

NIAID Director Dr. Anthony Fauci Surveys Infectious Disease Threats in U.S. and Worldwide

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Excerpts from Dr. Fauci's Remarks

How big a problem is Zika? The real issue is the pregnancy issue. That should not be taken lightly, because there is indeed -- and again, evidence is mounting that there is a true connection -- that's something that has to be taken very seriously. Which is the reason why the CDC did something they don't usually do. They said, you know, if you're pregnant, we tell you just think seriously about postponing your travel to these regions.

Is there something else that's coming along? There are things of fundamental, general health that you could help yourself with by your lifestyle that is probably more beneficial to you than worrying about the next disease that's going to come and get you.

Do you recommend that people get a flu shot? Yes.

What is your view on vaccines, and do they cause autism? I have strong views on that. There's zero evidence that the vaccines that were in question [in a discredited study in the U.K.], particularly measles, mumps, and rubella, have anything at all to do with the development of autism....That's one of the problems of not being able to erase a falsity.

What is the situation today with HIV and AIDS? We have the tools to essentially end the AIDS epidemic by treating the people who are infected. And we found out a few years ago something very interesting, that if you treat somebody who's HIV infected and you bring the level of virus to below a detectable level in their blood, you decrease by 96 percent the likelihood that they will transmit their infection to somebody else. Then, a few years ago, we showed by a number of studies that if you take a person who's at high risk -- and human nature being is that people just practice risk behavior; someone who may not regularly use a condom, who puts themselves at risk -- and you give them a single pill a day, which is referred to as pre-exposure prophylaxis, or PREP, you can decrease, like, by 98 percent or more the likelihood that they would get infected. So if you put those two things together -- your pre-exposure prophylaxis together with other behavioral modification, condom use, for those who are at risk; you treat those who are infected and bring down their virus to below a detectable level -- you can decrease by 98 percent the number of infections in the country.

Where is the incidence of HIV infection the worst? The bulk -- 67 percent -- of all the HIV infections in the world are in southern Africa. But at least in several countries like Uganda -- certainly Rwanda's doing a great job, in Tanzania and others, the infections are going down.

What about Ebola? Two nurses in Texas who took care of a person from West Africa who was infected in West Africa, in Liberia, who came to the United States and was unrecognized as having Ebola, and then it became clear he did, was hospitalized in Texas. And two nurses, one of whom I ultimately took care of at the NIH when they flew her in air evac to there -- two nurses contracted Ebola. No other people in the United States have contracted Ebola in the United States.

Is Ebola in a kind of quiescent mode in Africa now? There have been recently -- several weeks ago, one case in Liberia that sprung up in a 22-year old woman, and then one secondary case, and then it stopped there. But Guinea, Sierra Leone, and now Liberia all are Ebola-free.

How about polio? So there are two countries where there's polio that still is happening, and that's in Pakistan and Afghanistan. If you look at polio outside -- there's polio that you get from wild type, and then there's polio sometimes that you get from the oral polio vaccine. One in whatever million people who get it.

We almost had the eradication of polio a few years ago, and then for one reason or another, strange, in Nigeria particularly, there was this myth that the people who were giving polio vaccines were actually doing it to sterilize the people. They stopped doing polio vaccines. Then they went back and did them. And now we're closing in on it. There have been only like 200 cases of polio this past year, when it went -- years ago, it was like 300,000 -- just a few years ago.

What about malaria? Malaria is on the downstream, but I say that with a bit of caution, because malaria has gone up and down over the years, depending upon mosquito control. There used to be a million deaths of malaria a year. Then it went down to around 600,000. Now it's somewhere between 500,000 and 600,000.

What about tuberculosis? So one third of the world's population, over 2 billion people, are infected with tuberculosis. They're not ill with tuberculosis, but they're infected with tuberculosis. They have a latent form of it which can reactivate and make them sick. Each year there are over 8 million new cases of tuberculosis and 1.6 million deaths. So there are more deaths from tuberculosis than there are from malaria, from HIV/AIDS.

What has been the greatest thrill you've had as NIAID director? There have been several, but I think one that really does stand out is...taking care of HIV-infected individuals for over a decade, and having nothing but discouragement and people dying, and then all of a sudden having in your hand a pill -- one pill -- which you can give to somebody and you can tell them, you can go out and live a normal life for the next 50 years. That's pretty much a big thrill.

DAVID M. RUBENSTEIN: Welcome, members and guests of The Economic Club of Washington, welcome to this luncheon event in the Renaissance Ballroom of the Renaissance Washington Hotel in Washington, DC.

We're very honored to have with us today Dr. Anthony "Tony" Fauci, who is the director of the National Institute of Allergy and Infectious Diseases. I think it's fair to say that, while we've had many great experts over many years at The Economic Club of Washington, we've probably never had anybody about whom we could say he is without doubt the leading expert in the world on infectious diseases, among other subjects.

Let me tell you a little bit about his background before we get into what I think will be a very interesting conversation. A native of Brooklyn, he did his undergraduate work at Holy Cross, then went to Cornell Medical School and got his M.D.. He then came down to the National Institutes of Health and worked there for several years on a fellowship, returning to Cornell as the chief resident of internal medicine. In 1972 he came back to the National Institutes of Allergy and Infectious Diseases and became the head in 1984, so he's been running it for more than 30 years.

