

Autism Controversy: CDC Responds

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M-e-l-i-n-d-a W-h-a-r-t-o-n (spelled name)

I'm Deputy Director of the National Center of Immunization and Respiratory Diseases at CDC.

Q. What does that mean that your job is, in lamens terms, if you will.

A. The National Center for Immunization and Respiratory Diseases is the part of CDC where the National Immunization Program resides, as well as the Epidemiology and Laboratory activities related to a number of respiratory diseases that are vaccine-preventable.

We're going to get right to it and go back to last week. You and I spoke last week, although only by phone. We had a verbal conversation where I took notes and based on those notes, used a few quotes in the story and afterwards. I know there was concern within the CDC that the story wasn't as balanced as it should be, so we come back to interview today and to talk some more about this issue.

Q. So starting with Jenny McCarthy to get into this issue, she believes the ingredients in vaccines, such as aluminum, formaldehyde and ether, can trigger, as she calls it, autism in certain children. What do you say to that?

A. There's parents that have lots of concerns about vaccines and vaccine ingredients. But all of the things that are included in vaccine manufacturing are there for a reason—to make vaccine safe and effective. And there's now been a good deal of research around vaccines and autism. And that research does not support an association between vaccines and autism.

Q. You removed thimerosal, mercury, from childhood vaccines, correct?

A. In 1999, the U.S. Public Health Service and the American Academy of Pediatrics called for thimerosal preservative to be removed from vaccines administered to young children. And that process began in 1999 and was completed for all of the routinely recommended childhood vaccines over the next couple of years. The only vaccine we routinely give to young children that still contains thimerosal as a preservative is some formulations of influenza vaccine.

Q. And why is that?

A. Well, most of the influenza vaccine we give is given to older people and it's given from multi-dose vials. We give many millions of doses of influenza vaccine a year, and it's far more efficient to package it in a multi-dose vial. We don't have enough capacity in all of the vaccine industry to package all the influenza vaccine we need in

single doses, which is what we would have to do if we didn't use thimerosal to package it safely in multi-dose vials.

Q. You mean it would be too costly to?

A. Well, there's not enough capacity to do it; there's not enough factories; there's not enough fill lines.

Q. Why was it removed from vaccines?

A. Thimerosal was removed from vaccines because we are concerned about mercury exposure from all causes for young children. And some of it's going to be very difficult to deal with. There's many environmental exposures, but one kind of exposure seemed feasible to address, and that was the exposure in vaccines. It was technically possible to do, so it was done, again with the exception of some formulations of influenza vaccine—not because there was evidence that mercury in vaccines caused harm, but because it was possible to do it and would reduce the overall exposure of mercury in young children.

Q. So, what would you say to a parent who says, "I'm concerned about getting my child the flu vaccine because there's thimerosal in it."?

A. Well, if a parent's concerned, there are thimerosal-free formulations available, and there's been more each year. So for parents who are concerned, there are formulations available but they should be reassured that all of the information that has looked at this issue has found that it's a safe product.

Q. What studies are being conducted now in vaccine safety?

A. Vaccine safety is a very broad topic. For any vaccine before it's licensed, there will be studies done in thousands of children that look at the safety of vaccines including follow-up up to 6 months. Once vaccines are licensed and we're using them, we continue to do studies looking at the safety of vaccines. We use a number of different systems to look at the safety of vaccines, including the Adverse Event Reporting system, where physicians and manufacturers and vaccine recipients and their parents can report adverse events that occur following vaccines, as well as systems where we can do scientific studies to actually look for causation. So, at any given point there's going lots of different things in progress looking at different vaccines and different issues.

Q. What about pertaining to vaccines and autism?

A. CDC is currently in the process of completing a study that I expect will be published perhaps this time next year looking at vaccines and autism, but that study isn't completed yet and I don't know what the results are. We won't know until it's completed.

Q. Can you tell me more specifically what kind of study it is.

A. Sure, it's a study that looks at children who have autism and children who don't and will compare the thimerosal exposure from vaccines in those two groups.

Q. But only thimerosal exposure?

A. Well, their entire vaccine history, their entire vaccine experience will be looked at, so other questions could be addressed that were vaccine-related as well, but the study was designed specifically to look at thimerosal.

Q. Is the CDC conducting any studies concerning autism other than that?

A. Our Birth Defects and Developmental Disabilities center has a very active program in autism surveillance and research, and they have a number of studies looking at risk factors for autism and so forth. They also have had a campaign that's been ongoing for a number of years called "Act Early. Learn the Signs." really aimed at helping parents and physicians recognize the early warning signals early on so that children can be identified and early intervention can be implemented at the earliest point possible.

