

Sound Advice

This is an edited transcript of a telephone interview recorded in April 2009.

Dr. Meg Fisher is a board-certified pediatrician and a Fellow of the American Academy of Pediatrics. Dr. Fisher is Chair of the Academy's Section on Infectious Diseases and is a leading expert on vaccines.

Q: Dr. Fisher, most young parents today have never witnessed the diseases that vaccines protect against. Are immunizations still important?

Dr. Fisher: Immunizations are as important today as they have been in years past, and the reason for that is these diseases, although they've decreased here in the United States, many of them are just a plane ride away. Children today in 2009 can be exposed to them the same as they were in years past. So we need to ensure that all of our children are protected because we don't know which children will be exposed to any of these vaccine-preventable diseases.

Q: Are we seeing some of these diseases reappear?

Dr. Fisher: Unfortunately, we're seeing some reappear, and there are few that have not yet gone away. We've had more measles in the year 2008 than we had for a decade. We see what we call "imported" cases, people who got their measles when they were traveling or in their native country and then bring them, introduce them into the United States. We've always had those cases. What was unique about 2008 was we had the same amount of imported cases but many more secondary cases. Those secondary cases occurred in children whose parents had decided not to immunize them and also in children who were too young to be immunized. These children may have developed their measles infection while they were sitting in a waiting room in a healthcare facility because one of these imported cases received their care in the same area.

Another thing we're seeing is pertussis, or whooping cough, is making a comeback in certain areas. Now, pertussis is a disease that we've never entirely got rid of, and the reason for that is the vaccine protects you, but only for a limited amount of time. The booster dose of what's called Tdap, which is tetanus, diphtheria, and acellular pertussis, was approved for use in 2005 and we're hoping that that will alter the epidemiology of whooping cough, that we will really, by immunizing older people, decrease the amount of disease that we see throughout the country. We don't have enough information yet to know if that's working, but we have had outbreaks in several areas of the country, again related to pockets of children who have not been immunized. If you decide not to immunize your child, you make that decision not only for your child, but for any child that your child may come in contact with.

Finally, in 2008, there were five cases of invasive Haemophilus disease in Minnesota. In four cases the children were either not immunized or under-immunized. There was only one child who had received the entire vaccine series, and it turned out that that child had hypogammaglobulinemia so that he did not respond to the vaccine in a normal way. He was immune-deficient. In the other four cases, either the child was too young to have completed the

series or the families decided not to immunize them, and remember that we have had a shortage of Haemophilus influenzae vaccine. So this is a very big concern to us that, either because of vaccine shortages or parental choice, we may be accumulating children who are no longer protected against Haemophilus influenzae type B. I know that there was another case recently in Philadelphia which involved an Amish child who had not been immunized as well. So this, I think, is a big wake-up call to us. Haemophilus is not gone in this country, and we need to ensure that children are being protected against this invasive bacterial illness which can leave them with deafness, mental retardation, and a variety of other problems.

Q: How dangerous are these diseases that vaccines protect?

Dr. Fisher: Well, they range in severity. For Haemophilus influenzae type B, this is a very serious infection, and, in fact, one of the children that I mentioned died of his infection. So for measles, although most people would survive measles, it is not a disease that we would like to see return because we know that one in 1,000 children with measles will have a brain infection. Measles infection sets you up to get bacterial superinfection with bacteria such as methicillin-resistant Staph aureus or group A streptococcus. And the combination of the virus plus the bacteria can be quite severe.

Q: How dangerous is the flu?

Dr. Fisher: Influenza itself, obviously most people who get influenza have a significant illness, but it doesn't leave them with permanent problems. Unfortunately, influenza kills children every single year. It kills not only children who have chronic disease, but it kills normal children with no predisposing factors that we can identify. So again, we can't tell parents which child is going to be the one that will die of influenza if they get it. We can't predict that. We can say some children are at higher risk, but there's no child who is at no risk.

Q: Why should infants get the Hepatitis B vaccine?

Dr. Fisher: The reason that infants need to be protected is because for many of these diseases, they are the people who will get the most severe illness or have the most severe side effects. Let's take hepatitis B virus. Many people say, "Well, what in the world? Why are we immunizing babies? They're not having sex. They're not sharing needles." And, of course, that's true. However, if they are exposed to this virus, they have a more than 95 percent chance of becoming a chronic carrier of the virus. Now, if you or I gets infected today, if I get infected right now, I have less than a 10 percent chance of being a chronic carrier, and I may not live long enough to have complications from that chronic carriage. Our babies, our young infants, will live long enough to have significant sequelae from this virus.

The other thing to remember is when we see a child with hepatitis B infection, most of the time we can't tell you where that child got that disease, so how do young children get exposed to blood? Well, teenage children and, actually, school-age children do share their blood, whether it's becoming blood brothers and blood sisters or because a child cuts himself and he shares blood with a friend. In that manner, this virus can be transmitted. In fact, there was an outbreak

which was traced to children sharing chewing gum. How, how does that work? When you chew gum, your gums bleed and, therefore, your blood gets into the chewing gum. Now, if the next child just swallowed your gum, it wouldn't be a problem, but when you share chewing gum, you also chew that gum, your gums bleed, and now you have shared blood with the person that you're sharing your chewing gum with. And, in that way, you are sharing the infection.

So why is it so important to immunize a child at birth? Because we want to protect them from the first minute of life because we know that an infant who gets hepatitis B will become a carrier whereas, when you get older, your risks diminish.

