

Editorial

## Pertussis Vaccine: Whole Cell Vs Acellular

Mohsin Masud Jan

Editor

The older vaccine for whooping cough that was phased out in the late 1990s is more effective than the current version of the vaccine, a new study contends.

Teenagers who received four shots with the older vaccine, called whole cell vaccine, before they were 2 years old were significantly less likely to become infected with whooping cough during a recent outbreak in California, compared to children who received all of their immunizations with the new vaccines, called the acellular vaccine. Teens who were vaccinated with the acellular vaccine appear to have a six times higher risk of (whooping cough) than teens who received four doses of the whole cell vaccine. And, the teens who received some whole cell vaccine and some acellular had about a four times higher risk than teens who received all whole cell vaccines, said the study's lead author, Dr. Nicola Klein, co-director of the Northern California Kaiser Permanente Vaccine Study Center, in Oakland.

Whooping cough, which is also known as pertussis, is a highly contagious respiratory infection. In 2012, the United States had the highest number of whooping cough cases since 1959 with more than 41000 infections and 18 deaths. Most of the deaths occurred among infants, according to the U.S. Centers for Disease Control and Prevention. The whole cell vaccine was used from the 1940s to 1990s, but was phased out due to potential side effects. The reason we switched away from the whole cell vaccine was that there were some safety concerns, such as high fevers, Klein explained.

The acellular vaccine was introduced in the 1990s, and has few side effects. However, in recent years, a number of studies have found that the newer vaccine doesn't seem to work for as long as the older vaccine. California experienced an outbreak of whooping cough in 2010 and 2011. This gave researchers the chance to see how effective the acellular vaccine was compared to the whole cell vaccine in teens who may have received all of their shots with one or the other vaccine, or possibly with both.

The study included teens born from 1994 to 1999 who got their initial four shots of whooping cough

vaccine before they were 2 years old at Kaiser Permanente Northern California. Of the study participants, 138 teens had confirmed whooping cough. They were compared to 899 teens who'd had a lab test that confirmed they didn't have whooping cough, and to 54339 matched control teens. The researchers found that the fewer number of whole cell vaccines a teen had received, the greater the risk of whooping cough.

Teens who had received all acellular vaccines had a 5.63 times greater risk of whooping cough than teens who'd gotten all whole cell vaccines. Teens who received both acellular and whole cell vaccines had a 3.77 times higher risk of whooping cough compared to those who had all whole cell vaccines. The whole cell vaccine may stimulate the immune response more, but there were a lot of safety concerns with that vaccine.

Dr. Kenneth Bromberg, director of the Vaccine Research Center and chairman of pediatrics at The Brooklyn Hospital Center in New York City, agreed that there's no going back to the whole cell vaccine because of its side effects. It is a moot point. We don't have whole cell vaccine anymore, he said. The acellular vaccine doesn't last as long as the whole cell vaccine, but it's not like it doesn't work. It does, he said. And it's a vaccine that's had almost all of the side effects removed. Bromberg said it's important to make sure that those who are most vulnerable are protected, and in the case of whooping cough that's usually infants. Newborns and babies in the first few months of life are the most likely to die from pertussis, he said. That's why the CDC recommends that pregnant women get the acellular vaccine in the last trimester of pregnancy.

According to the researchers, the way forward would be to develop a new vaccine. But, until then, right now, make sure your children receive all their vaccines and boosters on schedule. The acellular vaccine does work, just not for a long as we would've hoped. So, until a newer longer lasting vaccine is developed, the acellular vaccine available right now is our best shot at preventing Whooping Cough in our children.