
Multidisciplinary Initiative Reduces Airway Infection in Pediatric Intensive Care Patients

An initiative that combines a multidisciplinary health care approach with a range of preventive measures could cut the rate of a common airway infection among children in intensive care by more than half, a new study suggests. The research, led by a team at Nationwide Children's Hospital, appears in the June issue of the journal *Pediatric Critical Care Medicine*.

Ventilator-associated tracheobronchitis—VAT for short—is a lower respiratory infection caused by a buildup of bacteria in the airway. Ordinarily, these small organisms are easily cleared, but being on a ventilator with an artificial airway in place disrupts the body's natural defenses. This, along with other factors, increases the risk of VAT, says Jennifer Muszynski, lead study author and a critical care physician and principal investigator in the Center for Clinical and Translational Research in The Research Institute at Nationwide Children's.

Historically, VAT infections have not been tracked as closely as another common airway infection known as VAP—ventilator-associated pneumonia—which has been monitored by the Centers for Disease Control and Prevention in Atlanta for more than a decade and is a common target for quality improvement initiatives in hospitals across the country.

A program instituted in 2007 at Nationwide Children's to prevent VAP in ventilated pediatric intensive care patients led to a dramatic decline in VAP rates. However, physicians found that many children still required treatment for ventilator-associated airway infections that did meet the CDC criteria for VAP. So, in 2010, Muszynski and her colleagues decided to adapt the VAP prevention program to study its effectiveness on reducing VAT.

The new plan included a bundle of patient care components. Ventilated patients' beds were raised to a 30-degree angle at the head, which helps reduce bacteria in the airway. Patients were given an anti-bacterial oral rinse every four hours, and respiratory therapists followed a strict process for suctioning secretions from patients' mouths and throats. A multidisciplinary team of respiratory therapists, physicians and nurses met regularly to monitor patients' progress.

After 18 months, the cases of VAT had dropped by 53 percent compared to pre-intervention rates.

"The multidisciplinary approach that was key to this success," Muszynski says, adding that because each team member interacted differently with the patient and brought a unique perspective, barriers to bundle implementation could be identified and solved quickly.

This is among the first published studies on VAT prevention in pediatric patients. While there is good information to be mined from the data, Muszynski says that this only grazes the surface of the problem.

"We still want to understand why some children get VAT and others don't, or why one child will have a mild case while another gets very sick, even when both have the benefit of the same preventive protocol," says Muszynski, who also is an assistant professor of pediatrics at The Ohio State University College of Medicine. "There are many more questions we'd like to answer."

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