

Nighttime intensivist staffing and mortality in the ICU

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Nighttime intensivist physician staffing in intensive care units (ICUs) with a low-intensity daytime staffing model is associated with reduced mortality, according to a new study published in the *New England Journal of Medicine* and presented at the American Thoracic Society International Conference in San Francisco. The same study showed that nighttime intensivists were not associated with reduced mortality among ICUs that used a high-intensity daytime staffing model.

Intensivists are physicians that are specially trained in the care of critically ill [patients](#). Previous studies show mortality is lower in ICUs in which intensivists manage or co-manage patients during the day (so-called "high-intensity" ICUs), while mortality is higher in ICUs with optional or no intensivist involvement (so-called "open" ICUs). This finding has led many hospitals to expand the intensivist presence in their ICUs, to the point of hiring intensivists to work around the clock.

"The role of 24-hour intensivist staffing as a means of improving healthcare quality has stimulated considerable debate, but is not well-studied," said Jeremy Kahn, MD MS, associate professor of [critical care medicine](#) and [health policy](#) and management at the University of Pittsburgh. "Our study indicates that 24 hour intensivists are likely to improve patient outcomes only in some circumstances. ICUs with low-intensity daytime staffing, the most common staffing model in the United States, have better outcomes when intensivists are also present at night. Nationally two-thirds of ICUs have no intensivists at night, so expanding the role of intensivists in these ICUs could translate into

improved healthcare quality."

"Equally important, we found that ICUs with high-intensity daytime staffing did not share the same benefit from [nighttime](#) intensivists," said Kahn. "These ICUs, which frequently already have residents and other trainees in the ICU at night, saw no [mortality reduction](#) from the addition of night-time intensivists. This shows that the movement to expand intensivist presence in these hospitals may be premature, especially since intensivists are in relatively short supply."

The research team studied 65,752 patients admitted to 49 ICUs in 25 hospitals participating in the Acute Physiology and Chronic Health Evaluation (APACHE) clinical information systems in 2009-2010.

Of the 49 ICUs studied, 12 had nighttime intensivist coverage. Among ICUs with low-intensity daytime staffing, nighttime intensivist staffing was associated with lower odds of risk-adjusted hospital mortality (odds ratio, OR: 0.62; $p=0.04$). Among ICUs with high-intensity daytime staffing, nighttime intensivist staffing was not associated with any risk-adjusted mortality benefit (OR: 1.08; $p=0.78$). Similar relationships were observed in several pre-specified subgroups, including patients with active treatment on admission, mechanically ventilated patients, patients admitted at night, patients with the highest severity of illness and septic patients.

"Interest in 24-hour intensivist staffing has grown from the observation that daytime intensivist-staffed critical care units are associated with improved [patient outcomes](#)," said Dr. Kahn. "In light of this finding, the critical care community, hospitals, insurance providers and legislators have struggled with the issue of staffing expansion, as empirical evidence of additional benefit from nighttime coverage is limited to two single center studies that had mixed results. This investigation is the first large multi-center study of well-characterized patients and ICUs to

address this important question."

Dr. Kahn also noted that intensivists may be associated with benefits that were not measured and might also reduce mortality for a small number of very sick patients such as those in severe shock or cardiac arrest.

"Reducing [mortality](#) is only one reason to adopt 24-hour intensivist staffing," Kahn said. "Hospitals wishing to invest in a nighttime intensivist might still do so in order to improve care at the margins, even if no impact is discernable for patients on average."

More information: "Intensivist Staffing And Mortality In Critically Ill Patients" (Session B13, Monday, May 21, 2012, Room 3000-3002-3004, Moscone Center; Abstract 31340)

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