

# Highlights of Study on Nursing Shortage, Outcomes

Summary of association of lower nurse staffing and patient outcomes

Patient Pool	Outcome	Higher rate for outcome is associated with:		Difference in rate between low and high RN hospitals
		Lower proportion of RNs	Fewer RN hours per day	
Medical Patients	Length of stay	X	X	3.5%-5.2%
	Urinary tract infection	X	X	3.6%-9%
	Upper gastrointestinal bleeding	X	X	5.1%-5.2%
	Pneumonia	X		6.4%
	Shock or cardiac arrest	X		9.4%
	Failure to rescue	X		2.5%
Surgical	Urinary tract infection	X		4.9%

How important are these complications affecting patients for which an association with RN staffing was found?

- Longer lengths of stay increase costs to patients and hospitals.
- Urinary tract infections are common complications, affecting about 6% of medical patients and 3% of surgical patients; they can add to patient cost, discomfort, and prolong a patient's stay in the hospital.
- Pneumonia, shock and cardiac arrest, and upper gastrointestinal bleeding are all associated with an increased risk of death, can increase patient costs and discomfort, and prolong a patient's stay in the hospital.
- Failure to rescue. As used in this study, "failure to rescue" is the death of a patient with one of five serious complications — pneumonia, shock or cardiac arrest, upper gastrointestinal bleeding, sepsis, and deep vein thrombosis (a blood clot in a vein which can break off and cause a heart attack, stroke, or pulmonary embolism) — for which early identification by nurses and medical and nursing interventions can influence the risk of death. In this study, nearly 20% of the patients with these five complications died. We reasoned that in hospitals where staffing is short, there is a greater chance that nurses will not detect one of these five complications early enough, or intervene quickly enough to prevent the complication from worsening and eventually causing death vs. hospitals where there is more nurses on staff.

Because of data limitations, our measures do not capture all of nursing's impact on quality of patient care. We view the results from these outcomes as lower bound estimates of the impact of registered nurses.

How big a difference does care from registered nurses make?

- We estimate that hospitals with high registered nurse staffing have lengths of stay 3% to 5% shorter and rates of complications 2% to 9% lower than hospitals with low registered nurse staffing, controlling for other factors. **(The difference varies by complication. See table above.)**
- High registered nurse staffing refers to a hospital whose staffing is at the upper quarter (75th percentile) of the 799 hospitals included in this study.
- Low registered nurse staffing refers to a hospital whose staffing is at the lower quarter (25th percentile) of the hospitals studied.