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Study finds resistant infections rising, with longer hospital stays for US children

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Infections caused by a type of bacteria resistant to multiple antibiotics are occurring more frequently in U.S. children and are associated with longer hospital stays and a trend towards greater risk of death, according to a new study published in the *Journal of the Pediatric Infectious Diseases Society*. Previously acquired mostly while children were already in the hospital, the new findings also suggest the infections—caused by bacteria from the Enterobacteriaceae family that are resistant to multiple drugs—may be spreading more often in the community.

"Antibiotic resistance increasingly threatens our ability to treat our children's infections," said study author Sharon B. Meropol, MD, PhD, of University Hospitals Rainbow Babies and Children's Hospital in Cleveland and Case Western Reserve University School of Medicine. "Efforts to control this trend are urgently needed from all of us, such as using antibiotics only when necessary, and eliminating agricultural use of antibiotics in healthy animals."

In the retrospective study, researchers analyzed data from 48 children's hospitals throughout the U.S., focusing on approximately 94,000 patients under the age of 18 who were diagnosed with Enterobacteriaceae-associated infections between 2007 and 2015. The proportion of these infections caused by bacteria that were resistant to multiple antibiotics increased from 0.2 percent in 2007 to 1.5 percent in 2015, a more than 700 percent increase in prevalence over the eight-year period.

Bacterial infections resistant to multiple drugs are especially concerning

in children, for whom there are a limited number of stronger antibiotics currently approved for use compared to adults, putting kids at higher risk for worse outcomes. In the study, children with Enterobacteriaceae infections resistant to multiple antibiotics had hospitals stays that were 20 percent longer than patients with infections that were susceptible to antibiotics, the researchers found. The results also suggest a greater mortality risk among pediatric patients infected with the resistant strains, although the increased odds for death were not statistically significant.

Most of the resistant infections were present when the children were admitted to the hospital, suggesting the bacteria may be increasingly spreading in the community. Older kids, children with other health conditions, and those living in the Western U.S. were more likely to have the infections, the study found. The results build on previous research reporting rising rates of these infections in adults and outbreaks in hospitalized children, especially in less-developed countries in Latin America and Asia, where antibiotics are available over the counter.

Future research should focus on better ways to limit the transmission of resistant Enterobacteriaceae bacteria, including between hospitals and long-term care facilities and their communities, in addition to the development of new antibiotics that are safe and effective to use in children, Dr. Meropol said. "While the march of antibiotic resistance seems inexorable, informed and rigorous efforts to reverse this trend have been successful for other types of organisms, and are urgently needed within this context."

Fast Facts

* Infections caused by a type of bacteria resistant to multiple antibiotics are increasing in U.S. children and are associated with longer hospital stays and a trend towards greater risk of death.

* Caused by members of the Enterobacteriaceae family of bacteria that are resistant to multiple antibiotics, these infections may be increasingly spreading in the community, not just in hospitals.

* Efforts to control rising antibiotic resistance, including the appropriate use of antibiotics in humans and animals, and the development of new antibiotics, are urgently needed.

Provided by Pediatric Infectious Diseases Society

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