

Antibiotics may be overused in many neonatal ICUs, study finds

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Big variation seen in prescribing rates, despite little difference in infection rates.

(HealthDay)—Antibiotics appear to be overused in many neonatal intensive care units, new research suggests.

Just how overused these medications were varied widely, the study authors found. Some neonatal [intensive care](#) units (NICUs) gave [antibiotics](#) to [newborns](#) at a rate 40 times greater than rates at other NICUs, even when there was little difference in infection rates.

"The results of this study aren't surprising. We have reams of data showing that antibiotics are overused in multiple other settings," said Dr. Clay Jones, a pediatrician specializing in newborns at Newton-Wellesley Hospital in Massachusetts, who was not involved in the study. "The most striking finding is the degree of variance in the use of antibiotics between facilities."

The findings were published online April 20 in the journal *Pediatrics*.

In the study, California health officials analyzed the medical care of more than 52,000 infants in 127 neonatal intensive care units across the state in 2013.

Antibiotic use in these units ranged from 2.4 percent of patient-days to 97 percent of patient-days. These percentages represent the number of days out of 100 that a baby received at least one antibiotic or antifungal medication. Approximately half the [neonatal intensive care](#) units used antibiotics less than 25 percent of patient-days, and half used more.

However, antibiotic use in the NICUs did not correspond to the rates of infections, surgical cases, infant deaths or cases of necrotizing enterocolitis, a condition in which parts of the digestive system decay. So, the researchers concluded that many antibiotics are likely being used when they are not needed.

A major reason for the wide variation in antibiotic rates is that deciding to prescribe antibiotics depends largely on an individual doctor's ability to determine the likelihood that an infant has a life-threatening infection, Jones explained.

"In all areas of medicine, treatment decisions come down to an assessment of risks versus benefits, and often there is a subjective component to this assessment," Jones said. "Most instances where antibiotics are used in newborns, we don't know what we are treating, but something has led us to have concern that the child is infected."

Doctors rely on their training and experience, but their emotions and thinking biases may lead them to make different decisions from one another, Jones said. Blood tests can also have false negatives, where the lab work shows no infection but there really is one.

When a baby has a major infection, it can be "catastrophic," Jones said, so doctors may also err on the side of caution by giving antibiotics. However, that cautionary treatment also has risks.

"Many of the potential adverse outcomes of antibiotics are not immediate, so the prescribing physicians in these facilities may not be exposed to them frequently," Jones said. "Thus, there may be a false perception regarding the risk of unnecessary antibiotic use."

Giving antibiotics to newborns may actually increase the risk of infection, death and necrotizing enterocolitis, the study authors explained. Antibiotic use is also linked to a higher risk of asthma later in life, can affect the balance of bacteria in the digestive tract, and contributes to the rise of antibiotic-resistant bacteria.

"These so-called multidrug-resistant pathogens are themselves associated with increased illness, deaths, cost of care and length of hospital stay," said study author Dr. Joseph Schulman, director of NICU quality measurement and improvement for California Department of Health Care Services. "There are benefits and harms when treating suspected but unproven [infection](#), and these may vary among different newborns."

More research could help reveal how doctors are making their decisions, but solving the problem is not so simple, Jones said.

"Unfortunately, this isn't a situation where firm recommendations are possible," Jones said. "These aren't well toddlers with the sniffles. With current technology, it is difficult to see how the subjective component of decision-making can be taken out of the equation."

Parents should always speak up to ask why antibiotics are being used, if they are needed and if they can be stopped, Jones suggested. But that usually is a lot to ask of anxious, exhausted parents with a child in NICU,

he said.

"The responsibility of curbing excessive use of antibiotics falls on the physicians," Jones said. "Research such as this, even if not surprising, is still beneficial. We need to be made aware of our shortcomings in order to focus on improving them."

More information: To learn more about antibiotic use, go to the [American Academy of Family Physicians](#).

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