During that period of time, he has authored or co-authored more than 1,300 scholarly papers relating to infectious disease and other medical issues, and is one of the most highly cited scholars in the medical field for his research. He's also been deeply involved in the HIV/AIDS problems of years ago and today. And he is one of the people responsible for the discovery that HIV does lead to AIDS, and has been very involved in the effort to help treat AIDS. Behind that, as well, he helped create the PEPFAR¹ program that President Bush announced that has been so helpful in reducing HIV and AIDS incidence in Africa, among other places.+

He's won almost every possible award you can win as a federal employee and as a scientist. Just to mention a couple of them, as a federal employee he's won the highest honor you can get and the highest honor any citizen can get in our country, the Presidential Medal of Freedom. He was awarded that for his work with PEPFAR, among other things. As a scientist, he's won the National Medal of Science award and the Lasker Prize, which is considered the U.S. or the American Nobel Prize.

So incredible career in infectious disease and health care, and also an extraordinary individual, and probably also the only person who's ever been our guest who came here by Metro. [Laughter.]

So, you know, sometimes, if you're Jewish, you have a hypochondriac kind of nervousness about getting diseases. [Laughter.] And, tell me, I've been afraid. I was in Palm Beach yesterday, in Florida. And am I likely to get Zika? Because, you know, I read it was in Florida, it's coming up the coast. And is there any likelihood that I would get that? How do you get Zika, and how do you treat Zika?

DR . FAUCI: Well, first of all, Zika's not in Florida and it's not coming up the coast, so you don't have to worry.

MR. RUBENSTEIN: All right, good. [Laughter.] Thank God.

DR. FAUCI: We'll start off with that.

As is always the case – I think we went through the same thing when we had the experience with Ebola last year and the year before – there are certain things that are risk

¹ The U.S. President's Emergency Plan for AIDS Relief (PEPFAR) is the U.S. Government initiative to help save the lives of those suffering from HIV/AIDS around the world.

and then there's a whole bunch of perception of risk that gets people anxious, like, you know, perhaps that little story about you being concerned about Zika in Florida.

What we need to know about Zika – and this is the confusion – Zika is an infection – mosquito-borne infection that was discovered a long time ago, in 1947, in the Zika Forest of Uganda. And for a very long period of time – decades – it was at a low level in Africa and Southeast Asia. And as a clinical disease, it was really off people's radar screens because it's relatively inconsequential. When you get ill, you get bit by a mosquito with Zika, you get an illness that's mild, that's self-limiting, and that almost never causes serious consequences or kills you. You get fever, joint aches, a rash, some red eye or pink eye called conjunctivitis.

What happened, and why we're now in this feeling of great concern and just reading things in the media and seeing them in the media, is that it remained sort of under the radar screen until about 2007, when there was an outbreak in the Pacific island of Yap. And then a few years later it worked its way into French Polynesia and then into the Easter Islands off the coast of Chile, and then into South America this past year, in 2015. And what happened was there was an explosion of cases of Zika that are accelerating that have been in South America and in the Caribbean. That in and of itself would have been interesting, and I've written about that months ago as a brand-new disease in our hemisphere, in the Americas, because prior to this year we never had Zika in the Americas. We had the right mosquitoes, because the *Aedes aegypti* mosquito that transmits yellow fever, which has been in the Western Hemisphere; which transmits dengue, which is all over Brazil and South America; which transmits other diseases like Chikungunya, which you've heard about, which is in the Caribbean. So we have in our area the right mosquito vector.

But something happened, it was an association – and I say association because the consequences are really rather striking, but we don't know whether it's cause-and-effect. But there is clearly an association of the major uptick in Zika in South America and the Caribbean and the occurrence of a rather large uptick in the occurrence of a complication in pregnancy with congenital abnormality, in that pregnant women who get infected with Zika have a complication. We don't know what the incidence rate of it is, but it's significant increase of a thing called microcephaly, which is a real problem with a developing fetus, the development of the brain. They wind up with small skulls, small heads because the brain is either underdeveloped and/or damaged during its development. And the consequences that – often stillbirths, miscarriages, and when babies survive they wind up having deleterious consequences sometimes forever, and they don't certainly have a normal lifespan. So –

MR. RUBENSTEIN: And when will we know if there is a consequential relationship?

DR. FAUCI: Well, you have to do case-control studies. I mean, you hear the scientists say there is an association, but we're very careful not to say it is cause-effect because we don't know yet. Certainly the evidence is mounting. The virus has been isolated in the brains of some fetuses at autopsy that were stillborn, others that died after birth. It's been

isolated from the amniotic fluid. So the evidence is accumulating, but we'd really rather be careful. And I say be careful because it might be that Zika is exploding in South America, and in the Caribbean at the same time something else is happening that's related to the microcephaly. That's a possibility. It could be it's Zika plus some other co-factor. Or it could be just Zika alone. We don't know that. And because of that you're hearing things about, in an abundance of caution, we've got to be careful. And that's the reason why the CDC² came out with a recommendation that if you're pregnant or thinking of pregnancy or might be pregnant that you forestall travel to the regions of those 20-plus countries that they've listed in South America and in the Caribbean because of the risk of a deleterious consequence on pregnancy.

But getting back to David's question, where there's confusion is that whenever you have infections that are mosquito-borne or other types of infections in South America or the Caribbean, for absolutely certain there will be imported cases, the same way we have had imported cases of dengue and imported cases of Chikungunya. And we've already had 30 imported cases to the U.S. mainland – 20 in Puerto Rico and one in the Virgin Islands –

MR. RUBENSTEIN: Do you mean imported by the mosquito or by the human?

DR. FAUCI: Let me clarify that. Imported means that I'm here in Washington, I go down to Brazil for a vacation or for business, I get bitten by a mosquito while I'm there. Then I get on a plane and a couple of days later I'm back in Washington, D.C., and I get Zika. That is called an imported case, as opposed to a locally acquired case. A locally acquired case is that when I go to Rio De Janeiro or Maceio or Recife in northeastern Brazil, I get bit by a mosquito, I come back here and then a mosquito lands on me, bites me, and then bites David, and then David gets Zika. That's a locally acquired case because he never left the country.

