

Use of antibiotics in newborns varies widely among California hospitals, study finds

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Researchers at the School of Medicine and their collaborators found that some hospitals in the state rarely administer antibiotics to newborns, while others give antibiotics to nearly half of the newborns in their care.

The rate at which California's newborns receive [antibiotics](#) varies

dramatically depending on the hospital, a study led by researchers at the School of Medicine has found: Percentages were as low as 1.6 and as high as 42.5.

Researchers compared data from 121 California hospitals that have neonatal intensive care units, looking at 326,845 babies born during 2017. A paper describing the work was published Oct. 22 in *Pediatrics*.

They calculated the percentage of newborns at each hospital who received antibiotics, as well as the number who received antibiotics per proven case of sepsis, or [bloodstream infection](#).

The number of babies receiving antibiotics ranged from 11.4 to 335.7 infants treated per case of early-onset sepsis, defined as sepsis diagnosed within two days of birth. (These rates were calculated based on the entire population of babies in the study, not just the ill or premature infants cared for in hospitals' neonatal intensive care units.)

The rates of antibiotic use were not linked to their rates of newborn sepsis, indicating that there does not seem to be a medical explanation for the differences.

"We have an extremely low rate of actual infection, and we have loads and loads of patients, even after four or five years of antibiotic stewardship work, being treated with antibiotics for reasons we don't understand," said Jeffrey Gould, MD, the study's senior author and a professor of neonatal and developmental medicine. The lead author is Joseph Schulman, MD, of the California Department of Health Care Services.

Since 2014, California clinicians and researchers have been trying to reduce unnecessary antibiotic use in newborns. Giving newborns unneeded antibiotics may put them at risk for developing diseases such

as asthma, and it contributes to increasing antibiotic resistance among bacteria that cause infections. Research published last year showed that California hospitals are making progress in reducing antibiotic use for newborns, but the new study shows there is still more work to do, Gould said.

Holdover from prior era

Antibiotic overuse is a holdover from a prior era of neonatology, when many newborns received prophylactic antibiotics because of concerns about whether sepsis could be detected quickly enough in babies.

"In the past, we were very crude in terms of our perception of the subtleties of the disease," Gould said.

Today, after decades of research, doctors have a much better understanding of the early signs of sepsis in newborns, including those born after full-term pregnancies and those who arrive prematurely. Watching and waiting for these signs before starting antibiotics is now an accepted approach, along with culturing a [blood sample](#) from babies suspected of having [sepsis](#) to confirm if they are actually experiencing an infection.

Research has also indicated that caregivers can stop giving antibiotics once a baby improves, or if their blood culture results are free of infection, even if they haven't completed the full course of medication initially prescribed. But these changes have been slow to catch on.

Using new data

Gould and his colleagues at the California Perinatal Quality Care Collaborative are using the data from the study as a springboard for

helping hospitals that overprescribe antibiotics.

"We're figuring out what to do if a group is challenged, and we're also starting to identify the teams that are high achievers to identify the things that allow them to perform well," he said. "We want to know what's driving quality and what's holding people back, so we can understand what we have to do to change this."

Other Stanford co-authors of the study are William Benitz, MD, professor of neonatal and developmental medicine; Jochen Profit, MD, associate professor of neonatal and developmental medicine; and Henry Lee, MD, associate professor of neonatal and developmental medicine.

Provided by Stanford University Medical Center

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