

# **Intensive care units' prevention of pneumonia in critically-ill patients generally strong**

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Mayo Clinic researchers found that the frequency with which critically-ill patients developed ventilator-associated pneumonia (VAP) is approximately the same at a multidisciplinary medical center such as Mayo Clinic compared to the average VAP-risk rate for 211 hospitals in the National Healthcare Safety Network (NHSN). This is good news for patients because it suggests that care levels are generally strong across the U.S. in intensive care units, which is where the sickest patients -- many of them elderly -- are treated. This is true despite variety in levels of care offered by individual hospitals.

The study also is helpful because it identified the fact that the VAP-risk rate for patients in a specific kind of intensive care unit, the trauma intensive care unit (TICU), was lower at Mayo Clinic, as compared to the NHSN average. This kind of finding is what the U.S. Centers for Disease Prevention and Control (CDC) intended when it made the NHSN data available in a June 2007 report. In that report, CDC analysts instructed hospitals to use the data to guide local prevention strategies and other quality improvement efforts aimed at reducing infection rates.

The Mayo group presented its findings this week at the American Thoracic Society's 2008 International Conference in Toronto. The data showed that the Mayo Clinic risk rate for VAP in intensive care units (ICU) for trauma patients averaged 3.4 per 1,000 days of mechanical ventilation. This compares to the VAP average of 10.2 per 1,000 days in

trauma ICUs participating in the NHSN.

The reason for this variation is not known, and the difference needs to be validated through further study. But these preliminary results identify a need for improvement to lower the 10.2 risk rate.

“The topic is an important one to study because developing VAP is a potential risk for all critically-ill patients who must be on an invasive mechanical ventilator greater than 48 hours,” says Mayo lead author Ahmed Mahmoud, M.B.B.S.

“As the demographics of this country change, the number of frail elderly who end up hospitalized and needing ventilation in a TICU is likely to increase,” adds senior author Bekele Afessa, M.D., of Mayo’s pulmonary and critical care medicine group. “We want to do our best to eliminate the potential for any additional disease burden to patients. Understanding the risk of VAP in all ICU settings is a step toward that.”

The Mayo study is the first to compare VAP-risk rates at (NHSN) hospitals to Mayo Clinic’s experience as a single advanced medical center with integrated intensive care units and a unified approach to infection control. Mayo Clinic researchers studied 206 patients treated at Mayo Clinic’s various ICUs between February and August 2007, and who consented to participate in the study.

The Mayo Clinic comparison also showed that:

- The VAP-risk rate varies depending on the ICU medical specialty, from a low of 2.8 at Mayo Clinic’s vascular/thoracic surgery intensive care unit and 5.7 in the analogous units of NHSN to a high of 10.2 per 1,000 ventilator days in NHSN trauma intensive care units.

- The Mayo VAP-risk data range from 2.8 to 8.2 across various kinds

of ICUs at Mayo Clinic; 2.8 for vascular and thoracic surgery, 8.2 for neurology and 4.9 for cardiac surgery.

-- Of the 19 bacteria isolated from the patients, the Mayo study found that the most common pathogen causing VAP was *Pseudomonas aeruginosa*. This information is helpful in determining the best antibiotic treatment for VAP. Acting on it could perhaps help prevent levels of VAP elsewhere.

Source: Mayo Clinic

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