Q. I was reading last night. This was 2 years ago, "Dr. Julie Gerberding said that the simple study of autism rates among vaccinated and unvaccinated children could be done and should be done to help settle this raging debate." Do you know if this study is being done?

A. To do a study looking at autism rates in vaccinated and unvaccinated children would be enormously difficult in the United States because so few people are unvaccinated. And it's a good thing that only a few people are unvaccinated.

Q. Isn't it like, I swear I don't know if this is an...I found in Pediatrics magazine, the CDC published an article, and I didn't know if this was countrywide or worldwide, and it says that 17,000 children annually go unvaccinated. Do you know if that's here or worldwide?

A. Well, in the United States, it's about 3 per thousand based on the most recent analysis I've seen from our National Immunization Survey, which may be in the paper that you referred to. So if 3 per thousand children have received no vaccines, and if our best understanding of the autism rate is 2-6 per thousand, then you've got to deal with the population that is large enough to identify a difference of 2-6 per thousand in a subset of the population that's only 3 per thousand. So, it's just enormously difficult to do in this country because immunization coverage is so high. The other thing to consider in thinking about doing such a study is that people who have chosen not to give their children any vaccines at all, probably are quite different from the general population in terms of other ways they raise their children, other ways they access healthcare, and whether or not there are other exposures that may be important in causing autism, which of course we don't know if there are any exposures at all. But if there were any or if there were differences in how they access the healthcare system, what kind of doctors they see and how likely those doctors are to make the diagnosis, it could be really difficult even if you had a large enough population to do it. So, although I understand that it seems like it ought to be a simple thing to do, actually if you think about how large a population it would take, it would be enormously difficult.

Q. Can you say with certainty that vaccines, not mercury, in no way contributed to the

rise in autism?

A. It's hard to say anything absolutely certainly, and when the Institute of Medicine reviewed this topic, their conclusion was that the evidence supports rejection of the idea. Now, is it possible that there is a very small group of children who have some exposure that we don't understand, some risks that we don't understand. I can't tell you that it's impossible, but that's not how science works. Science can't prove that things are impossible. What we can do is look at the things we can study and based on the studies that have been done, there is no evidence linking vaccines with autism.

Q. Should vaccines and the vaccine schedule be one size fits all?

A. Well, the immunization schedule was developed to protect children at the earliest age possible from the diseases that vaccines can prevent them from. And there are children who have immune deficiencies, for example, children with HIV who are seriously impacted, who we recommend not receiving some of the vaccines if they're seriously **immunocompromised**. So, it's not a one size fits all schedule, but the vaccine schedule and the vaccines themselves are tested extensively in large groups of children and almost all children can safely receive the recommended schedule.

Q. Can you explain to me what is herd immunity?

A. Herd immunity is the idea that you can protect a population by immunity in most of it but not all of it because diseases spread person to person to person, so for the disease to spread it has to find a susceptible person to pass it along to. Otherwise that infection is a dead end; the virus or bacteria goes away and it dies out. If enough people in the population are protected, the disease can't spread from person to person because the next person you run into is immune. So if there are a few people in the community who the vaccine didn't work in or they were unable to be vaccinated or they're too young to be vaccinated, we can protect those people by maintaining a high level of immunity in the rest of the population.

Q. How many vaccines (I'm 37 so I'm too old to ask this question), 20 years ago, how many vaccines did kids get or how many shots did kids get compared to today?

A. In the early 1990's we added the **homopholus** influenza B and Hepatitis vaccine to our routine schedule. Before then we had diphtheria tetanus and polio, we had MMR, so we had diphtheria, tetanus, and pertussis, we had polio and we had the MMR vaccine. With the great investment in research that has been made in this country, there's been development of a number of vaccines so we can prevent now many more diseases than we could back then.

Q. How many diseases are we preventing?

A. Now, the childhood schedule provides protection against 16 vaccine-preventable diseases.

Q. And is a total of 36 shots...give or take?

A. Yeah, depending on combination vaccines...

Q. But the number of shots has increased a lot since the early 80's because I saw on

some government site I was on last night it used to be 10 or a dozen around the time I was growing up.

A. As we've added vaccines, it has meant more injections. It provides more protection from more diseases. Some of the injections are combination vaccines and there's a big push to develop more combination vaccines, which will reduce the number of injections. But it's important to keep in mind that the immune system can handle this. It's not like we've got the choice of living in a germ-free environment. We live in a sea of bacteria and viruses and even the immune system of very young children, it's not that it gets used up by the vaccine. The vaccines make the immune system stronger and better equipped to handle the things that it's going to encounter.