MR. RUBENSTEIN: Has anything like that happened yet in the United States?

DR. FAUCI: That's the critical question. That's why you don't have to worry right now about Florida. Because – just to give a history – the history of it is critical to why you never can make a definitive statement, but you could kind of predict about what will happen. Thus far, in the United States mainland, there have been no locally acquired cases. So the question is, what is the chance of there being a major outbreak of millions of cases in the United States?

What we do is we look at history. Take dengue. Dengue is the same class of virus as Zika. It's called a flavivirus. Dengue is transmitted by the same mosquito as is Zika. It's the *Aedes aegypti* mosquito. *Aedes aegypti* are in South America, they're in the Caribbean, and they are in the southeastern part of the United States – Florida and the Gulf Coast. So dengue has been in South America and the Caribbean for a very long

² Centers for Disease Control and Prevention.

time. It's really a problem there. We have had small, mini-outbreaks in Florida and the Gulf Coast of Texas with a cluster of cases that have been well-controlled by mosquito control and by jumping on it from a public health standpoint. So we have had locally acquired dengue in Florida and in Texas, but it has been prevented from becoming a big outbreak. The same thing with Chikungunya. We've had it occur in Florida – again, a small, mini-outbreak.

So we know that we've had these infections lapping at our shores for years and years and years. And although we've had both imported cases and some locally acquired cases, we've not seen a major outbreak.

Now, in biology, David, you never say never and you never say always. So it isn't, like I say, well, we're definitely not going to have a major outbreak in the United States. That would be foolish to say. So what we do is we prepare for the possibility of a major outbreak. But in reality, you have to say we believe – we don't know, we believe – that it is unlikely that it would happen.

MR. RUBENSTEIN: Why is it unlikely?

DR. FAUCI: For the same reason I just gave you, that we have years of experience with a very similar virus, dengue, which has been lapping at our shores for years, and we've had little, mini-outbreaks, but we haven't had 2 million people in the United States infected with dengue. That's the reason why you can't say with absolute certainty, but you say if it acts like dengue – which you kind of think it might – that we very much – now, having said that, you don't just want to walk away and be very cavalier and say, not a problem. No, we're developing vaccines, better diagnostics, better vector control. We're doing everything that you would do if you are anticipating that there is going to be an outbreak, even though we feel there won't be.

MR. RUBENSTEIN: But would you recommend going to the Olympics in Brazil?

DR. FAUCI: I think you have to wait. When you say “you,” I'm not going to be pregnant at any time, so – [laughter] –

MR. RUBENSTEIN: But to just get the disease without the pregnancy problem, it's not as big a problem?

DR. FAUCI: Without the pregnancy issue, Zika is a disease that it is fundamentally less severe than Chikungunya or dengue. So if you're going to say don't go to Brazil because I'm afraid of getting Zika, then you shouldn't go to Brazil because you're afraid of getting dengue, which is much more serious. The issue that's the real issue is the pregnancy issue. And that should not be taken lightly because if there is indeed – and again, evidence is mounting that there is a true connection – that's something that has to be taken very seriously. Which is the reason why the CDC did something they don't usually do. They said, you know, if you're pregnant, we tell you just think seriously about postponing your travel to these regions.

MR. RUBENSTEIN: All right. So, to conclude on this, at the moment no one has been bitten by a mosquito in the United States and come down with Zika. Is that right?

DR. FAUCI: At this point in time, to our knowledge, no one has been bitten by a mosquito in the United States, having never left the United States, and got it. In Puerto Rico, it was very interesting because Puerto Rico is not part of the states of the United States, but it is a territory. It has happened in Puerto Rico. So in Puerto Rico there has been that local transmission.

MR. RUBENSTEIN: OK. [Laughter.] All right, so now I have to worry less about Zika, but what should I worry about? Is there another disease coming along that, like – [laughter] – that’s going to be the next thing I have to worry about? Is there something else that’s coming along, or nothing for a while?

DR. FAUCI: Well, I think you probably, as you and I have had this discussion a lot in the past, David, is that there are things of fundamental, general health that you could help yourself with by your lifestyle that is probably more beneficial to you than worrying about the next disease that’s going to come and get you.

MR. RUBENSTEIN: OK. So let’s go – let’s go through those.

DR. FAUCI: All right. [Laughter.]

MR. RUBENSTEIN: So do you recommend that I get a flu shot?

DR. FAUCI: Yes.

MR. RUBENSTEIN: Because when I get them I sometimes get the flu still.

DR. FAUCI: Right. And when you don’t get it, sometimes you don’t get the flu.

MR. RUBENSTEIN: That’s correct.

DR. FAUCI: OK. So let’s clarify that. There are very few vaccines that are 100 percent effective. Some are really, really close. Measles is one of the best examples. Measles, if you get the two shots that the children should get at a few months and then a year, it’s about 98 percent effective. It’s a really super-duper vaccine, the measles vaccine. Other vaccines have varying degrees. I mean, polio is a great vaccine. Those are the kind of things that we know really work.

Flu, interestingly, depending upon the strain that’s going around, depending upon how old you are, it is better to get a flu vaccine than not to get a flu vaccine. But since it’s not 100 percent protective, nor in fact even close to 100 percent effective – sometimes in older individuals it’s a very small percentage, 30 or 40 percent –

MR. RUBENSTEIN: Do you get a flu vaccine?

