

Hello, everyone! I'm Charlotte Kilpatrick reporting for Vaccine Nation I'm delighted to be hosting another of our exclusive interviews in preparation for the world Vaccine Congress in Washington this April. Today we have the pleasure of speaking to Dr Mark Feinberg, President and CEO, of the International Aids Vaccine Initiative. Thank you so much for your time, Dr Feinberg.

It's a privilege to speak to you.

Thank you. To get us started, would you kindly tell us a little more about what your current role entails?

Yes. Well, I lead a global organisation called IAVI which is now in its 26 year. It was founded with the specific intent of accelerating HIV vaccine development, but it has more recently, building upon our HIV capabilities and technologies expanded, to address additional diseases, including tuberculosis emerging infectious diseases, and other global health threats that disproportionately impact people living in low-income countries.

The organisation, it has a specific goal of really trying to make sure that the best, most powerful scientific innovations can be applied to addressing the needs of people who would otherwise be left behind and also, we have a very specific focus on ensuring that our efforts lead to the development of products that can be made available in an affordable and accessible manner to the people who need them.

You've mentioned the importance of making remarkable scientific discoveries more widely accessible. Why is it so important to global health that we keep accessibility in mind, and what are some of the barriers that we're facing in achieving this?

Well, I think that Covid example, especially as it relates to vaccines and in therapeutics, really highlights that if you don't plan for equitable global access, there's going to be really these tragic inequities, and really the health of every individual around the world is equally important.

And that's our organisational commitment. And I know the commitment of lots of people who work in, you know, vaccines and public health more broadly. But access doesn't happen by accident.

And, product development, really focuses on meeting a specific target, and unless your target product, profile, or preferred product characteristics, however you want to frame it, includes affordability and scalability, and appropriateness for diverse circumstances then you will not achieve those goals. So really, with a commitment to access, as sort of your guiding goal in your product development efforts, that's a very important consideration, because everywhere along the product development continuum, you make decisions that either could or good foster the chances of equitable affordable access or decrease the chances of that happening.

Absolutely. Your work also emphasizes the importance of sustainability. To what extent do you think sustainability and accessibility are connected?

Well, I think they're really connected. So I mean, in addition to the product development and you know, scientific discovery and translation work IAVI obviously does, we've been working for more than 20 years, you know, to build scientific research and product development capabilities in Africa and in India, where many of the diseases we target are, you know, particularly important problems.

And you know, I think the days of when you know people really took a kind of colonial view to global health, and people were now using terminology like de-colonisation of global health, I mean, I think that's an important consideration.

But that's something that we've been trying to address for a long time. I think we know that if you want a product to be developed in a manner that's appropriate for a population, you need to understand the needs and preferences of that population, and you also need to have a trusting and trusted relationship with those individuals and the only way you're going to do that is, if you have research capability is an effective community engagement and understanding of the target populations where you really want the products to be available.

And the only way you do that is by having capable investigators who come from the countries where you are thinking that the products need to be used, and that commitment of IAVI pre-dates by far my tenure in the organisation, but I completely support it and if you're working to try to strengthen research, capacity, and product development capabilities in many countries whether it's in countries in Africa, or in India you really need to have that be LED by investigators from those countries, and so they need to have the skills and be empowered to do that work.

And I think again, the Covid example just shows the value of that. I mean many of the really important discoveries related to the Covid pandemic have emerged from studies done by African investigators in Africa, and many of their capabilities in the infrastructure that they work in was really catalysed by the response to the AIDS pandemic.

So in many ways we're seeing the value of how investments in one area can have benefits in the future in other areas. And yet, if any of this is going to work, these efforts need to be sustainable. And so that is not an easy challenge to take on. But it's one that we're very committed to doing our best to contribute to that goal.

That's really exciting. Obviously not an easy task, as you said, but a very important one.

One of your sessions at the Congress will focus on diseases that have perhaps been “forgotten” during the Covid pandemic things like TB, Malaria, And HIV. How did this happen? And how can we sort of catch up in a sense; what progress can we make now?

