

Short antibiotic courses safer for breathing-tube infections in children

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Short courses of antibiotics appear just as effective as longer ones - and a great deal safer - in treating respiratory infections that might cause pneumonia in children on temporary breathing devices, according to a Johns Hopkins Children's Center study published online May 3 in *Clinical Infectious Diseases*.

In the study's analysis of 150 [children](#) treated with [antibiotics](#) for respiratory infections while on a ventilator, longer antibiotic courses did not only fail to confer extra protection against full-blown pneumonia when compared with shorter therapy, but also considerably increased a child's risk for developing drug-resistant infections within a month.

To rein in the spread of bacterial drug resistance, the researchers advise clinicians to carefully evaluate the need for antibiotics in the first place and to use antibiotics for the shortest time needed to achieve clinical effect.

"Our study underscores the old physician maxim to first do no harm," said lead investigator Pranita Tamma, M. D., an infectious disease specialist at the Johns Hopkins Children's Center. "Longer treatment is not always more effective, and it could be downright dangerous."

Children on ventilators often develop respiratory infections, or tracheitis, because the breathing tubes allow bacteria an easy entry into the [respiratory tract](#). These children need antibiotics promptly to prevent the infection from spreading into the lungs, but the optimal length of

treatment has been unclear.

"We hope that our findings will help clear up some of the confusion and discourage physicians from preemptively opting for longer treatments," Tamma said.

The Johns Hopkins investigators analyzed three years of medical records involving more than 1,600 children, age 18 and younger, who spent at least two days on a [breathing tube](#). Of them, 150 got antibiotics for ventilator-related upper respiratory infections; only 118 of them, however, met clinical criteria for such infections, and 32 were treated merely on suspicion of infection.

Of the 82 children with actual infections who were treated with antibiotics for more than a week, 23 percent developed pneumonia, compared to 20 percent of the 36 children who got antibiotics for seven days or fewer. Children who received the lengthy antibiotic course were, however, five times more likely, on average, to develop drug-resistant infections following the treatment. Children who got multiple antibiotics were three times as likely to do so.

Although the length of antibiotic use made no statistical difference in pneumonia risk, the length of intubation did. Children whose tubes were left in after diagnosis of infection and start of therapy were four times more likely to progress to pneumonia than children taken off the ventilator promptly after diagnosis and start of treatment, the researchers found. The finding emphasizes the need for careful daily reassessment of each child's need to stay on a [ventilator](#), they added.

Past research has shown that more than one-third of antibiotic prescriptions for upper respiratory infections in the intensive care unit may be unwarranted, the investigators noted.

"Beyond fueling drug resistance, antibiotics can cause serious side effects and add to healthcare costs. We, as physicians, should ask ourselves two critical questions any time we prescribe them: 'Does this patient really need antibiotics?' If so, 'what is the shortest course of treatment that will achieve clinical benefit?'" said senior investigator Sara Cosgrove, M.D., an infectious disease specialist at Johns Hopkins.

More information: *Clinical Infectious Diseases* journal
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