

Sound Advice

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

Dr. Harvey Karp is a pediatrician and child development specialist. He is an assistant professor of pediatrics at the UCLA School of Medicine. Dr. Karp is the author of the books and DVDs *Happiest Baby on the Block*, and *Happiest Toddler on the Block*. Welcome, Dr. Karp.

Q: Dr. Karp, are shots a plausible cause of autism?

Dr. Karp: For more than 10 years, a growing chorus of activists and worried parents have voiced their concerns that vaccines may be causing the autism outbreak. They worry that shots have too many ingredients, or too many shots are given together. And many of them have said that since baby shots have increased in number simultaneously with the rise in autism frequency, that there's a clear causal relationship between the two.

The rise in autism is scary, and all reasonable people should be desperate to solve this mystery. But is the fact that we give more vaccines proof that they trigger the disorder or a terrible coincidence? History is filled with good guesses that just fell flat. For example, five years ago, many were convinced that mercury in vaccines was the autism culprit, and it was a fair hunch, but it was totally wrong. In 2002, over 95 percent of vaccine mercury was removed, yet instead of plummeting, autism rates zoomed even higher.

Another popular hunch was that the MMR shot – measles, mumps, German measles – caused autism. But a huge Danish study examining hundreds of thousands of children found that kids skipping the MMR had the same exact risk of getting autism as those who were immunized. And a Japanese study also showed zero difference between MMR getters and MMR skippers. There was no benefit seen, even when the MMR was split into separate shots.

So, to date, there have been dozens of studies examining over a million children, and they've all failed to find any credible association between shots and autism. None. I know of no plausible pathophysiologic pathway to link vaccines to autism.

I also believe we need to continue to promote childhood disease registries so that we can make a more accurate determination of the true incidence of autism. While there's data that a portion of these rising incidents is due to a labeling shift -- that is, that many developmentally delayed children who, in the past, would have been labeled as having mental retardation, are now labeled as having autism. But a recent study by the California Department of Health indicates that there's strong evidence for an actual rise in the incidence of autism above and beyond this labeling shift, so we need to try and resolve this issue for parents that this is something that's overblown.

The National Children's Study will establish over 100 study centers across the United States to test the blood of 100,000 newborns for scores of synthetic chemicals, including many EDCs. Workers have already begun going door-to-door enrolling pregnant moms into the program.

And for the next 21 years, scientists will carefully follow the children's health, comparing the body burden of chemicals at birth to diseases developing later in life.

The National Children's Study may be our generation's best chance to solve the autism riddle. It's exactly the type of study needed to tease out the subtle relationships that may exist between autism and chemicals. And, fortunately, it won't take 21 years to start getting answers. Within three to four years, we expect to have enough data accumulated to start detecting what chemicals might be linked to autism.

The National Children's Study will also search for correlations between chemical exposures and other increasingly frequent serious illnesses such as diabetes, leukemia, brain tumors, prostate, breast, and ovarian cancers, lymphoma, congenital malformations, infertility, attention deficit disorder, and perhaps even Parkinson's disease.

Q: Is it just a coincidence that children are diagnosed with autism after receiving vaccines?

Dr. Karp: Well, the speculation that shots cause autism continues to stick in parents' minds in large part because they've heard reports of kids who suddenly get autism just a week or two after getting their shots. And, in fact, this is one of the scariest characteristics of autism, that a child can suddenly be afflicted who previously appeared to be developmentally normal.

But as you ask in your question, it is possible that a sudden problem right after shots can be a coincidence. In fact, every day, serious and amazing things occur purely by chance. I mean, think of it this way. In a large country like the United States, a one-in-a-million coincidence happens 300 times a day. So there are approximately 24,000 kids diagnosed with autism every year in the United States, and about a third of those cases or 8,000 kids a year are normally developing kids who show an abrupt deterioration, so-called regressive autism.

Now regression usually appears between a child's first and third birthdays, a period during which they get shots four different times, so when you multiply the average number of kids being diagnosed with regressive autism per week during this period by the number of weeks that kids are in the immediate post-vaccine period, you quickly realize that over 600 kids can be expected to suddenly deteriorate into autism during the two-week period that follows these four different shot visits. So, and that's just by pure utter total random chance, coincidence. Such a high level of coincidence means that when parents hear about four or five toddlers or even 400 or 500 toddlers that worsened after shots, they can easily be fooled into assuming that the cause of the autism was the shots, but they'd be jumping to a false conclusion.

Now scientists have carefully investigated this sudden developmental deterioration, and have repeatedly shown that there is no link with vaccines. For example, the University of Michigan, analyzed 351 children with autism, half of whom had the regressive form of autism, and they noted that the average age of regression was 19 months, but they found no correlation to regressive autism and when the vaccines were given.

Q: Why are some parents fearful of vaccines?

