

A Q&amp;A WITH ANTHONY FAUCI, MD

## Challenges and Similarities in HIV, COVID-19 Crises

Interview by Allison Inserro

To mark the 25th anniversary of The American Journal of Managed Care® (AJMC®), each issue in 2020 will include a special feature: an interview with a thought leader in the world of health care and medicine. The July issue features a conversation with Anthony Fauci, MD, director of the National Institute of Allergy and Infectious Diseases (NIAID).

**AJMC®:** It's the journal's 25th anniversary year, which coincides with the 30-year anniversary of your speech at the 6th International AIDS Society Conference in 1990. At that time, you outlined the priority research gaps for the 1990s, and we were wondering, if you look ahead, where are the remaining gaps? Also, what are you most excited about in terms of HIV and AIDS research and, obviously, other types of virus research?

**ANTHONY FAUCI:** I think it's important and appropriate to reflect back to that classic meeting in San Francisco in 1990 for a number of reasons, because it was between a time when the first drug AZT [azidothymidine] was approved in 1987 and [the time in] 1996, when we had the development of the triple combination cocktail, which has completely transformed the lives of HIV-infected individuals. So, it was a very interesting year. It was the height of the interaction between the activist community and the establishment of scientists and regulators. I remember I gave a keynote address, and Peter Staley, who now 30 years later has become a very close personal friend of mine, gave a very stirring keynote address about the importance of paying attention to activists. And if you fast-forward 30 years, from that 1990 meeting till now, we have people who were activists at the time who are now actually full colleagues who are integrated into everything that we do, from the research agenda to the conduct of clinical trials to the interpretation of the data. So that has been an amazing evolution.

The other thing that is amazing in its evolution is the amount that we've learned about HIV pathogenesis, the reservoir, the potential for controlling the virus, either in the absence of antiretroviral [treatment] or in a modified regimen that takes away the need to have a single pill or multiple pills every single day. The thing that remains the holy grail of accomplished goals is the development of a highly effective, safe vaccine. And so what we need to do—and

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where we're putting a lot of effort but also struggling with—is develop a vaccine that would be effective enough to be able to be deployed.

Right now, [we have] pre-exposure prophylaxis, either with a pill that you take every day like Truvada, which is a combination of tenofovir and emtricitabine, or what we're working on now [with] data that came out...showing that in an injectable form of a drug called cabotegravir, which, when given every couple of months, can actually prevent the acquisition of HIV in people at risk as well as, or maybe even a little better [than], but certainly as well as Truvada can.

So, if you look at all those things that we didn't have when I was giving that plenary address in San Francisco and Peter Staley was giving his plenary address, and then-secretary of HHS Louis Sullivan was up there getting condoms thrown at him from the audience—that took place in 1992—we didn't have therapy that was effective. We didn't have treatment as prevention, as in “U equals U” [undetectable = untransmittable]. We didn't have exquisitely effective pre-exposure prophylaxis, and we didn't have a vaccine. Of all of that, the things we still don't have are a vaccine and a cure—and we're trying for a cure, but a cure is going to be problematic.

Cure means that you essentially eradicate the virus, which we have not been able to do, or suppress it in a way that doesn't require daily antiretroviral drugs. So, the 2 remaining challenges, if we

were having the meeting now in San Francisco—and we're going to be having it virtually—are where are we on the road to a cure? And where are we on the road to a vaccine?

**AJMC®:** And where are we in terms of what you think the similarities are between HIV and coronavirus disease 2019 (COVID-19)? You talked about prevention, you talked about a cure, you talked about vaccines.

**FAUCI:** Well, the common denominator is that they both started off as a new virus that the human species had never had any experience with. It jumped, as many of these new emerging infections do, from an animal reservoir to a human. The differences are profound. [One] difference is that [COVID-19] is highly efficiently transmitted from person to person by the respiratory route, which makes it very difficult to prevent yourself from getting infected except by doing draconian things that we've done with COVID-19; namely, [you] essentially shut down your country, lock it down, have such physical separation that you don't transmit because you're not physically close enough to transmit a respiratory infection. That is a very, very profound and draconian way of blocking infection.

