

Improving hospital nurse staffing is associated with fewer deaths from sepsis

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According to a new study published in *American Journal of Infection Control*, improving nurse staffing as proposed in pending legislation in New York state would likely save lives of sepsis patients and save money by reducing the length of hospital stays.

Researchers at the Center for Health Outcomes and Policy Research (CHOPR) at the University of Pennsylvania School of Nursing, conducting independent research on whether pending [nurse staffing](#) legislation in New York state is in the public's interest, found that the wide variation in patient-to-nurse ratios across hospitals in New York is contributing to [avoidable deaths](#) for patients with [sepsis](#), a common, high mortality condition.

New York state is a national leader in sepsis care through legislation known as Rory's Regulations named after a child that unexpectedly died in a New York hospital from sepsis. The new study finds avoided sepsis deaths associated with better hospital nurse staffing are much greater than adherence to mandated sepsis care bundles.

The new study shows each additional patient added to a nurse's workload is associated with 12% higher in-hospital mortality from sepsis compared with only a 5% improvement in mortality associated with improved adherence to mandated care bundles.

The study concluded that while Rory's Regulations and sepsis care bundles helped reduce deaths from sepsis, implementing proposed patient-to-nurse ratios in NY state holds promise for much greater reductions in sepsis deaths.

Lead author Karen Lasater, Ph.D., RN, an assistant professor and CHOPR researcher said, "Results show that improving nurse staffing in New York hospitals could substantially reduce deaths from sepsis over and above the benefits of mandated care bundles."

Additionally, the study showed that while hospital adherence to mandated sepsis care bundles is associated with shorter length of hospital stays, improved nurse staffing at the levels in the pending legislation had more than twice as large an effect on reducing length of stay than the care bundles.

Co-author, CHOPR Director Linda H Aiken, Ph.D., RN, a senior researcher and professor at the University of Pennsylvania said, "This independent scientific study shows that improvement of hospital nurse staffing holds the best promise for significantly reducing deaths from sepsis which often strikes when it is least expected. Moreover, improving nurse staffing results in cost savings in sepsis care due to shorter hospital stays that can be reinvested in improved nurse staffing."

Background

The study is of 116 hospitals in New York state and more than 52,000 hospitalized patients with a diagnosis of sepsis. On average in these hospitals, nurses cared for 6.3 patients each and staffing varied substantially by hospital from 4.3 patients-

per-nurse in the best staffed hospitals to 10.5 patients per nurse in the worst staffed hospitals. There is currently no requirement in New York that hospitals meet a minimum safe nurse staffing standard.

The Safe Staffing for Quality Care Act (A2954/S51032) currently pending action in the NY Legislature sets a minimum nurse staffing requirement for all New York state hospitals that would serve to bring hospitals with poor staffing to an evidence-based minimum standard.

A 2020 Harris Poll sponsored by NursesEverywhere.com found that 90% of the public surveyed believed that hospitals should be required to meet safe nurse staffing standards.

Sepsis is a life-threatening acute condition that results from an infection that might seem harmless initially but can escalate rapidly to death for children and adults. Each year, at least 1.7 million adults develop sepsis and nearly 270,000 die.

Rory's Regulations were enacted by New York state in 2013 after the highly publicized death of a 12-year-old boy with sepsis. The Regulations require hospitals to implement protocols for screening, early diagnosis, and timely treatment of patients with sepsis. More recently, the Centers for Medicare and Medicaid Services (CMS) began mandating the public reporting of hospital adherence to evidence-based sepsis care protocols via HospitalCompare. Nurses are responsible for implementing these protocols although no previous research has been done on the impact of nurse staffing on adherence to the protocols. This new study shows the effect of improving hospital nurse staffing on avoided deaths from sepsis is much greater than the care bundles mandated under Rory's Regulations.

Another recent publication on the adverse on patient outcomes on variation in nurse staffing across New York hospitals is:

Lasater KB, Aiken LH, Sloane DM, French R, Martin B, Reneau K, Alexander M, McHugh MD. 2020. Chronic [hospital](#) nurse understaffing meets COVID-19. *BMJ Quality & Safety*. Epub ahead of

print 18 August 2020.

doi:10.1136/bmjqs-2020-011512. [Open Access](#).

The study was carried out by the Center for Health Outcomes and Policy Research, University of Pennsylvania School of Nursing in partnership with the National Council of State Boards of Nursing. Funding for the study was from the National Council of State Boards of Nursing, the National Institute of Nursing Research/NIH, and the Leonard Davis Institute of Health Economics at the University of Pennsylvania.

More information: Karen B. Lasater et al. Evaluation of hospital nurse-to-patient staffing ratios and sepsis bundles on patient outcomes, *American Journal of Infection Control* (2020). [DOI: 10.1016/j.ajic.2020.12.002](#)

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