Dr. Karp: Well, of course, when diseases like H. flu, meningitis, and polio were common, parents were highly motivated to have their kids immunized. Any rare vaccine side effects seemed distant and theoretical. But now these illnesses have all but vanished from our communities, and it's logical for parents to question putting something foreign in this child's body if there's no apparent pressing need. In fact, we doctors have done the same things, when we questioned the continued need for smallpox vaccine and oral polio, so we're constantly reviewing the shot schedule and updating it, and making it as effective and as risk-free as possible.

And then for parents, in addition to the reduction of risk about infectious disease, they have this concern about the unexplained rise in reported cases of autism over the past two decades, and that's created a lot of uncertainty, doubt and anxiety, which has turned into fear. We know that this fear has been fed by the increasingly vocal speculation of those who said that shots trigger autism, which they said was evidenced by children deteriorating after getting shots, by ingredients in the shots being neurotoxic, and by autism rates increasing in rough parallel to the increase in the number of the vaccines.

Q: What is the result of this increasing fear of parents on public health?

Dr. Karp: Well, so many parents have become paralyzed with indecision that they've lost track of the fact that shots have saved millions of children and adults from disease, deformity, disability and death. In the 1930s, whooping cough's painful strangulation was epidemic. In the '40s, the vaccine became widely used, and by the '50s, whooping cough was uncommon.

In the 1940s, paralytic polio terrorized every family. In the '50s, the vaccine became widely used, and by the '60s, polio was almost eradicated.

In the 1950s, measles caused thousands of cases of suffering from pneumonia, encephalitis, and death. In the '60s, the vaccine became widely used, and by the '70s, measles was rare.

And this is the same story over and over again with rubella causing stillbirth and deafness, and H. flu, meningitis, and epiglottitis causing death and disease across the country, and hepatitis B and mumps and chickenpox and the pneumonia vaccine.

So, in fact, shots are so important that even the most vocal vaccine advocates swear they're not anti-vaccine. Unfortunately, their actions make a travesty of their words. With alarming Web sites and a relentless, multiyear media blitz, they have single-handedly unleashed a huge vaccine backlash. They shredded decades of public health investment and triggered a surge of shot phobia that threatens to add epidemics of infection to the tragic rise of autism that already weighs so heavily on children and families.

The coming danger of this anti-vaccine campaign is seen all across the country. Doctors daily encounter fearful parents doubting the safety of vaccines. The *New England Journal of Medicine* reported a doubling and tripling of the number of parents getting vaccine waivers for their children, and the *LA Times* found that over 50 percent of children in some schools have asked for

the exemptions to avoid all vaccines, and this is of grave concern because disease outbreaks can start when as few as 5 percent of children in a community skip shots.

So moms who sidestep vaccines may do so because diseases like polio and whooping cough are so uncommon, but the great irony is that the only reason these killers are uncommon is because other moms get their kids immunized. So in essence, shots-skipping parents are like people who expect others to shield them from the rain with their umbrellas.

Q: Can too many vaccines overwhelm a child?

Dr. Karp: Well, that idea is pretty close to a baby urban legend. There's no evidence, nor theoretical basis to believe that vaccines impair the immune system or any other biological system in young babies. I think this idea came about because of the observation that as autism rates have increased, so has the number of shots given to young babies. But, of course, contemporaneous relationships do not prove cause. Babies get more vaccines today than 30 years ago, but if parents think that more things are injected into their baby's young bodies, they'd be wrong. That's because immunizations today are much more purified than they were in the past.

For example, in 1980, the DPT shot was made from a soup of blenderized bacteria with over 1,000 different illness particles or antigens all mixed together. And the polio vaccine had live virus that actually protected children by triggering a minute case of polio. So today, our modern DPT vaccine is much more purified, containing only three bacterial antigens, and the polio shot has absolutely no live virus. So actually, the current trend to give kids more shots is a win/win for kids. They win because they're protected from many more illnesses, and because they also have fewer antigens put in their body.

But some still worry, can too many shots overwhelm a baby's immature immune system? You have to remember, the immune system is a multitasking, fighting machine. Every day, babies are bombarded by thousands of threats: irritating pollen, colonic microbes, bacterial invaders from the skin, the nose, the eyes, the mouth, swarms of viruses offending dietary proteins, damaged cells, and even tiny cancers. So the immune system's magnificent ability to protect the child against many mild attacks all at once is exactly why babies tolerate getting several shots at once with no reaction whatsoever. In fact, a new theory suggests that allergies and asthma may be on the rise in part because we've made the world so clean. It doesn't exercise a baby's immune system enough.

Q: Are some children extra sensitive to vaccines?

Dr. Karp: Well, each of us has special sensitivities. Some have peanut allergies. Some get lots of strep throats, and very, very few get serious reactions to vaccines. I wish we had a way to test to detect which infants are susceptible to measles or big vaccine reactions, but no such test exists.