Yeah. Well, I don't know that those diseases have been forgotten. They may have gotten less attention in the headlines of the newspapers and in the media more broadly but I mean they've continued to not only impact millions of people around the world, and I think the sense of what you're saying, it is very valid, is that the public health response to those other pressing global health problems has been compromised by the challenges imposed by the covid pandemic.

Whether it was yeah, distraction of resources or just, broader shutdowns, or supply chain issues, whatever it may be, and it's not too surprising, although it is tragic to see that rates of HIV infection and progress towards containing them have been compromised. So, infection rates are likely increasing, not only for HIV, TB and malaria, because the public health response was compromised, and we do indeed have catching up to do.

But I mean, the nature of infectious diseases is when a problem is going in a bad direction, it has continued momentum to continue to go in the bad direction for a while, and so it's not just that, simply restarting the earlier intensity of the control efforts is necessary. You need to think about augmenting that to really not only make progress, but get back on track, but the reality is for HIV, TB, and malaria. For all of those diseases. We're well off the track of what was projected to be the public health goals by the World Health Organization and other stakeholders, and that is a problem in and of itself.

And I think that's a different problem in the Covid impact.

I just think, you know, especially for diseases like tuberculosis, which prior to Covid was the leading cause of death to an infectious disease, and yet the resources devoted to public health control measures, and especially to research and development to bring forward new, more efficacious TB vaccines or better TB therapeutics. There's tremendous underinvestment in that, and why that's the case is to be honest with you, a mystery to me.

I think it's probably an issue where human nature is such that if you have a problem and it's there for a long time, and it's hard to deal with, you tend to try to ignore it and put it in the back of your mind and TB has been around for so long that it's just part of the landscape.

But that's really tragic, and it's kind of in a way difficult to understand, like, why there's not greater investment in some of these really pressing problems that affects so many people in such negative ways.

Absolutely.

Another of your sessions will be focusing on HIV vaccine updates to trials for vaccines. Members of our community might be aware that we recently heard some disappointing news from Janssen about that vaccine. With progress with prevention and treatment, how can we ensure that vaccines are still a priority for HIV? And what progress can we hope for?

Yeah, well, there's actually been amazing progress in HIV therapeutics. And I think there's important progress in biomedical prevention innovations, including pre-exposure prophylaxis, trying to develop better products that would be more widely embraced and used is still a challenge. But there's progress being made there, but pretty clearly to end the AIDS epidemic - AIDS pandemic - we're going to need a vaccine, and the search for an HIV vaccine has been long, and difficult. With the virus being first discovered in 1983. We're now pretty far along, many decades down the path, and there have been a multitude of efficacy trials like the most recent Janssen trial that you refer to that have yielded, negative results in terms of lack of efficacy.

Yeah, the problem is that HIV is the most vexing pathogen that vaccinologists have ever really tried to take on good, while the headlines might draw attention to negative results of efficacy trials, what's actually been going on is an amazing scientific endeavour that has really pushed the capabilities of the broader vaccine community to levels of sophistication and power and impact that is, it's never had before, and that all derives early.

A lot of it derives from the search for an HIV vaccine in the creativity that's been applied to that. And while we have these large efficacy trials that have not worked out as hoped, in many ways that was expected by a number of people in the scientific community, because the real goal many people think, myself included, of an HIV vaccine is to induce broadly neutralizing antibodies that are able to block, infection with diverse viral variants, because that is a major challenging HIV vaccine development.

But HIV is so challenging for vaccine development, because in of inherent features of the structure of the envelope, like a protein, the genetic diversity of the virus the fact that there is no natural immunity to your reinfection so all the things that you typically look for as a guide to vaccine development don't really exist, for HIV, until relatively recently, where a study called the AMP Trial had been done.

That showed that if present in sufficient levels and against specific genetic variants you could protect individuals from getting infected with a monoclonal antibody and HIV broadly neutralising antibody, and that validates the goal of eliciting broadly neutralizing antibodies by vaccination and importantly, really fundamentally important progress has been made in the pursuit of induction of broadly neutralising antibodies by vaccination of study recently published by my colleagues, at IAVI and Scripps

research as well as a number of other partners in the NIH and other academic centres really demonstrated for the first time that it was possible to design and image in using really state of the art, structural biology and computational biology to initiate the process of inducing broadly neutralizing antibodies.

