

Hospitalized Children Who Carry MRSA at Risk for Full-Blown Infections

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A Johns Hopkins Children's Center study of more than 3,000 hospitalized children shows that those colonized but not sick with the antibiotic-resistant bacterium methicillin-resistant *Staphylococcus aureus* (MRSA) are at considerable risk for developing full-blown infections.

The study, described online in the Aug. 30 issue of the journal *Clinical Infectious Diseases*, is believed to be the first of its kind to measure the risk of invasive MRSA infection in children who carry the germ but have no symptoms. The findings show that the risk is far from theoretical and underscore the pivotal role hospitals can play in curbing the spread of a pathogen that each year causes more than 18,600 deaths in the United States, the Hopkins team says.

The study involved 3,140 children admitted to the Hopkins Children's pediatric intensive care unit (PICU) between 2007 and 2010. Routine screening showed that 153 arrived at the hospital already colonized with MRSA. Compared with noncarriers, these patients were nearly six times more likely to develop invasive MRSA infections after discharge and eight times more likely to develop them while still hospitalized.

A tiny subset of children — 15 in all — came to the hospital MRSA-free but acquired the bacterium while in the PICU. Seven of the 15 children who became colonized with MRSA in the PICU went on to develop full-blown infections, six of whom while still in the hospital. The finding, the researchers say, highlights the risk of MRSA spread among vulnerable patients.

"Hospitalized children colonized with MRSA have a very real risk for invasive infections, both while in the hospital and once they leave, so mitigating this risk is a serious priority," says lead investigator Aaron Milstone, MD, MHS, a pediatric infectious disease specialist at Hopkins Children's.

Many hospitals, including the Johns Hopkins Hospital, already screen critically ill patients for MRSA upon admission and weekly thereafter, but there are no uniform protocols or even standardized guidelines on how, if at all, to treat these patients once identified.

"We need standardized protocols on ways to protect MRSA carriers from developing invasive infections while also minimizing its spread to others. In the meantime, there are certain things healthcare providers can do to protect all patients," Milstone says.

Rigorous hand washing among healthcare providers and isolating MRSA carriers in private rooms can help reduce the spread of the pathogen from carriers to MRSA-free patients, but additional steps may be needed to minimize that risk even further, the researchers say.

Preemptively "decolonizing" carriers with a topical antibiotic in the nostrils and bathing with antiseptic solution may reduce the risk for transmission to others while also cutting the carrier's own risk of full-blown infection, Milstone adds.

The researchers emphasize that preemptive treatment may be especially beneficial in hospitalized children because their immune systems are typically weakened by illness, making them far more vulnerable to invasive disease than healthy MRSA carriers.

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