The good news, however, is that shot risks are tiny compared to the risk of full-blown illness. So, for example, influenza and chickenpox hammer the immune system 100 to 1,000 times harder than the impact of flu or chickenpox vaccines. So while most kids breeze through the chickenpox shot, even a mild case of real chickenpox can weaken a child's immunity for weeks

to months, and lead to ear infections, pneumonia, and rarely even toxic shock syndrome. And, of course, it can often land an adult in the hospital.

Q: Are vaccines related to mitochondrial disease?

Dr. Karp: Well, there's one special case of possible vaccine susceptibility triggering regressive autism that made the headlines in 2008, and became a major new focus for those warning that shots may cause autism. A 19-month-old child developed autism after getting five vaccinations, but it's important to understand that this little girl, unlike the majority of autistic kids, also had a rare disorder that affected her whole body called mitochondrial disease. Recently, vaccine avoiders have wondered, could shots trigger autism in kids who seem normal, but have hidden mitochondrial disease? And the answer, I believe, is no.

Mitochondrial disease is rare. It's seen in one in 5,000 to 10,000 children. Recently, scientists from Harvard and Johns Hopkins who studied mitochondrial disease and autism could find only 25 kids with both, and the kids with mitochondrial disorder had serious problems not seen in other kids with autism like delayed walking and acid reflux, liver disorder, severe fatigue, and other problems.

Fourteen kids who had mitochondrial disorder and regressive autism had their sudden deterioration during the toddler years, but only one of the 14 got worse right after shots. And unlike classic autism spectrum disorder, which is seen three to nine times more commonly in boys, kids with mitochondrial disorder and autism were evenly split 50/50 between boys and girls, so it seems to be a different entity, this association of autism and mitochondrial disease. In the final analysis, a few mitochondrial disordered children may be more vulnerable to the shots, but they are all super vulnerable to illness, so mitochondrial disorder kids who avoid shots risk getting the real diseases like influenza that could make them much, much sicker.

Q: Do pediatricians make a lot of money by giving shots?

Dr. Karp: You know, this accusation is as appalling as it is ridiculous. Pediatricians labor through 23 years of education. We wake up at all hours to help worried parents, and we desert our own families on weekends and holidays to rush to the hospital to care for sick kids. Actually, greedy doctors wanting to make more money would discourage shots because doctors make more money caring for sick kids who need frequent office visits and hospital visits than we do caring for the well. In truth, the only reason doctors cajole, beg, and pressure parents to immunize their kids is because we want to protect them and other children from the pain and suffering of preventable infections.

Q: If my children are immunized, are they still at risk from unvaccinated children?

Dr. Karp: Fortunately, children who are fully immunized are relatively protected against those diseases. Yet, vaccines do not have 100 percent take rate, so even vaccinated children can fall ill to the diseases they're immunized against. But at least they tend to have partial immunity that usually mitigates the severity of the illness.

Q: Is it better to delay certain shots than not to get them at all?

Dr. Karp: Well, our ultimate goal is to have as many children as comprehensibly vaccinated as possible. There are several conditions that require us to delay vaccines. But we should endeavor to catch a child up on their shots when the opportunity becomes more favorable.

Q: Which vaccines are most critical for infants?

Dr. Karp: Well, as a pediatrician, I recommend all vaccines. I understand the need to have a clear and standardized vaccine schedule. But the shot schedule has never been written in stone. In fact, we have repeatedly tweaked it to make it safer and more effective.

For example, of the last 30 years, the measles vaccine has been pushed from 9 months up to 12 months, and then all the way up to 15 months of age. So I believe that each doctor has the right and responsibility to tailor the vaccines to the particular needs of a child and family, and to the concerns and sensitivities of the parents. Our job is to understand the concerns of our parents, to educate them about their options, and to help them make the best decisions without making them feel deficient or demeaned.

Of course, it's always a doctor's prerogative to refer a patient out of their practice if they feel strongly that the parent is making a decision they cannot support. I personally never did that because I always feel that my good relationship with the parent would ultimately allow me to persuade them to at least consider a compromised position.

Q: What influence are celebrities having on parents' understanding of vaccines?

Dr. Karp: Celebrities are having a lot of effect, and I don't think that's a bad thing. I think celebrities are our natural partners. In our work to educate parents and protect children, we should endeavor to create more alliances with celebrities.

I thank all parents for their concern and interest, and I want to salute all activist parents for standing up and making their voices heard on behalf of their children and all children. But parents are not biochemists or toxicologists. You know, mastering scores of scientific studies is a real challenge, and it, I mean, it shouldn't be a parent's responsibility.

The problem with what's going on now with celebrity spokespersons is that too often the information they're spreading is false and misleading. So I hope that we in organized medicine continue to push for more research to answer the serious questions about autism, and that we work hard to formulate clear and compelling responses to the questions that remain unanswered, and we use celebrities as our natural allies in getting this message out to parents across the country.