Q: Do babies have natural immunity against diseases?

Dr. Fisher: There's a very neat thing about babies. They are born with the protection that their mothers have, so when a baby is born at term, that baby has the antibody of their mother. So this is a wonderful gift for that child. It protects them against the bacteria that their parents are protected against. However, this is not the gift that keeps on giving. This gift goes away over time, so every month you have half as much protection as you started with. By the time you are about six months old, you lose that protection that you were born with, so it should be no surprise that before we had the vaccines, when did we begin to see Haemophilus meningitis and pneumococcal meningitis? Between the ages of six months and a year. We give our vaccines at two months, four months, and six months in order to increase a child's antibody levels so that they are protected right at the same time that they lose their mother's antibody. So why do we make the schedule the way we do? Because we want to get children protected from these very serious and potentially fatal and damaging diseases.

Q: Are parents asking pediatricians to follow alternate vaccine schedules?

Dr. Fisher: Unfortunately, this has become very common. Parents are asking to make up their own schedules. The schedules that the parents want to make up on their own are totally untested. We don't know if they work. We don't know if they're safe. We don't know if they are associated with more problems, so it makes no sense to use an alternate schedule when we have one that was developed with the plan to protect children as soon as possible. So what's wrong with waiting a little while to protect your child? Well, every day that you wait is a day that you leave your child unprotected. As we said before, I can't predict for you which children will be exposed to which visitor from another country or to which needle that was left somewhere and they got inoculated inadvertently or which child with Haemophilus disease or pneumococcal carriage. We can't predict when your child will be exposed.

Q: Is the schedule recommended by the CDC and the American Academy of Pediatrics one-size-fits-all?

Dr. Fisher: I would not call it a one-size-fits-all schedule. I would call it a schedule based on what is most likely to protect all children from disease. However, there are reasons to stray from the schedule. If your child has a reaction to a dose of the vaccine, that would be a reason to alter the schedule for that child. Likewise, if your child has a significant illness at the time that they

would've been vaccinated, that's a reason to delay the vaccine. So no, it's not a one-size-fits-all. Every time your child comes for a vaccine, your pediatrician will decide whether it's appropriate for them to get the vaccines that could protect them at this age.

Q: Are the ingredients in vaccines safe?

Dr. Fisher: These ingredients are there for a reason. So the preservatives that are in vaccines are in there because when these vaccines were developed, they were often distributed in multi-dose vials. Those multi-dose vials could become contaminated, so we needed a preservative to prevent the contamination. Currently, influenza vaccine is often distributed in multi-dose vials. We need a preservative to prevent contamination of the vial. However, for most of the other vaccines, we can now distribute them in single dose ways so that we don't need the preservative. Now what about aluminum? It's there as a product that makes the vaccine work better, so if we would take it out, the vaccine would not work. It would not cause you to make the same type of immune response as when we have it in the vaccine. So when people talk about greening vaccines, you have to realize that you can't take out the thing that makes the vaccine work. It would not make sense to take out aluminum, and again, all of the vaccines are very well studied for safety from the minute that they are being developed through the time that they go through the phase I, II, and III studies for licensure. After licensure, we continue to very closely monitor these vaccines for safety. Lots of people are looking at the safety of vaccines, and we will continue to do that because these are products that have to be safe. We're giving them to normal children. We're recommending them for all normal children, so their safety record has to be beyond reproach and, in fact, it is.

Q: How well are vaccines studied in the combinations that they're normally given -- several shots at once in one visit to the pediatrician's office?

Dr. Fisher: There are several ways that we study these combinations. If a vaccine actually comes out as a combination vaccine, for instance, you add the chicken pox on to the measles, mumps, and rubella vaccine, so that's a combination vaccine, or in the same needle, you put the diphtheria, tetanus and pertussis along with a Haemophilus vaccine along with a polio vaccine, you have one of these combination vaccines. Before those can be licensed, the company has to show that the combination is at least as effective as giving the vaccines separately and as safe. There is no increase in the side effects. Otherwise, the product cannot be licensed. So, in fact, the combination vaccines, again, are very closely studied and looked at in that way.

Now, as far as giving several vaccines at once, that's where we come back to the schedule that we've been using over many years, and when that schedule was developed, there were studies done to show that giving more than one vaccine at a time was not only safe but it didn't interfere with the ability of the vaccines to work. So these are actually very well studied and, again, it's studied not only when a new vaccine is developed, but these are ongoing issues that are looked at as we continue post-licensure.

Q: Where should parents go to find accurate information about vaccines?

Dr. Fisher: The first place a parent should go is to their own pediatrician, and they should talk to their pediatrician about their concerns and get information from their pediatrician. The next place is the American Academy of Pediatrics, and they can access that information by going to the Academy Web site, which is AAP.org. In addition, the Centers for Disease Control and Prevention has excellent information on their Web sites, and that is CDC.gov. If you go to that site and search “immunizations,” you will get information about all of the vaccines, the things that are in the vaccines, the safety studies that are underway, the groups that look at that safety, and really also about the diseases that these vaccines prevent.

Q: Dr. Fisher, what kind of advice do you give your own family members about immunizations?

Dr. Fisher: I give my family members the same advice that I would give every young parent. Talk to your pediatricians. Get your child immunized. Get them protected as soon as possible, and continue to get them protected throughout their lifetime. And furthermore, make sure that you yourself are protected. Remember, vaccines are not just for babies. We have vaccines for adolescents and for adults, and it’s very important that we all get these immunizations as part of our routine health care.