DR. FAUCI: I get a flu vaccine shot every year, because it's better to get it than not – but I don't expect it to be 100 percent effective. So you had asked me the question: If you get the flu shot, are you guaranteed not to get the flu? No. I mean, if it were 100 percent effective, I would say you're not going to get it. But it isn't.

But then you asked me, but if I don't get the flu shot, will I get the flu? And the answer is not necessarily at all, because if you look at any given year and you do a retrospective look, at any given year when there's a flu outbreak, anywhere from 5, 10, to 15 percent of the population, 20 percent, get infected. When you have a pandemic flu, it can go up to 25 to 30 percent. So in any given year, let's say a max of a real typical flu season – not a very severe flu season, but a typical flu season – let's say 20 percent of the population will get infected. If you're in the 80 percent of the population, you're not going to get infected.

MR. RUBENSTEIN: How many people here get flu shots? [Show of hands.]

DR. FAUCI: Good!

MR. RUBENSTEIN: How many people don't get them? How many people are going to get them now? [Laughter.]

So let me ask you about vaccines. There has obviously been a controversy with children's vaccines, about whether or not they might cause autism. What is your view on that?

DR. FAUCI: I mean, I have a strong view on that. There's zero evidence that the vaccines that were in question, particularly measles and MMR³, have anything at all to do with the development of autism.

MR. RUBENSTEIN: Where did the idea come from, then?

DR. FAUCI: Well, it's a sad story. The idea came from a physician/scientist in the U.K. years ago who did a study saying that there was a connection between the measles vaccine and autism. And as it turned out, not only was the data incorrect, it was fabricated and false. And for that, that person has been disbarred from practicing medicine in the U.K.

Now, the problem with the Internet Age is that it goes up on the Internet that there is a connection. And then, when it's proven to be absolutely incorrect, it's still on the Internet as being connected. And that's one of the problems of not being able to erase a falsity.

³ The MMR vaccine is an immunization vaccine against measles, mumps, and rubella.

MR. RUBENSTEIN: OK. So let's go down my health situation. [Laughter.] Should I take an aspirin every day?

DR. FAUCI: Yeah. The benefit of like a baby aspirin every day has clearly been shown to be – have a positive impact on –

MR. RUBENSTEIN: I thought it can cause ulcers or –

DR. FAUCI: Well, you know, that's a good point. If you can tolerate aspirin, it's a home run for you. Take one every day. Some people can't tolerate aspirin very well.

MR. RUBENSTEIN: Do you take one?

DR. FAUCI: I do, every day.

MR. RUBENSTEIN: Wow, OK. What about a statin? Do you recommend statins?

DR. FAUCI: Well, the answer is I do, but you have to give a little explanation for that because the data that statins are absolutely valuable for someone who is at a real risk for cardiovascular disease – they either have a high cholesterol, they have blood pressure elevation, smoking, family history – there's no doubt that statins are beneficial. Where it gets a little gray is if you have no risk at all for cardiovascular disease. By bringing your total cholesterol down, your HDL up and your LDL down with a statin, there isn't really solid, concrete data that that is going to make a major difference in your longevity. Now, having said that, I take a statin every day, and I don't have a real big risk for cardiovascular disease.

MR. RUBENSTEIN: OK. Now, your grandfather – your father lived to be 97.

DR. FAUCI: Correct.

MR. RUBENSTEIN: And did he take a statin or did he take anything? [Laughter.] Or he just – no?

DR. FAUCI: There weren't even –

MR. RUBENSTEIN: Didn't have statins.

DR. FAUCI: The statins weren't even in the mind of anybody. [Laughs.]

MR. RUBENSTEIN: OK, all right. So keeping – going on on my list of things I need to worry about – [laughter] – is drinking wine good for you, red wine?

DR. FAUCI: In moderation. You know, there are studies that show – yeah, David and I were talking about this at the table. There are so many studies that you can get confused. You read one study, it says great, and the other study says doesn't make any difference,

and the other study says it's bad. With wine, in moderation, there are enough good studies to say that a glass of red wine a day or every couple of days has beneficial cardiovascular effects.

MR. RUBENSTEIN: Can you get the same benefit by taking some vitamin or some other pill?

DR. FAUCI: You know, the vitamin thing is much more iffy, about supplemental vitamins. There are unfortunately – I mean, I have to tell you, I do take them because if it works that's great, and there's no –

MR. RUBENSTEIN: Wow, you take a lot of stuff there.

DR. FAUCI: I do. I really do. [Laughter.] It's all good stuff, though.

MR. RUBENSTEIN: But obviously working. [Laughter.] So, OK, so let me ask you this. What about exercise? Is exercise overrated?

DR. FAUCI: No, no. [Laughter.]

MR. RUBENSTEIN: I was hoping you'd give a different answer. [Laughter.]

DR. FAUCI: So David doesn't run very much, and he wants to get me to say that it's overrated. But it's not. It's not. In fact, exercise – a good deal of exercise – you don't have to, you know, be a long-distance runner. In fact, there was a recent study that showed that if you just run in real moderation, just a couple of miles a day, or walk a few miles a day, it's as good as compulsively doing 10 miles a day or seven miles a day.

MR. RUBENSTEIN: But you do three miles a day now, and –

DR. FAUCI: I do about three miles a day.

MR. RUBENSTEIN: And you used to do six or seven miles, or?

DR. FAUCI: Yes, yes.

MR. RUBENSTEIN: I try to do three a year. [Laughter.]

DR. FAUCI: Right. [Laughs.]

MR. RUBENSTEIN: I'm not there yet. [Laughter.] All right, what about an annual physical? Some people say annual physicals are a waste of money and time. What do you think?