We still have work to go to sort of walk the immune system all the way down the path from naive before a precursor to high level, sustained production of broadly neutralizing antibodies. But the first step of that process in the first study that was done with that intent yielded results that were really amazingly positive. So we're optimistic that this is a viable pathway.

That being said, it's still going to take a while to actually accomplish that, because we know for HIV-inducing or broadly neutralising antibody against one vulnerable epitope on the envelope glycoprotein surface is not going to be adequate that we'll have to induce broadly neutralizing antibodies, probably to 3 different, at a minimum, specific epitopes, and that is, as you can imagine, a complicated process.

But the progress that's been making, and the pace of acceleration of that progress is really encouraging to me, and many other people in the field. So, while the headlines may seem disappointing, the actual state of vigour and progress in the field is really so much more. A much more optimistic story, I think, than it's ever been in the HIV vaccine endeavour.

And you know, unfortunately, I've been doing this since the very early days of HIV. So I'm looking forward to continued, next hour of that progress.

Absolutely. And we're looking forward to reporting on it and staying with it and being really excited about it, as progress is made.

So my penultimate question is about sort of attention and focus.

Where should we be? What should we be worried about? Perhaps so, we've got natural threats, like infectious diseases. But we've also, during COVID-19, seen an increase in the spread of misinformation and vaccine hesitancy and things like that. What do you think should be occupying the minds of the vaccine community?

Should we be just focusing on producing these vaccines or thinking about communication and how we're addressing issues, perhaps closer to home?

Well, I mean, I think we all know. The answer to that question is, we need to do both of those we need to do all of those things. You know the development of the COVID vaccines was really a remarkable scientific accomplishment, but it was also a remarkable accomplishment of collaboration across the scientific community and between private sector and public sector partners.

I mean not everything worked perfectly. We all know, and as we've talked about the access issue was one area that didn't. But what's really tragic is the level of disinformation and the consequences of that disinformation have been really profound, and in not only the scepticism and misinformation related to covid vaccines.

Specifically, evidence suggests that it's expanded beyond that to other vaccines, including routine, childhood vaccinations which is tragic, because all of that means that people whose lives could be long and healthy and happy are dying prematurely and often really tragic circumstances and it's not due to a lack of a public health tool like an efficacious, safe vaccine.

It's due to misinformation that makes people question the safety and efficacy of the products. And I'm not an expert in how to solve that problem. But I do think scientists who developed vaccines do need

to consider what role they can play in making sure that the public has a better understanding of the process. All the tremendous efforts they go into assessing and optimising the safety of the vaccines and the data that you know support the efficacy and public health impact of it.

And I think we need better ways of communicating that information. We need better ways of talking about it, and we can't just say that it's okay just to work in the lab and you know not pay attention to these issues. Cause they might not make sense to the average scientist. I think we all know, having worked in vaccinology for a long time. I think the people who work in the field really care about scientific innovation, but they also care about making the world a better, healthier place. And I think they want to make contributions to this area, and we will all work together to find a way to do so.

My final question is, what you most excited about at the Congress?

What are you hoping to gain? What's, what's bringing you there?

Yeah, well, I mean, I think Covid had many terrible consequences.

But what it really did was really kind of in some way shake up the traditional vaccine development ecosystem. And I mean there were new parts involved, new technologies that were applied, new partnerships that were implemented. And it's really pretty amazing to see that and all that happened in difficult circumstance.

I think what I'm hoping the Congress will help me better understand is, what are we gonna do with all that new opportunity that was created? Because I think it could not only just like HIV vaccine research, helped the broader field of vaccinology, I think lessons from Covid are going to really help us do more and better in vaccine development broadly. And I think it will be very interesting to hear people's ideas about how we can make that happen.

We are so grateful to Dr Feinberg for taking time to share these valuable insights with our community. To hear more from him at the World Vaccine Congress in Washington make sure you get your tickets soon.