



## Study: Preventing Ventilator-Associated Events



Nearly 800,000 hospital patients undergo mechanical ventilation in the U.S. each year due to different illnesses such as stroke, brain injury or pneumonia. Going on a ventilator can often be the difference between life and death for some patients. While a ventilator does provide assistance in breathing, it is also associated with certain risks that can lead to complications or ventilator-associated events such as blood clots, lung damage or ventilator associated pneumonia. This in fact, is believed to be one of the most commonly acquired infections in the ICU.

Recently, a paper was published in *Critical Care Medicine* that discusses findings from a study conducted by researchers at the Johns Hopkins Armstrong Institute of Patient Safety and Quality. Findings from this study demonstrate that health care providers can take steps to curb these ventilator-associated events. This is the largest study of its kind that shows that complications from mechanical ventilation or ventilator associated events are preventable.

For the purpose of the study, the researchers included 56 ICUs at 38 hospitals in Maryland and Pennsylvania. The goal of the research was to improve adherence to evidence-based practices, unit teamwork and safety culture, explains Sean Berenholtz, MD, professor of anesthesiology and critical care medicine at the Johns Hopkins University School of Medicine and a faculty member in the Armstrong Institute.

The researchers trained and coached quality improvement teams and focused on recommended interventions by the Society for Healthcare Epidemiology of America and the Society of Critical Care Medicine for patients on ventilators. These recommendations include elevating the head of the patient's bed, suctioning a patient's mouth tube, performing oral care, such as tooth brushing and using chlorhexidine and performing spontaneous awakening and breathing trials by reducing narcotics and sedatives and screening the patient for improvement. The teams were also trained in the implementation of the Agency for Healthcare Research and Quality's (AHRQ) Comprehensive Unit-based Safety Program, or CUSP, in their units.

During the period of the study, the total number of ventilator-associated events in the ICUs decreased from 7.34 cases per 1000 patient ventilator days to 4.58 cases after 24 months. This translated into a reduction of nearly 38%. The number of infection-related ventilator-associated complications also decreased from 3.15 to 1.56 cases. This was a reduction of over 50%. Possible and probable ventilator-associated pneumonia cases dropped from 1.41 to .31 cases per 1000 ventilator days. This translated into a reduction of 78%.

"These complications prolong the duration of mechanical ventilation, and they keep patients in the hospital longer," Berenholtz says. "This, in turn, leads to higher complications, higher mortality, higher lengths of stay

and higher costs. So decreasing these complications is a national priority and helps our patients recover sooner."

Source: [Johns Hopkins Medicine](#)

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