DR. FAUCI: I'm going to go back to my database. I get an annual physical every year, OK? And the reason I do, I think if you look at cost effectiveness, it is certainly not cost

effective every single year to get a physical examination. But if you get a physical examination and you put aside cost effectiveness because you're not worried about that, you can afford it, there is an advantage to having someone go over things. They may pick up so something. They may pick up something that you can intervene earlier, and that can be any of a number of things. That could be, you know, a nevus that looks suspicious, like it's a melanoma and you get it removed before you get into trouble. That could be a blood sugar that looked like it's getting high and you might want to be making modifications of your diet. That could be anything from somebody – history telling you you have, you know, a little bowel issue and maybe you have an obstruction, and maybe you want to get a colonoscopy. So doing it every year, I think, has an advantage. If you take a cohort of thousands of people and say, is the cost-benefit of all these people getting a physical exam every year a positive, and the answer may be no. But for you as an individual, it might be a good idea.

MR. RUBENSTEIN: Do you recommend a colonoscopy once every 25 years or so, or something like that? [Laughter.]

DR. FAUCI: No.

MR. RUBENSTEIN: How frequent?

DR. FAUCI: Well, it depends on your age and it depends on your family history. But certainly everyone should, after a certain age – 50, 55 – should get a colonoscopy. And if you get one and it looks clear, you can then wait five years for another. If you have a little polyp that they took out, you might want to come back in two years and do it again.

But I really am a bear on colonoscopies, as well as skin examinations, because if there are two diseases that early intervention makes a huge difference is the skin examination of picking up a melanoma before it becomes metastatic, and colon cancers almost all start off as polyps that then get a little bit dysplastic, that then become cancerous and then could spread. So that usually takes place over years and years. So if you do a colonoscopy and you have a completely clean colon, the chances of next year your coming up with a colon cancer that's a problem, that you can't do anything about, are almost zero because it takes so many years for it to develop. So if you intermittently get a colonoscopy, you'll be able to pick it up before you have a problem.

MR. RUBENSTEIN: What about eating red meat? What do you think about red meat? Is that healthy for you?

DR. FAUCI: Well, if you eat a lot of red meat – I mean, steaks and red meat, particularly grilled red meat, a lot – there are some studies to show that that is a problem in the sense of a greater incidence of cancer of the colon. I think you don't want to be too obsessive compulsive about it. I think a piece of red meat, a hamburger every once in a while or a steak, is not going to be harmful to you, so long as you do it in moderation.

MR. RUBENSTEIN: And what about desserts? Do you recommend them? [Laughter.] I noticed you didn't eat your dessert, but do you ever eat desserts, or? [Laughter.]

DR. FAUCI: [Laughs.] Why don't you stick with fruit? It'll make you feel better.

MR. RUBENSTEIN: OK, I'll try that. [Laughter.]

So let me ask you about HIV and AIDS. Why did it take so long for medical researchers to realize there was a connection? And when was it recognized that really there was a connection? And what did the U.S. government do about it? Was the U.S. government slow in getting involved and not –

DR. FAUCI: Well, when you say a connection, David, what do you mean a connection?

MR. RUBENSTEIN: HIV leads to AIDS.

DR. FAUCI: Oh, that was – well –

MR. RUBENSTEIN: But I thought for a while people didn't recognize that that was necessarily the case.

DR. FAUCI: Well, that we'll call denialists who are really off the radar screen, so we won't even go there. So let me tell you how it evolved.

So we first started recognizing people with a very strange immunodeficiency disease in the summer of 1981. Curiously, the first five that were reported were all gay men from Los Angeles. I was very curious about that. I had no idea what that was. My career and my life changed one month later, in July of 1981, when the MMWR of the CDC reported 26 young men from L.A., San Francisco and New York, curiously all gay, with these strange diseases that you only see in immunosuppressed people. And that's when I knew we were dealing with a new disease, and I just turned my career around and started working on it. But that was the summer of 1981.

In the spring of 1983, the French discovered HIV. In the spring of 1984, Bob Gallo at the NIH⁴ made the definitive connection that HIV unequivocally is the cause of AIDS. And since then, the connection was clear. A blood test was developed. Massive screening was done. And we found out that not only were the people who were sick that we were taking care of, who were deathly ill, not only were they HIV infection, but there were millions and millions of people who were HIV infected who were not yet sick, who would ultimately get sick over the years. And that was from 1985 on because the blood test was developed in 1985. 1996 was when we developed the very effective cocktail to treat what was formerly a fatal disease.

So I'd just take a second to tell this story. I started taking care of HIV-infected individuals in the fall of 1981. I've seen and personally taken care of thousands of

⁴ National Institutes of Health.

patients now over the years. And from 1981 to the middle of the 1990s, the mean survival of a patient who came in with advanced disease was about a year to a year and a half, which was horrible. There wasn't anything worse than that. Every one of my patients died. It was very, very dark years.

In 1996, when we developed the combination of drugs, it completely transformed the lives of HIV-infected individuals so that today, in 2016, with the combination of drugs that we now have in one pill, one of the most extraordinary things has happened. We can now take an HIV-infected individual – let's say he's 25 years old, man or a woman comes in, newly infected – and put them on a drug. We can look them in the eye and tell them honestly that, if they take their drug regularly every day the way they should, that they will live, likely, by actuarial curves, an additional 52 years, which means it's like a normal lifespan, so. [Applause.]

MR. RUBENSTEIN: So today, if you get HIV and you don't take this pill because you either don't know you have HIV or you refuse to take the pill, you will get AIDS, and then once you get AIDS you have a life expectancy of a year or two?

