

Physician's Case Volume of ICU Pneumonia

Admissions and In-hospital Mortality

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Abstract

RATIONALE: Although several studies have investigated volume-outcome relationships for surgical procedures, there has been no such study of intensive care unit (ICU) patients admitted for pneumonia. **OBJECTIVES:** This study examines associations between in-hospital mortality of ICU-admitted pneumonia patients and their attending physician's case volume. **METHODS:** We used 2002-2004 claims data from Taiwan's National Health Insurance for all 87,479 adult ICU admissions for pneumonia. Patients were assigned to one of four groups, on the basis of their physician's ICU pneumonia case volume (low volume, <36 cases; medium volume, 37-114 cases; high volume, 118-314 cases; and very high volume, >=315 cases). Generalized estimating equations (conditional on hospital, and unconditional) were used, adjusting for physician demographics and specialty, hospital characteristics, patient characteristics (including clinical severity and comorbidities), and physician-level random effect (clustering effect) to assess whether physicians' case volume predicts in-hospital mortality. **MEASUREMENTS AND MAIN RESULTS:** In-hospital mortality systematically declined with increasing physician case volume: 14.7, 14.3, 11.4, and 8.1% from low-volume to very-high-volume groups. Adjusted unconditional odds of mortality among low-volume physicians' patients were 2.04 times those of very-high-volume physicians, 1.35 times that of high-volume physicians, and 1.09 times those of medium-volume physicians (all $P < 0.001$). The relationship is sustained when the odds are estimated conditional on hospital, when initial 5-day mortality is separated from 30-day mortality, and when pulmonologists' and critical care specialists' patients are studied separately. **CONCLUSIONS:** Physician volume significantly predicts inpatient mortality among ICU patients with pneumonia. Detailed study of clinical approaches, decision algorithms, and treatment plans of high-volume physicians is recommended to identify possible mediating factors in this phenomenon.