Comparing Broad- and Narrow-Spectrum Antibiotics for Children with Ear, Sinus, and Throat Infections

Principal investigator
Jeffrey Gerber, MD, PhD

Organization
Children's Hospital of Philadelphia

What was the research about?
Antibiotics are the most commonly prescribed medicine in children. Narrow-spectrum antibiotics target a few types of bacteria. Broad-spectrum antibiotics target many types of bacteria. Both types work well to treat infections. But using broad-spectrum antibiotics when they're not needed can create antibiotic-resistant bacteria that are hard to treat. They may also have side effects, such as diarrhea or rash.

In this study, the research team compared narrow-spectrum and broad-spectrum antibiotics to treat ear, sinus, and throat infections in children.

What were the results?
- **Treating infections.** Narrow-spectrum antibiotics worked as well as broad-spectrum antibiotics to treat infections. Symptoms improved the same amount in three days.

- **Side effects.** Children who took narrow-spectrum antibiotics had fewer side effects than those who took broad-spectrum antibiotics.

- **Quality of life.** There were no differences in quality of life between children who took broad- or narrow-spectrum antibiotics.

What did the research team do?
The research team did two studies. In both studies, children were ages 6 months to 12 years.

In the first, the research team looked at health records for 30,159 children who used broad- or narrow-spectrum antibiotics to treat ear, sinus, or throat infections. Of the children, 63 percent were white, 16 percent were mixed or another race, 12 percent were black, and 8 percent were Hispanic. The average age was 5, and 52 percent were boys. The team looked at how often treatment worked and whether patients had side effects in the month after diagnosis.

The second study included 2,472 children. All children had an ear, sinus, or throat infection. The research team interviewed parents and children about quality of life, how long symptoms lasted, and side effects after the children got antibiotics. Of the children, 59 percent were white, 23 percent were black, 8 percent were another race, and 9 percent were Hispanic. The average age was 5, and 52 percent were boys. All were patients at one of 31 children's clinics in Pennsylvania or New Jersey.

Children, parents, and physicians helped plan and conduct the study.

What were the limits of the study?
Some children in the study may have had infections caused by viruses. Because antibiotics don't treat viruses, the results could differ if only children with infections caused by bacteria were in the study.

Future research could study the two types of antibiotics in children with confirmed infections caused by bacteria.
How can people use the results?
Doctors and parents can use these results to make decisions about the type of antibiotic to use.

To learn more about this project, visit www.pcori.org/Gerber094.