DR. FAUCI: Right. Well, that's sad but true that even today – and that's the big push that – some of you may be hearing about it because I've been tooting that horn publicly a lot lately – is that we have the tools to essentially end the AIDS epidemic by treating the people who are infected. And we found out a few years ago something very interesting, that if you treat somebody who's HIV infected and you bring the level of virus to below a detectable level in their blood, you decrease by 96 percent the likelihood that they will transmit their infection to somebody else. Then, a few years ago, we showed by a number of studies that if you take a person who's at high risk – and human nature being is that people just practice risk behavior; someone who may not regularly use a condom, who puts themselves at risk – and you give them a single pill a day, which is referred to as pre-exposure prophylaxis, or PREP, you can decrease, like, by 98 percent or more the likelihood that they would get infected. So if you put those two things together – your pre-exposure prophylaxis together with other behavioral modification, condom use, for those who are at risk; you treat those who are infected and bring down their virus to below a detectable level – you can decrease by 98 percent the number of infections in the country.

MR. RUBENSTEIN: But let's suppose you have AIDS. You didn't take the medicine and you get AIDS. Once you get AIDS, what can you do for people?

MR. RUBENSTEIN: Well, it depends. If you stay out of medical care, you're in a real trouble. You're back to the 1980s. I mean, I have plenty of patients that come into my clinic – our clinic at the NIH – who have just that, who didn't know they were infected until they had advanced disease. That's not uncommon. It's a real indictment of our health care system that people can actually get infected, not know they're infected, and come in to see you when they have really advanced disease. I see that all the time.

You put that person on therapy. I can't say they'll have a normal lifespan. But I've been following some people for a long, long time who came in to see me when they had full-blown AIDS who, 20-plus years later, they're still alive. So I can't say they're going to live till they're 75, but they're 55 now and they seem to be doing pretty well.

MR. RUBENSTEIN: So the well-publicized instance was Magic Johnson. He announced publicly he had HIV. Did he get those cocktails and that's why he seems to be healthy?

DR. FAUCI: He did. He did. Yep, yep. He's a long-term person who's been on antiretrovirals.

MR. RUBENSTEIN: So is the incidence of HIV on the upswing, or is it stable, or going down in the United States?

DR. FAUCI: Well, unfortunately, I'd like to say it's going down, but we have a real tough situation in the United States. Back in the '80s and '90s, if you look at the incidence – which means the number of cases – there was about, oh, it went up to about 150,000 per year, concentrated in places like Greenwich Village and San Francisco in the Castro District. And then, when we turned it around, it went down like 120,000, 110,000, 100,000, 75,000. And then, for reasons that are complicated – sociological reasons – it hit about 40,000 to 50,000 new infections a year, and to our great sadness and maybe even shame it has stayed at that level literally for the last 20 years. And there's been a switch in the demography, where it used to be a disease of young, white, gay men and injection-drug users and a little heterosexual, now it's very, very heavily young, gay men, African-American or minorities in this country. So we do still have that level of infection that's unacceptably high.

If you look at the world in general, due to PEPFAR and the Global Fund, the infections are coming down.

MR. RUBENSTEIN: They are in South Africa and –

DR. FAUCI: Absolutely. There are certain countries in southern Africa where the bulk – 67 percent of all the HIV infections in the world are in southern Africa. But at least in several countries like Uganda – certainly Rwanda's doing a great job, in Tanzania and others, the infections are going down.

MR. RUBENSTEIN: Let's talk about Ebola for a moment.

DR. FAUCI: OK.

MR. RUBENSTEIN: Did anybody in the United States contract Ebola here? Or when Ebola came, was it all coming from Africa with people coming back from Africa?

DR. FAUCI: Two nurses in Texas who took care of a person from West Africa who was infected in West Africa, in Liberia, who came to the United States and was unrecognized as having Ebola, and then it became clear he did, was hospitalized in Texas. And two nurses, one of whom I ultimately took care of at the NIH when they flew her in air evac to there – two nurses contracted AIDS from taking –

MR. RUBENSTEIN: Not AIDS, Ebola.

DR. FAUCI: Excuse me, I'm sorry. Pardon me. Contracted Ebola from taking care of this person in an intensive care unit. No other people in the United States have contracted Ebola in the United States. We have flown several people who are health care providers and who got infected in West Africa and took care of them here. There were three hospitals in the United States that were designated as capable of taking care of Ebola in an intensive care, namely putting on the spacesuits. One was Nebraska, University of Nebraska. The other was Emory. And there was us and my team at the NIH.

MR. RUBENSTEIN: So today I don't read as much about Ebola. Is it kind of in quiescent mode in Africa now, or?

DR. FAUCI: It is, it is. There have been recently – several weeks ago, one case in Liberia that sprung up in a 22-year old woman, and then one secondary case, and then it stopped there. But Guinea, Sierra Leone, and now Liberia all are Ebola-free.

MR. RUBENSTEIN: Let's talk about polio. Polio was treated pretty successfully in the United States. Are there any incidents now of polio in the United States?

DR. FAUCI: First of all, the answer is no. So there are two countries where there's polio that still is happening, and that's in Pakistan and Afghanistan. If you look at polio outside – there's polio that you get from wild type, and then there's polio sometimes that you get from the oral polio vaccine. One in whatever million people who get it.

But the answer to your question is, we almost had the eradication of polio a few years ago, and then for one reason or another, strange, in Nigeria particularly, there was this myth that the people who were giving polio vaccines were actually doing it to sterilize the people. They stopped doing polio vaccines. Then they went back and did them. And now we're closing in on it. There have been only like 200 cases of polio this past year, when it went – years ago, it was like 300,000 – just a few years ago.

