Association Among ICU Congestion, ICU Admission Decision, and Patient Outcomes

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Resumen

Objectives: To employ automated bed data to examine whether ICU occupancy influences ICU admission decisions and patient outcomes.

Design: Retrospective study using an instrumental variable to remove biases from unobserved differences in illness severity for patients admitted to ICU.

Setting: Fifteen hospitals in an integrated healthcare delivery system in California.

Patients: Seventy thousand one hundred thirty-three episodes involving patients admitted via emergency departments to a medical service over a 1-year period between 2008 and 2009.

Interventions: None. Measurements and Main Results: A third of patients admitted via emergency department to a medical service were admitted under high ICU congestion (more than 90% of beds occupied). High ICU congestion was associated with a 9% lower likelihood of ICU admission for patients defined as eligible for ICU admission. We further found strong associations between ICU admission and patient outcomes, with a 32% lower likelihood of hospital readmission if the first inpatient unit was an ICU. Similarly, hospital length of stay decreased by 33% and likelihood of transfer to ICU from other units including ICU readmission if the first unit was an ICU decreased by 73%.

Conclusions: High ICU congestion is associated with a lower likelihood of ICU admission, which has important operational implications and can affect patient outcomes. By taking advantage of our ability to identify a subset of patients whose ICU admission decisions are affected by congestion, we found that, if congestion were not a barrier and more eligible patients were admitted to ICU, this hospital system could save approximately 7.5 hospital readmissions and 253.8 hospital days per year. These findings could help inform future capacity planning and staffing decisions.

Palabras clave

Palabras clave de autor:admission decision; hospital bed capacity; length of stay; quality of health care; readmission

KeyWords Plus:INTENSIVE-CARE-UNIT; MORTALITY; SURVIVAL; RISK

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