

# NURSE STAFFING

## HIGHER LEVELS OF RN STAFFING ARE RELATED TO BETTER PATIENT OUTCOMES

### Source

Needleman, J., Buerhaus, P., Mattke, S., Stewart, M., & Zelevinsky, K. (2002). Nurse-staffing levels and the quality of care in hospitals. *New England Journal of Medicine*, 346 (22), 1715-1722.

### Objective

To examine the relationship between levels of nurse<sup>1</sup> staffing in hospitals and the rates of adverse outcomes among patients.

### Background

Registered nurses (RNs) and others are concerned that patient safety and quality of care are threatened because nurse staffing levels are inadequate to match the increasing severity of illness of hospitalized patients. Although several studies have been undertaken, no definite conclusion has been reached about the relationship between the level of nurse staffing in hospitals and patient outcomes. Limitations of many of these studies include small sample size and the use of inconsistent measures of staffing levels. The current study aimed to overcome these and other weaknesses by using administrative data from a large multi-state sample of hospitals.

### Methods

- A retrospective design was used to analyze patient discharge and nurse staffing data from 1997 from 799 hospitals from 11 states in the United States. The data covered 5,075,969 discharges of medical patients and 1,104,659 discharges of surgical patients.
- Two different staffing variables were examined:
  - the proportion of hours of care provided by licensed nurses (RNs and LPNs) that were provided by RNs; and
  - the number of hours of care per day provided by RNs, LPNs and nurse aides.
- Patient variables included length of stay and the rates of adverse outcomes. For both medical and surgical patients, 11 adverse outcomes were measured, including urinary tract infection, pressure ulcers, in-hospital death and failure to rescue.<sup>2</sup> Three other variables were measured for surgical patients only (wound infection, pulmonary failure and metabolic disturbances).

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<sup>1</sup> In this study, 'nurse' refers to registered nurses (RNs), licensed practical nurses (LPNs) and nurses' aides (NAs). RNs and LPNs are referred to together as licensed nurses. In Ontario, the title for a practical nurse is registered practical nurse (RPN).

<sup>2</sup> Failure to rescue refers to the death of a patient with one of five life-threatening complications (pneumonia, shock or cardiac arrest, upper gastrointestinal bleeding, sepsis or deep vein thrombosis).

- These outcomes were selected for study because they have the potential to be affected by nurse staffing. For example, when nurses are able to identify complications early and initiate actions independently or with other members of the health care team, the risk of death from the complication may be reduced.
- To be able to make appropriate comparisons, differences in nursing care required by patients of each hospital, patients' risk of adverse events and factors such as age, sex and the presence or absence of 13 chronic diseases, were taken into consideration.

### Principal Findings

#### *For medical patients*

- A higher proportion of RNs in the mix of licensed care providers (RNs and LPNs) and more RN hours a day were associated with:
  - shorter lengths of stay;
  - lower rates of urinary tract infections; and
  - lower rates of upper gastrointestinal bleeding.
- A higher proportion of RNs in the mix of licensed care providers was also associated with lower rates of pneumonia, shock or cardiac arrest and failure to rescue.

#### *For surgical patients*

- A higher proportion of RN hours in the mix of licensed care providers was associated with a lower rate of urinary tract infection.
- A greater number of RN hours a day was associated with a lower rate of failure to rescue.

### What do the Study Findings Mean?

- Increasing the number of RNs or the proportion of RNs relative to LPNs on a hospital unit can be expected to reduce the number of negative outcomes experienced by patients.
- Hospitals require adequate RN staffing to ensure patient safety and improve quality of care.
- Strategies are needed to recruit and retain RNs in the hospital workforce.

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