MR. RUBENSTEIN: What about malaria? Is that on the rise?

DR. FAUCI: Malaria is on the downstream, but I say that with a bit of caution, because malaria has gone up and down over the years, depending upon mosquito control. There used to be a million deaths of malaria a year. Then it went down to around 600,000. Now it's somewhere between 500,000 and 600,000.

MR. RUBENSTEIN: What about tuberculosis? Where does that stand?

DR. FAUCI: Tuberculosis is an interesting disease, because people forget about tuberculosis. It's an ancient disease. But it is still in the developing world one of the worst killers. So let me give you an example. This is a statistic that's true, that you won't believe. But it's true. You got to trust me.

MR. RUBENSTEIN: I trust you.

DR. FAUCI: So one third of the world's population, over 2 billion people, are infected with tuberculosis. They're not ill with tuberculosis, but they're infected with tuberculosis. They have a latent form of it which can reactivate and make them sick. Each year there are over 8 million new cases of tuberculosis and 1.6 million deaths. So there are more deaths from tuberculosis than there are from malaria, from HIV/AIDS –

MR. RUBENSTEIN: What are the symptoms of tuberculosis, anyway? [Laughter.] Tell me so I know if I got it. [Laughter.]

DR. FAUCI: Well, it's a Jewish guy from New York – [laughter] –

MR. RUBENSTEIN: All right, OK. That'd be me. OK. So but for everybody else.

DR. FAUCI: [Laughs.] OK. The symptoms are: fever, cough, pneumonia, weight loss, if you have it predominantly in the lung. You can have something like military tuberculosis spread all over. It can involve the bone. It can involve the brain. It can involve the meninges. You can get very sick. But it's fundamentally a pneumonia type of –

MR. RUBENSTEIN: Weight loss is not my problem, so – [laughter] –

DR. FAUCI: Yes, OK.

MR. RUBENSTEIN: So talk about the National Institute of Allergy and Infectious Disease. How many people work there?

DR. FAUCI: In my Institute I have about 3,500 people.

MR. RUBENSTEIN: OK. Now, you've been doing it for more than 30-plus years, running it. So you are very fit, 75 years old. Do you intend to do this for 10 more years, 15 more years? Your father lived to 97. Are you going to keep doing this for the country for a long time?

DR. FAUCI: I'm going to do it as long as I can do as good a job as I'm doing now.

MR. RUBENSTEIN: What's the biggest challenge you have? Is it getting members of Congress to give you adequate funding? Is it getting OMB to give you adequate

funding? Is it questioners like me asking you ridiculous questions? [Laughter.] What is your biggest challenge?

DR. FAUCI: Well, there are a couple of challenges. We have great scientific opportunities to make real great advances. We're living in an era where the opportunity for great advances is extraordinary. But we're living in an era of rather severe fiscal constraints. So the NIH, just to give you an example historically, the NIH budget over a period of decades, if you looked at the budget, it's a little bit of a saw-toothed pattern, but it generally has gone up, and it doubles about every 10 years.

From 1998 to 2003, the combination of the Administration and the Congress and advocacies had the NIH budget double over five years instead of 10 years. However, since 2003, until essentially now, the budget has been essentially flat. And that means, with about a 2.3, 2.2, 2.1 biomedical research inflation, that we've lost about 22 percent of our purchasing power. Happily, the 2016 budget for NIH has a 6.6 percent increase, which is the first time in over 10 years that we've actually had an increase.

MR. RUBENSTEIN: OK. So the many years you've been doing this, what has been the highlight, would you say, the greatest thrill you've had, the greatest excitement you've had?

DR. FAUCI: There have been several, but I think one that really does stand out is what I just described to you, is, you know, taking care of HIV-infected individuals for over a decade, and having nothing but discouragement and people dying, and then all of a sudden having in your hand a pill – one pill – which you can give to somebody and you can tell them, you can go out and live a normal life for the next 50 years. That's pretty much a big thrill.

MR. RUBENSTEIN: So one time, I understand, President Bush called you up and said: Come in and see me – President Bush 43. And you went in and you talked about creating a program, which became PEPFAR. Is that how it came about?

DR. FAUCI: Yeah. It actually President George W. Bush's idea, when in 1982 he sent me –

MR. RUBENSTEIN: In 2002 –

DR. FAUCI: Excuse me. 2002, I'm sorry. He's good. He's sharp. [Laughter.]

MR. RUBENSTEIN: Right, right. Yeah.

DR. FAUCI: In 2002, President George W. Bush sent me and then-Secretary of HHS Tommy Thompson to a group of African countries, with the thought of could you find out, is there something that we could do there that's transforming, because he actually did tell me – this is the truth – that he said, you know, we as a rich country, he feels we have a moral obligation to do something for those who are less fortunate than us. And he

knew, because it was happening, that most of the suffering and the devastation in HIV was in southern Africa. So he sent us to southern Africa. We visited a bunch of countries. And he said: I want you to come back with is it feasible to do something? Would we be able to be effective? And could we do something transforming? Don't worry about how much it costs, but just first out could we do something for treatment, prevention or care?

So I went down. Then I came back in the spring of 2002. I presented it to him. And one of it was to do a mother-to-child transmission prevention program. That was about \$500 million. And he said, great. Let's do it right away. And I thought that was it. We were going to go do \$500 million for mother-to-child transmission. But to my surprise, as I was walking out – I think it was the Roosevelt Room that we were in the White House – Josh Bolton was the deputy chief of staff at the time. And he grabbed me and he grabbed Josh. And he said, you know what? Why don't you go back and put together a really, really big program that involves beyond pediatrics, that involves adult treatment, prevention, and care?