Q. Has there ever been a study examining the safety of the total load of vaccines children receive in the first few years of life?

A. Every study we do of vaccines where when we are adding one to the schedule it will be looking at all the vaccines that are being administered. Now, children don't get everything all at once so if we are studying a vaccine at 2, 4, and 6 months of age, it will be administered in the context of the recommended schedule. So, yes, we study the schedule the way we currently get it as we add vaccines to it.

Q. I want to go back to something they talked about before I did \_\_\_\_\_ because you said there was a push to do more combination vaccines so there are fewer injections. I know that there's a concern from parents I talked to at this conference I was at about combination vaccines, of course the one you hear about most often is the MMR—the measles, mumps, and rubella—parents feel that's too much, that that vaccine can be a problematic one for their children. So what would you say to parents who are worried about the combinations that already exist when you're looking at doing more of the same?

A. It's important to remember that these vaccines are studied before they're ever made available as well as afterwards to make sure they're safe and effective. And again, it's not that we live in a germ-free world; we're exposed to things all the time. The exposures we get from vaccines are actually far less in terms of the number of particular proteins that we respond to in vaccines now than they used to be because the vaccines now are pure. We use the acellular pertussis vaccine for example instead of the old **whole cell** (Video 2, 7:07) pertussis vaccine which was a far more immunologically potent vaccine in terms of a lot of things the immune system responded to. So, the combination vaccines help parents who don't really want to see their young child get all those shots, but they still can provide protection and be safe and effective.

Q. And you don't think it's too much of an overload on them?

A. No, again, our immune system can deal with the bacteria and viruses we're exposed to all the time and it doesn't get used up by the vaccines we're exposed to.

Q. I've received hundreds of emails since this story aired last week and hundreds of parents have said to me, as they said to me at the conference, that they believe their child's immune system for whatever reason, from birth, may not have been as strong as other children's, may have been compromised in some way, and that the vaccines

overwhelmed their system and made them ill. Do you think we should test children's immune systems before vaccination?

A. Well, the kind of problem with an immune system that can present a problem with some vaccines is very serious immunodeficiency which becomes apparent in the first year of life because of problems that the child has, so these things do become apparent for the children who have them. I don't think that's the kind of problem that the parents talked to you about. Parents have lots of concerns about lots of things. They want to make the right decisions for their children, and parents of children with autism have a lot of things they're trying to deal with. They have many challenges in trying to meet their children's needs, but it doesn't mean that vaccines caused autism. And in order to help parents make the right decision, they need accurate information, and the best science we have doesn't support this.

Q. Aluminum is used in vaccines. This is a question I bring with me from attending the conference and seeing a panel of 3 doctors or so talk about aluminum and the amount in vaccines. One said that the aluminum exposures for the vaccine's recommended of the 2 month visit exceed the suggested safety limits set by the FDA. Has the CDC tested the toxicity of aluminum in vaccines?

A. The vaccines are licensed by the FDA, and the vaccines meet FDA standards, so no, CDC hasn't looked at that particular issue, but that is handled by the Food and Drug Administration's part of vaccine licensing.

Q. So, that would almost be counter productive....

A. It wouldn't be licensed if it was toxic.

Q. What about when a lot of parents have suggestions spacing out vaccines?

A. Again, parents want to make good decisions; they want to protect their child; they want to do the right thing, but it's important to remember that a decision to delay vaccination is a decision to leave your child susceptible, and there aren't any benefits that come with that. Based on everything we know, there's no benefit to your child from spacing out those vaccines, but there are real risks in leaving your child susceptible when you could've protected them by giving them their vaccine on time.

Q. I saw in February of this year, the CDC published autism rates for children born in 1994 was **1 in 50** (Video 3, 1:46). Did you know that California actually published the actual number of autism diagnosis quarterly?

A. Right.

Q. I found that the dept of education data shows their autism rates as high as 1 in 67. Given that this last look at autism rates are based on children born in 1994, is the CDC going to look at them again?

A. The Birth Defects center that does the work on autism has ongoing surveillance projects looking at autism, and we'll be having more updates in the future with more recent information on autism. But because they look at the rates of autism at age 8, which is old enough for children to have received the diagnosis if they've got milder

cases, that it does take a while, there's quite a lag time in completion of those studies. They will be having some more information on that, but it's not available yet.

Q. What do you think causes autism?

A. I'm not an expert on autism, and I don't know. But from what I understand, from what people who know far more about this than I do have told me, it seems that genetics probably does play a role. Are there other factors? I don't know, but based on everything I've read, I'm confident that our vaccine schedule and the vaccines we use aren't responsible for the big increases in recognized autism that we've seen in the last few years.

