

Vaccine-associated Paralytic Poliomyelitis in Immunodeficient Children, Iran, 1995–2008

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[Karen Hunter] Hello, I'm Karen Hunter. With me today is Olen Kew, Associate Director for Global Laboratory Science at the Centers for Disease Control and Prevention. We're talking about a paper in the July 2010 issue of CDC's journal, Emerging Infectious Diseases. The article looks at vaccine-associated paralytic poliomyelitis, or VAPP, in immune-deficient children in Iran. Welcome, Olen.

[Olen Kew] Thanks, Karen. It's great to be here. VAPP is an important issue in the global eradication of polio, and I'm happy to have a chance to discuss it.

[Karen Hunter] What is VAPP? Is it a very common illness?

[Olen Kew] VAPP is an infection caused by exposure to the live virus polio vaccine, which is given orally. It's a very rare event, but still happens often enough to be a public health concern. Back when the oral vaccine was used in the United States, before 2000, there would be about eight cases per year, and about 20 percent of those would be in persons who had primary immune-deficiencies---that is, they had defects in antibody production. Iran has a much smaller population than the U.S., so the number of cases there is less than one per year. If a person is known to have an immune-deficiency, that person would not be given the live virus vaccine, but in Iran, the first dose of polio vaccine is given at birth. That's why most of the cases reported in this paper occurred in very young infants. Their immune deficiencies weren't then known. The authors suggest that neonatal screening should be improved to reduce the risk to Iranian infants.

Many countries, including the U.S., no longer use a live virus vaccine so, depending on where you live, the risk of VAPP is extremely small. Unfortunately, that isn't true everywhere.

[Karen Hunter] Why is that?

[Olen Kew] The live virus vaccine is used in many developing countries because it's easy to deliver---it's given orally---and because it confers intestinal immunity that prevents person-to-person spread. However, as this paper from Iran shows, there will always be a risk that the weakened strains of the virus used in the vaccine will mutate into a form that can cause severe illness and even death. In addition, there can be a considerable time lag between when people are exposed to the virus and when they become ill. The virus can spend many months or years quietly replicating in the body before causing a person to become ill. In the paper, the times described ranged from a little over a month to nine months, from exposure to the vaccine to the onset of the symptoms, but there have been a few cases reported elsewhere of the infection taking more than 10 years to become apparent.

[Karen Hunter] Now you mentioned that the use of live virus vaccine has implications for the global campaign to eradicate polio. Why is that?

[Olen Kew] Well, the use of the live virus vaccine means that there could be a small, persistent reservoir of polio virus in the human population. We could eliminate all wild poliovirus in a region of the world and then have the disease return when someone who had the live virus vaccine remained infected for months or years after receiving it. That person could then infect other people around him or her.

[Karen Hunter] If a person did become ill with VAPP, how would the illness be transmitted from person-to-person?

[Olen Kew] Polio is an enteric infection, so the usual transmission route is fecal-oral – a person eats or drinks something that has been contaminated with the virus. In addition to vaccination, improving sanitation and personal hygiene to reduce exposure to contamination is an important part of the global polio eradication efforts.

[Karen Hunter] Thanks, Olen. I've been talking with CDC's Dr. Olen Kew about a paper that appears in the July 2010 issue of CDC's journal, *Emerging Infectious Diseases*. You can see the entire article online at www.cdc.gov/eid. If you'd like to comment on this podcast, send an email to eideditor@cdc.gov. That's eideditor – one word -- at cdc.gov. I'm Karen Hunter for *Emerging Infectious Diseases*.

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