Memo to docs: Mind the nonresistant bugs too

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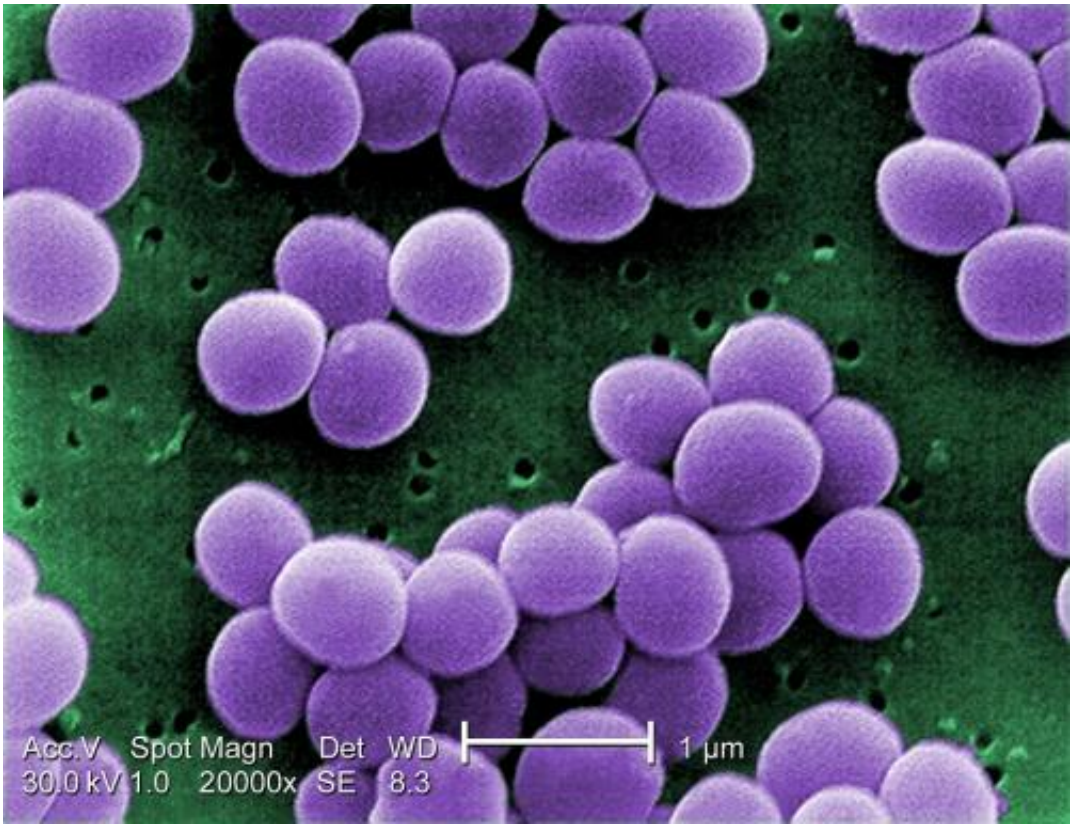

Scanning electron micrograph of S. aureus; false color added. Credit: CDC

Drug-resistant bacteria have dominated news headlines and the attention of public health experts, but a study by experts at the Johns Hopkins Children's Center and the Duke Clinical Research Institute shows that nonresistant bacterial infections occur far more often and can take just

as great a toll on newborns as their drug-resistant cousins.

The research, described in the Oct. 19 edition of *JAMA Pediatrics*, found that nonresistant forms of the common *Staphylococcus aureus* bacterium affect more than twice as many babies as antibiotic-resistant strains and have just as high a mortality rate.

The results, the researchers say, sharply contradict well-established findings among adults in whom drug-resistant infections cause death at a much greater rate than nonresistant forms. Scientists suspect the discrepancy may stem from differences between young and old immune systems, among other factors.

"Just because a bug responds well to antibiotics doesn't mean it's any less deadly," says senior investigator Aaron Milstone, M.D., M.H.S., an infectious disease specialist at the Johns Hopkins Children's Center. "If not detected and treated early, invasive bloodstream infections with garden-variety staph can wreak just as much damage on a newborn's body as antibiotic-resistant forms."

Experts estimate that more than 5,000 newborns in the United States develop invasive staph infections each year, which are especially prevalent in premature infants and those with compromised immune systems.

Staph infections that have developed escape mechanisms to evade treatment with first-line drug of choice methicillin are known as methicillin-resistant *S. aureus* (MRSA). That ability, researchers say, can overshadow the danger of the more common forms of the bacterium known as known as methicillin-susceptible *S. aureus* (MSSA).

According to Milstone, many U.S. neonatal intensive care units (NICUs) already screen rigorously for drug-resistant bacteria and take a set of

precautions to reduce the risk of infection and transmission. However, researchers say, the new findings suggest that such protocols and measures may need to be adopted for all forms of staph, not just against those impervious to methicillin.

The findings, based on medical records from more than 3,800 infants with invasive staph infections treated at NICUs across the United States between 1997 and 2012, reveal nearly equal death rates following the invasive infections MSSA and MRSA.

Specifically, the overall death rates of infants with MSSA and MRSA infections were 10 percent and 12 percent respectively, but significantly, the researchers say, MSSA was found to cause 2.5 times as many infections as MRSA among newborns, with 2,474 babies acquiring the drug-sensitive strain, compared with 926 contracting a drug-resistant strain during the study period.

The researchers caution that invasive infections with either organism remain exceedingly rare—0.4 percent of newborns in the study were infected with either strain.

"We have made strides toward detecting drug-resistant organisms and reducing their spread," says study author P. Brian Smith, M.D., M.P.H., M.H.S., a neonatologist at Duke University Medical Center and a researcher at the Duke Clinical Research Institute. "These findings reinforce the continued need to do everything to prevent all types of infections in the nursery."

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