US hospital adverse events drop significantly

July 12 2022, by Lauren Woods

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The largest medical record-based study ever of adverse events suffered by hospitalized patients in the U.S., published in the July 12 issue of *JAMA*, reports a significant decrease in the rate of adverse events over the last decade. The study findings hold promise for both the safety of

patients and the effectiveness of hospital patient safety initiatives.

In this study, the de-identified medical records of 244,542 patients across 3,156 U.S. hospitals over 10 years were examined. Researchers used the Medicare Patient Safety Monitoring System (MPSMS), a surveillance system managed by the Agency for Healthcare Research and Quality (AHRQ) designed to assess 21 in-hospital adverse events in patients with the key conditions of acute myocardial infarction (heart attack), heart failure, pneumonia, major surgical procedures, and all other conditions. Relative risks were adjusted for patient age, sex, race ethnicity, specific comorbidities, and each hospital's characteristics.

The researchers report the rate of adverse events declined significantly between 2010 and 2019 in patients admitted for acute myocardial infarction, heart failure, pneumonia, and major surgical procedures. Some of the adverse events captured included adverse drug events, hospital-acquired infections, procedural complications, pressure ulcers and falls.

"Our study is the biggest and most comprehensive assessment of adverse events in patients hospitalized in the U.S. that is based on detailed analysis of the medical record as opposed to billing data, which can be misleading," said co-author Dr. Mark Metersky, professor of medicine at UConn School of Medicine and chief of the Division of Pulmonary, Critical Care and Sleep Medicine at UConn Health. "There has been an improvement in patient safety in U.S. hospitals during the 10 years we studied. Our data shows that the major safety improvement efforts made by our country and our hospitals seems to be paying off."

Researchers evaluated the in-hospital trends in the number of adverse events per 1,000 hospitalizations. For example, adverse events among patients who experienced heart attacks declined significantly over a decade from 218 in 2010 to 139 per 1,000 discharges in 2019; in heart

failure patients, adverse events dropped from 168 to 116; in pneumonia patients from 195 to 119; and in major surgery patients, from 204 to 130. However, for those with other conditions there was no observed change in the number of adverse events in the same time period; however, reductions were seen in the first four groups and this fifth group as well when comorbidities and other factors, such as the age of patients, were taken into account.

Interestingly, the researchers observed larger improvements in the adverse event rate in older patients than younger ones, and there were few apparent differences in risk based on a patient's race, ethnicity, sex or region of care in the U.S. All groups saw similar reductions. However, those patients who experienced adverse events throughout the period of study had substantially higher mortality rates and longer lengths of stays than those that did not experience an adverse event.

More information: Noel Eldridge et al, Trends in Adverse Event Rates in Hospitalized Patients, 2010-2019 *JAMA*, (2022). DOI: 10.1001/jama.2022.9600

Provided by University of Connecticut