Q. So, there's no denying that there's been an increase?

A. There certainly has been a big increase in recognized autism. I think people are far more aware of it than they used to be. The definitions of what we consider autism have broadened. How much is a real increase in incidence of autism as opposed to an increase in recognition, I think is not a completely settled issue. But again, I'm not an autism expert and I would defer to those who are to address that.

Q. This is my last question. This may be difficult for you to respond to because I'm asking you to respond to parents' gut instinct. A lot of parents have written to me, and you can go on any message board on the internet, these sites for families with children on the spectrum, and these parents make a point of letting you know that I'm educated, I'm **learned**, I'm bright, I'm a very involved parent, and I know beyond a shadow of a doubt that vaccines played some role in my child getting autism. And there are thousands of parents who believe that, so how do you respond to that when you have these citizens who are so sure of their belief?

A. It's very hard to counter that sort of observation and belief. You know, we all believe things based on things we've observed, and scientists are just as susceptible to that as other people, but that's the reason we have to do studies to get around what we believe based on our observation and look at things in a whole group of people in standard ways and count all the cases and classify things correctly and separate out what you believe based on your own observations and experience from the objective reality that science can show us. The only way we're ever going to be able to deal with this issue fundamentally I think is to really understand, much better than we do, what autism is all about, what causes it, how to intervene better to help children who are seriously impacted and families that are seriously impacted. That's I think the only thing that's going to address the concerns people have is if we can answer the questions that right now we can't answer.

Q. Do you think we'll be able to answer them anytime soon and in a way that everyone can agree upon?

A. Having everyone agree is a pretty high standard, but I'm confident that there's progress is being made in studying autism, and at some point we will have a much better understanding than we do.

Q. Do you believe the CDC is doing everything it should and can as far as research on

children with autism and a possible connection to vaccines?

A. CDC has made an enormous investment in doing studies looking at autism and vaccines, and as I mentioned earlier, one of those studies is still ongoing; we expect it to be completed next year. CDC has designed studies that addressed several different specific concerns. There's ongoing work at the agency looking at autism and we all hope that the work will provide answers that our vaccine studies have not in terms of what really are the actual causes of autism.

Q. Is there anything else that you would like to add that I didn't ask you feel we need to talk about?

A. I would like to add that we have the luxury of living in the United States where we have very high immunization coverage, as we talked about only 3 in a thousand children who receive no vaccine, so almost all children are vaccinated. And because of that vaccine-preventable diseases are at a very low incidence in this country. That's a really good thing. There's diseases that now you only learn about in the medical books; we don't see them in the hospitals or on the [\(Video 4, 4:00\)](#) in the in this country, and that's wonderful. But it's vaccines that are responsible for that. I do have concerns that parents hear things that alarm them, they hear things that scare them. They aren't things that are based on science, and they may lead them to make decisions about vaccinating their child that are going to put their child at risk. We can't protect our children from everything we'd like to protect them from as parents, but we can protect them from diseases, from these particular diseases from which we have vaccines. But we have to use them. I am concerned that in the current climate with so much concern about this on the part of parents, again, that it's based on concerns, it's not based on good information, that we're going to end up in a situation where diseases that we could've prevented will be back.

Q. You know there will be some parents who see that and say, "She can say that, but I know what happened to my child. Nobody can tell me what happened to my child."

A. I wouldn't try to tell a parent what happened to their child. The way we advance knowledge is by not just looking at that child but by looking at a large group of children and really trying to sort out what happened and what causes things. When those studies have been done, no association has been found between vaccines and autism.

Q. Thank you. I have one other thing we talked about last week. You said, "Say parents across America stop vaccinating, you said that these diseases..."

A. The diseases will come back; there's no question about it. There was an outbreak in Indiana that I told you about last week that happened in 2005 where there was a girl that came back from a mission trip. She had measles when she came back. She wasn't sick yet and ended up infecting 33 other people. Three of them ended up in the hospital and one of them in the intensive care unit. Yes, herd immunity is partially responsible for our very low incidence of these diseases in the United States. Many of these diseases are very rare here or don't happen at all. A lot of them still happen in other parts of the world, and they're only a plane ride away. So there's still a risk for children in this country if we don't vaccinate them.

Autism Information Center [www.cdc.gov/autism](http://www.cdc.gov/autism)

Information on Mercury and Vaccines

<http://www.cdc.gov/od/science/iso/concerns/thimerosal.htm>