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From the JAMA Network, this is JAMA Pediatrics author interviews. Conversations with authors exploring the latest clinical research reviews and opinions featured in JAMA Pediatrics.

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>> Hi this is Aaron Carroll and I'm the Digital Media Editor for JAMA Pediatrics. In this Podcast we talk to you about interesting articles featured in the Journal and what they might mean to you. This week we're focusing on vaccination patterns in children after autism spectrum disorder diagnosis and in their younger siblings by [Inaudible] and colleagues. Although we know a lot about autism spectrum disorder, we still don't know what causes most cases. What evidence we do have points to a combined role of genetic and environmental factors. One thing we do know doesn't call ASD is vaccines. Unfortunately, many still believe that immunizations are linked to autism and this has led to an increase in unvaccinated children across the country and the world. One thing we'd like to know is having a child diagnosed with autism changes how a parent feels about vaccinations. A study released this week in JAMA Pediatrics looked at just that. It had two main objectives. First to look at whether a child who receives a diagnosis of autism spectrum disorder finishes the rest of their scheduled vaccinations and second to look at whether a diagnosis of ASD changes whether subsequent siblings get all their vaccines on time. Researchers use the Vaccine Safety Data Link. A collaborative project between the CDC and eight sites across the country to collect comprehensive medical and immunization data for more than 10 million people a year. This study examined data from six of those sites for kids born between 1995 and 2010 and then siblings were in between 1997 and 2014. This was a matched cohort study. In order to be classified as having an ASD, the researchers required kids to have an ICD-9 code for it on at least two separate occasions. The researchers matched controls who did not have ASD to the kids with ASD by month and year of birth, sex, and where the site was they collected the data. Younger siblings were also matched by the same criteria. The primary analysis compared the proportion of fully vaccinated children in each age category by whether they had an autism spectrum disorder or not. The secondary analysis compared the proportion of siblings of children with or without a diagnosis of ASD who received the full complement of recommended vaccines at each well-child visit and the proportion of parents who refused to vaccinate subsequent children. The final cohort included more than 3,700 kids with ASD and almost 484,000 children without ASD as well as their respective siblings. With respect to the main outcome of interest, children with a diagnosis of ASD were significantly less likely to be fully vaccinated compared to children without ASD with an adjusted rate ratio of 0.87. The proportion of kids with ASD who received all their vaccines was 81.6% compared to 94.1% in the kids without ASD. For MMR specifically the rates were 84% among kids with ASD compared to 95.9% in those without. With respect to the secondary outcomes, in every age category vaccination rates were significantly lower in the siblings of kids with ASD compared to the siblings of kids without ASD. Parents were more likely to refuse at least one vaccine for a sibling of a child with ASD and also to limit the number of vaccines those siblings could receive in their first year of life. The good news here is that vaccine rates were pretty good overall no matter if the kids had ASD or not. The bad news though is that a diagnosis of ASD seems to

reduce a parent's willingness to vaccinate, both for that child diagnose and their subsequent siblings. This leaves such children at higher risk for communicable diseases than vaccines might otherwise have prevented. The problem here is simple to describe, yet it's difficult to fix. A large body of research shows that we're not doing a very good job in correcting the mistake and belief that vaccines cause autism. In fact, there's a growing body of evidence that some of our corrective messaging, and even our efforts to combat this myth again and again in public are backfiring. People hear what we're saying but it's not working to change their minds. However, personal one-on-one explanations and trust building with individual patients may lead to better success. This study identifies a specific sub population that seems to be an increased risk to believe that vaccines are dangerous. Parents of children diagnosed with an autism spectrum disorder, while we don't know the source of their fears, whether they be from the media, from parenting support groups, or even just directly from other parents of kids with ASD, we see from this study that these parents are at increased risk to believe that vaccines should be withheld or delayed. Given that pediatricians might want to spend more time probing the beliefs of parents of kids with ASD and working to create a better dialogue with them to correct those fears. Children with autism are at an increased risk for many issues all ready. Vaccine preventable diseases don't have to be among them.

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