

Risk of hospital patient mortality increases with nurse staffing shortfalls, study finds

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(PhysOrg.com) -- Nurses are the front-line caregivers to hospital patients, coordinating and providing direct care and delivering it safely and reliably. The goal for any hospital is to ensure that each of its patient-care units has an adequate number of nurses during every shift.

Ideally, the proper number of hours nurses work — known as the "target level" — should be adjusted each shift, depending on the ebb and flow of patients and their need for care. Too many nurses can be costly for hospitals; too few can put patients' health in danger.

In a new study, a team of researchers from the UCLA School of Public Health, Mayo Clinic and Vanderbilt University has determined that patients' mortality risk rises as the number of below-target nursing shifts they are exposed to increases. The study also found that when nurses' workloads increase during shifts because of high patient turnover, mortality risk also increases.

The findings appear in the March 17 edition of the *New England Journal of Medicine*.

For the study, first author Jack Needleman, a professor of health services at UCLA's School of Public Health, and his colleagues analyzed the records of nearly 198,000 admitted patients and 177,000 eight-hour nursing shifts across 43 patient-care units at a large tertiary academic medical center in the U.S.

As part of their comprehensive analysis, the researchers calculated the difference between the target nurse-staffing level and the actual nurse-staffing level for each shift they examined.

The researchers found that for each shift patients were exposed to that was substantially understaffed — falling eight or more hours below the target level — patients' overall mortality risk increased by 2 percent. Because the average patient in the study was exposed to three nursing shifts that fell below target levels, the mortality risk for these patients was about 6 percent higher than for patients on units that were always fully staffed.

The study also found that when nurses' workloads increase because of high patient turnover in individual units, [mortality risk](#) also increases. For each shift a patient experienced in which turnover — due to admissions, discharges and transfers — was substantially higher than usual, the risk of mortality was 4 percent higher. The average patient in the study was exposed to one high-turnover shift.

Study closes door on controversy

Nearly a decade ago, research published by Needleman and his colleagues in the *New England Journal of Medicine* provided important early evidence that nurse staffing in hospitals was associated with patients' clinical outcomes. This was followed by additional research that reported similar findings using different analytic methods, different data and different measures of patient outcomes associated with hospital nurse staffing.

Despite agreement that nurse staffing does indeed matter to the well-being of patients, earlier findings were challenged because the data used did not allow researchers to directly link staffing to the precise hospital units on which patients stayed or to the nursing shifts to which they were

exposed. Nor did earlier studies include information on how staffing decisions were made. In addition, because the earlier studies compared hospitals with high average nurse staffing to hospitals with low staffing, researchers could not control for all the variations across hospitals that might contribute to differences in mortality.

This time, however, by examining a single hospital rather than comparing hospitals, these challenges have been addressed, thus "closing the door on the controversy," said Marcelline Harris, a senior associate consultant in biomedical informatics at the Mayo Clinic and principal investigator of the current study.

"This study, conducted a decade later than our original analysis, addresses the challenges to prior studies and finds that, indeed, nurse staffing is hugely important," Needleman said. "Since the hospital we studied delivers high-quality care, has low mortality rates, has high nurse-staffing targets and meets its targets over 85 percent of the time, it's unlikely the increased mortality we observe is due to general quality problems.

"We believe that these findings apply to all hospitals — those like the one we studied, where staffing is generally high and targets are usually met, and hospitals that are less successful in achieving staffing levels needed to meet patient needs and keep them safe," he said.

"I believe this study sets a new standard for rigor," said study author Peter Buerhaus, a professor of nursing at Vanderbilt University. "The results reinforce the importance of hospital management, physicians and nurses working closer together to examine all the elements that contribute to providing patient care, including nurse staffing, to be sure that each patient's welfare is assured throughout their entire hospital stay."

"These results can be used to shift the national dialogue," Harris said. "It moves it away from questioning whether nurse staffing impacts patient outcomes, to focusing on the most effective ways to deliver nursing care and how current and emerging payment systems can reward hospitals' efforts to ensure adequate staffing."

Provided by University of California Los Angeles

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