HIV—although its impact is enormous, with over 80 million infections and over 37 million deaths and still over a million people getting infected each year—is so different because it's insidious. It started off slow. When it started off, we saw the tip of the iceberg, not realizing that many more people were infected than we were actually seeing getting sick. So if you can get infected today, you could go 10 years before you actually get symptoms enough to make you feel sick. That's very different from COVID-19. You get sick, it's explosive, you get infected. You either get better within a period of a couple of weeks or you progress to disease and die. So they have so many things that are different about them but yet some things that are common denominators.

**AJMC®:** In a recent article in the *Journal of the International AIDS Society*, you and your coauthor wrote, "We emphatically state that finding safe, effective, and durable vaccines for HIV and COVID-19 are NIAID's top priorities. The world must have both."<sup>1</sup> What are the current challenges in doing so?

**FAUCI:** Well, I think the challenge for getting a vaccine against SARS-CoV-2 [severe acute respiratory syndrome coronavirus 2] is more of a time element. We feel fairly confident, given the fact that the body makes a pretty good immune response against natural infection, that you can get a vaccine to induce a similar response that could protect—you never guarantee that; there's never a guarantee with vaccinology. But we feel fairly confident that we'll get a vaccine. We'd like to get one.

And the projections are that it's at least aspirationally possible by the end of the year and the beginning of 2021. Whereas with HIV, we've been working on a vaccine for 30-plus years. It is very difficult to get a vaccine because it's very difficult to induce the body to do something that even natural infection doesn't successfully allow

it to do, [which] is to develop an adequate immune response to clear the virus. So the challenges are very, very different. I'm more confident that we'll get a vaccine for SARS-CoV-2 than I am that we'll get one against HIV, although I have cautious optimism that we'll get it for both. But I think it's going to be much easier to get it against the coronavirus.

**AJMC®:** When do you think we'll know how durable the vaccines are once they come out?

**FAUCI:** I think you have to follow it for a few years. That's what we do with postvaccination studies. The first thing is, does it induce a response that's protective? That's the big hurdle. Once you show it's protective, by follow-up studies, you can determine if the protection is 6 months, a year, 2 years, 5 years. I hope it's measured in several years. But we don't know that now.

**AJMC®:** And lastly, you've always described yourself as a physician, scientist, and public health person, and you've put equal weight on the public health aspect. What can health care leaders do to keep emphasizing the importance of public health and restore the public trust in science? I'm thinking of the measles outbreaks a few years ago.

**FAUCI:** Yeah, that's a tough one. There is indeed a certain element of antiscience sentiment, not only in our own society in the United States, but [also] globally. My colleagues in Europe, I think, are having a worse time with that than we're having here in the United States, and the situation in the United States is troubling. The point in the example that you gave—about the sort of skepticism about vaccine safety and the conspiracy theories that vaccines are being used to hurt people, as opposed to help them—is really quite troubling. A lot of it relates to a fundamental antiscience feeling because of moments of pushback from authority, and science tends to fall into the category of authoritative. People don't like that. They don't like people telling them what to do. But sometimes you go to the extreme and you don't listen to things that you should be doing, because you think people are telling you that you have to do that. That's a problem. But a lot of the vaccine stuff is misinformation, you know, dating back to the now-infamous fraudulent reporting of certain negative consequences of measles vaccines with autism and things like that. That really set us back. Because...particularly in the era of social media and the era of the internet, when something that's incorrect gets propagated, it becomes very difficult to erase it, because it's out there. This is not the way it used to be preinternet, pre-social media, when if something was false, you corrected and that was it. Not so now: Even if you correct it, it's still lingering in there somewhere. That's one of the problems. ■

## REFERENCE

1. Dieffenbach CW, Fauci AS. The search for an HIV vaccine, the journey continues. *J Int AIDS Soc*. 2020;23(5):e25506. doi:10.1002/jia2.25506

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