of success, for a vaccine, there are a substantial number of countries that that have more doses than they do have people. That along with the idea that, it's not just the the total number of doses that a country has access to, it's also the timing of those doses.

[00:13:18] And what we're seeing right now is with the tens and now hundreds of millions of doses that are being distributed worldwide, there are a very limited number of countries, about 10 countries, that have administered about 80% of the doses that are being distributed right now.

[00:13:34] That's not going to work. It's not going to work for a small number of countries to go very far and very fast, while leaving behind, both in pace and scale, a large number of countries that don't have access to be going as fast or with as high coverage.

[00:13:52] And when I say it's not going to work, what I mean is: what we all want is we want the pandemic to end. We want our lives to get back to some kind of new normal.

[00:14:01] We can't do that until there's widespread protection, not just within a country, but across borders. We've seen this pathogen move across borders and it will continue to do that.

[00:14:14] Even if we immunize some parts of some countries or immunize large parts of some countries, we're starting to see variants of the virus. They may become variants that now are not protected by the vaccines. And the smart way to actually get out of this pandemic is to assure that the benefit of immunity is felt around the world, while we're crushing transmission with our non-vaccine interventions.

[00:14:48] You just said, and I completely agree, we all want the pandemic to end. What in your head is your timeline, for what this is going to look like? How do you think vaccination is going to roll out? And what's our hope for reaching population immunity?

[00:15:05] So, I'm really a scientist at heart. And so, I don't like to speculate, but I'll tell you what I think we know is going to happen. And then, what can we envision will happen out in that distance.

[00:15:21] Every country in the world is going to be able to achieve somewhere around 25% coverage of their population in 2021. There are a smaller number of countries that will reach higher population coverage of vaccine, because they have access to doses.

[00:15:39] We know that it is very likely that countries do need to go beyond 25%. Now, that number is enough to cover the highest priority individuals in countries: health workers who are the ones who have been putting their lives on the line and sustaining our health systems through this pandemic; those who are in older age groups or who have underlying conditions that put them at risk of having severe disease or death from COVID.

[00:16:08] And that's the reason why we're in this situation in the first place, is the severity of the disease. That's the thing that has put our health systems at risk and it has caused so much loss of life, severe disease, and required that all of the other interventions that we've put in place.

[00:16:27] So, if we can really turn down the volume on that severe disease spectrum, the risk of death and the protection of our health system, that's going to take a lot of air out of the balloon in terms of why we're having to do what we're doing in the first place.

[00:16:43] So, that is the first priority and the critical priority for 2021, is that every country everywhere is able to protect against that most urgent need.

[00:16:55] Now beyond that, what we really want is this pathogen to go away. We're not we're not going to get rid of this pathogen. I don't think anybody thinks that anymore.

[00:17:04] But will it become something that is much less severe? Is it something that would circulate in a much slower pace, because there is such high immunity in the population as a result of either vaccination or natural immunity?

[00:17:21] And we are not advocating that we get to immunity through natural means, because of the risk of severe disease and death. So, we need to get to that place and the size of that immunity. How many people need to have immunity in order to, as I sort of call it, take the air out of the balloon on this, is not really a known value.

[00:17:40] We are learning as we go. We're learning about whether these vaccines interrupt transmission of the virus, whether they can protect against infection of our upper respiratory tract.

[00:17:54] So, there are components of this whole response and components of the virus itself, that remain unknown for us. And the virus is adapting and it is changing as time goes on and as more transmission takes place.

[00:18:13] So, we are going to have to learn about whether booster doses are needed. About whether or not we need an adaptation of the vaccines to get out in front of the virus, in terms of the variants of the virus. Whether or not there will be a role for immunization of children, for which we don't have clinical trial data, yet.

[00:18:34] So these are some of the questions that are yet to be answered and will influence what the strategy is for using these vaccines and ending the pandemic.

[00:18:46] So, as a final question, let me just ask you. I told you earlier, many of the participants in this course are journalists who are working in lower resourced countries, developing economies. As they cover their vaccination campaigns, what would you want them to be most alert to? What's your counsel for what they should be writing about?

[00:19:08] I think the most important thing is that journalists around the world are very scrupulous about writing, using credible information.

[00:19:20] There is so much misinformation out there. It's extremely important that accurate information is used.

[00:19:28] The second thing is that vaccines are really this beacon. It is this hope that we all have. It's the lighthouse we're all trying to row towards, right?

[00:19:38] But vaccines are not a "magic bullet". And, just because you get vaccinated does not mean that you can stop using the other interventions that we have: handwashing; masking; physical distancing; protecting yourself by not going out with large numbers of people; really constraining the people that you're interacting with.

[00:20:04] And the reason I say that is that, first of all, vaccines are rolling out for most countries in a very constrained supply.

[00:20:13] The majority of people are not vaccinated. And, we don't have the information about the degree to which if you're vaccinated, you are protected either from getting infected. You may be protected against getting disease. But, we don't know the degree to which you're protected against getting infected.

[00:20:31] And if you are infected, your ability to go on and transmit to somebody else. So, you may still be a threat to somebody else, even if you aren't a threat to yourself, because of your vaccination status.

[00:20:44] So that's a really important thing. It is not the time, even if you're vaccinated, to take our foot off the pedal for all of the other interventions that are working, and do work when they're actually implemented. We need to be patient to let the vaccines roll out, to give them the best chance to provide protection.

[00:21:06] And the best way that they can provide protection is when transmission is really low in the community. Because then the virus is not being put under pressure through its own circulation to actually try to evade the immunity that vaccines are giving.

[00:21:23] So, those would be a couple of the points that, I think in this early rollout phase, are really important points to get across to people.

[00:21:30] And then the final one is there has been concern, of course, about the safety of the vaccines, the potential side effects of vaccines. And we hear a lot of rumors about the vaccines. And as a result of some of those people are hesitant.

[00:21:45] They're not sure whether or not they feel safe getting the vaccines. This is really important.

[00:21:51] A vaccine that sits on the shelf is of no value to anybody. It actually needs to be administered to people who most need the vaccines.

[00:21:59] So, really getting the information across about the very strong information we have about the safety of these products. They do cause local reactions. They do cause soreness of the arm, some swelling, some redness. For some of the vaccines, they also don't make you feel very well for about a day or two.

[00:22:19] And that is expected. It's a normal part of the reaction to the vaccine. It is, in fact, some indication that your body is responding to the vaccine.

[00:22:30] So in a way, if you have some of those reactions, in some almost paradoxical way, an individual might feel like something is happening. This is a good thing.

[00:22:46] So, I think also people's preparedness and readiness, their expectations that there will be some time limited, reversible, modest or mild side effects from the vaccine.

[00:23:03] But these are very safe products. They're being monitored for anything that might happen, that is rare, rare events.

[00:23:12] We have a very strong safety system that is monitoring on a daily basis all of the safety information that is coming through, as these vaccines are being deployed now in hundreds of millions of doses.

[00:23:28] Thank you so much for that advice for our participants. This was a wonderful conversation.

[00:23:34] It was incredibly informative. We thank you so much, Dr. Kate O'Brien of the WHO. Thank all of you for watching again. I'm Maryn McKenna. You were chief instructor and we have more segments coming for you. We'll see you in the course site.

[00:23:48] Thanks for watching.