So for about eight months, from maybe June or so of 2002 until the end of the year, I kept on going back and forth and putting the model together of how many countries? How many people? Et cetera, et cetera. And then I went to him and I said, now, this is going to be a very, very expensive program. It's going to be at least \$15 billion over a period of five years. And to the great dismay of OMB⁵, who were getting very nervous with additional money to come out, the President said: Let's do it. And he announced it in his State of the Union address on January 28th, 2003. And it was the initiative of President George W. Bush. I mean, I was the instrument of it, but it was his initiative to do it. And that's been extraordinary because there have already been now 10 million people who have been on antiretroviral, which means that billions of lives have been saved by his program.

MR. RUBENSTEIN: Well, it's an incredible program. And no doubt, after doing all the things you've done, have you ever thought that maybe you could go into the private sector, going into private equity, and – [laughter] – I mean, have you ever been tempted to into the private sector and take this great knowledge and make a little money out of it? Or are you just happy with what you're doing?

DR. FAUCI: [Laughs.] I'm very happy with what I'm doing. And I never was tempted to into the private sector. No offense to you guys, but. [Laughter.]

MR. RUBENSTEIN: So the greatest health problem that you see the United States having now, what would you say it is? Obesity? Is it some kind of infectious disease? What would you say is the greatest health problem we now face?

DR. FAUCI: You know, I think there are many. But I think you hit on one of the really important ones is obesity and not taking care of one's self. The other one is actually drug abuse. I mean, our substance abuse in the country is considerable. If you look at alcohol

⁵ Office of Management and Budget.

and prescription drug abuse, together with dietary issues, including obesity, that you pointed out – if you could handle that, you'd do a lot for the health of the country.

MR. RUBENSTEIN: Well, look, on behalf of the country, I'd just want to thank you for the great job you've done for everybody in the world and the country. And you're a great American. And I thank you very much for coming today.

DR. FAUCI: Thank you. [Applause.]



Anthony S. Fauci, M.D.

Dr. Fauci was appointed Director of the National Institute of Allergy and Infectious Diseases (NIAID) in 1984. He oversees an extensive research portfolio of basic and applied research to prevent, diagnose, and treat infectious diseases such as HIV/AIDS and other sexually transmitted infections, influenza, tuberculosis, malaria, and illness from potential agents of bioterrorism. NIAID also supports research on transplantation and immune-related illnesses, including autoimmune disorders, asthma, and allergies. The NIAID budget for fiscal year 2015 is approximately \$4.4 billion. Dr. Fauci serves as one of the key advisors to the White House and U.S. Department of Health and Human Services on global AIDS issues, and on initiatives to bolster medical and public health preparedness against emerging infectious disease threats such as pandemic influenza. He was one of the principal architects of the President's Emergency Plan for AIDS Relief (PEPFAR), which has already been responsible for saving millions of lives throughout the developing world.

Dr. Fauci also is the long-time chief of the Laboratory of Immunoregulation. He has made many contributions to basic and clinical research on the pathogenesis and treatment of immune-mediated and infectious diseases. He helped pioneer the field of human immunoregulation by making important basic scientific observations that underpin the current understanding of the regulation of the human immune response. In addition, Dr. Fauci is widely recognized for delineating the precise mechanisms whereby

immunosuppressive agents modulate the human immune response. He developed effective therapies for formerly fatal inflammatory and immune-mediated diseases such as polyarteritis nodosa, granulomatosis with polyangiitis (formerly Wegener's granulomatosis), and lymphomatoid granulomatosis. A 1985 Stanford University Arthritis Center Survey of the American Rheumatism Association membership ranked the work of Dr. Fauci on the treatment of polyarteritis nodosa and granulomatosis with polyangiitis as one of the most important advances in patient management in rheumatology over the previous 20 years.

Dr. Fauci has made seminal contributions to the understanding of how HIV destroys the body's defenses leading to its susceptibility to deadly infections. Further, he has been instrumental in developing highly effective strategies for the therapy of patients living with HIV/AIDS, as well as for a vaccine to prevent HIV infection. He continues to devote much of his research time to identifying the nature of the immunopathogenic mechanisms of HIV infection and the scope of the body's immune responses to HIV.

In 2003, an Institute for Scientific Information study indicated that in the 20-year period from 1983 to 2002, Dr. Fauci was the 13th most-cited scientist among the 2.5 to 3 million authors in all disciplines throughout the world who published articles in scientific journals during that time frame. Dr. Fauci was the world's 10th most-cited HIV/AIDS researcher in the period from 1996 through 2006.

Dr. Fauci has delivered major lectures all over the world and is the recipient of numerous prestigious awards, including the Presidential Medal of Freedom, the National Medal of Science, the George M. Kober Medal of the Association of American Physicians, the Mary Woodard Lasker Award for Public Service, the Albany Medical Center Prize in Medicine and Biomedical Research, the Robert Koch Gold Medal, the Prince Mahidol Award, and 42 honorary doctoral degrees from universities in the United States and abroad.

Dr. Fauci is a member of the National Academy of Sciences, the American Academy of Arts and Sciences, the Institute of Medicine, and the American Philosophical Society, as well as other professional societies including the American College of Physicians, The American Society for Clinical Investigation, the Association of American Physicians, the Infectious Diseases Society of America, The American Association of Immunologists, and the American Academy of Allergy, Asthma & Immunology. He serves on the editorial boards of many scientific journals; as an editor of *Harrison's Principles of Internal Medicine*; and as author, coauthor, or editor of more than 1,280 scientific publications, including several textbooks.