Key Findings from Research Studies on Safe RN Staffing

Safe Staffing Literature Review (August, 2014)

Registered nurses have long acknowledged and continue to emphasize that staffing issues are an ongoing concern, one that influences the safety of both the patient and the nurse. Safe staffing is important to every nurse in both clinical and non-clinical areas. The purpose of the staffing literature review is to share classic and current publications on nurse staffing that affect nursing practice. The goal of this literature review is to provide the reader with a broader understanding and multiple perspectives on nurse staffing such as:

Safe Staffing Impacts Patient Safety and Quality of Care

- Recent studies that support staffing models
- California Studies and Assembly Bill 394
- A well-staffed nursing unit decreases patient mortality

Safe Staffing and Medical Errors

- Incidence of surgical site infections, pneumonia, falls
- Mixed findings from California studies
- Skill mix
- International view of nursing staffing issues

Safe Staffing Impacts the Retention of Experienced RNs

- Recent findings from California studies and Assembly Bill 394
- Quality improvement and nurse surveillance

Safe Staffing Decreases Hospital Readmission Rates

- Decrease in patient days
- Satisfaction rates

*Please note* – These references are arranged alphabetically by author in each section. The URLs for those references noted as being available online were current as of August 4, 2014.
Safe Staffing Impacts Patient Safety and Quality of Care

- Nurse staffing is a complex issue with no easy quick solution. A literature review concluded that support, not regulation, is needed for safe nurse–patient ratios. There are many variables that affect staffing decisions and the RN needs to be informed and take an active role in determining the best staffing ratio that promotes patient safety.


- A well-staffed nursing unit that performs a high volume of aortic abdominal aneurysms (AAA) is associated with improved patient outcomes, decreased patient mortality, and fewer failure-to-rescues. In poorly staffed hospitals, an increase of volume in AAA made little difference on patient mortality. However, in hospitals that had higher nurse-to-patient ratios, the rates of patient mortality decreased by approximately 60%.


- Hospitals typically under-staff neonatal intensive care units by 32%. In order to meet minimal staffing standards, an additional 0.39 of a nurse would be necessary for each high-acuity infant. Substantial neonatal nurse understaffing is associated with an increased risk of hospital-acquired hospital infections and an increase in neonatal mortality.


- A study of 232,342 surgical patients in Pennsylvania revealed that 4,535 (2%) died within 30 days of discharge. The significantly significant study suggests that the differences in nurse-to-patient staffing ratios (4:1 vs. 8:1) may have been a factor in these patient deaths.


- A multivariate analysis of nurse staffing and patient outcomes reported that when RN staffing is increased, there were significant improvements in patient mortality following a medical or surgical complication. Additional data showed a decrease in pulmonary
embolism, deep vein thrombosis, and sepsis. Further data revealed that higher staffing was linked to shorter lengths of stay.


- Staff mix which takes into account educational preparation, experience, and professional needs to be a factor when addressing nurse staffing. Nurse managers must evaluate competency levels and critical thinking skills and use this information as a basis for creating a safe patient care environment. An effective staffing model should take into account resources such as support personnel, equipment and supplies as having adequate resources on hand improves the nurse’s workflow.


- The availability of medical and nursing staff is associated with the survival of critically ill patients and suggests that future studies should focus on the resources of the health care team. The results emphasize the urgent need for a prospective study of staffing levels and the organization of care in ICUs.


**Safe Staffing and Medical Errors**

- Higher numbers of nurses are associated with improved survival rates among patients the very seriously ill. A study determined that seven additional lives would be saved for every 100 patients if nurse numbers increased from four to six per bed. Researchers discovered that the reason survival rates improved with higher numbers of nurses was that nurses spend more time with critically ill patients than other healthcare professionals do, and are more likely to detect early signs of deterioration. Another reason is that fewer permanent staff might mean greater reliance on agency staff who may have less expertise or be unfamiliar with some aspects of a unit’s way of working.

Key Findings from Research Studies on Safe RN Staffing

ANA Practice & Policy Department

- A study of 11 hospitals over a two-year period demonstrated a significant relationship between RNs in the skill mix and medication errors and falls. As the proportion of RNs increased, the medication errors decreased. The study found that for every 20% decrease in staffing below the staffing minimum, medication errors increased by 18%.


- A number of studies have not supported mandatory nurse–patient ratios. A report by the California Nursing Outcomes Coalition (2005) documented no statistically significant change in patient safety and quality outcomes such as decreased falls or the prevalence of pressure ulcers.


- International nurse leaders from nine countries gathered to deliberate on common trends affecting nurses’ capacity to deliver safe and effective patient care. Issues discussed included cuts to healthcare, safe staffing levels, the 24/7 work environment within the continuum of care and the economic value of nurses to society.


- Nursing surveillance is an important aspect of monitoring quality improvement projects and for the evaluation of effective nursing care. A significant relationship was reported between staffing and length of stay, suggesting that early recognition and treatment of potential adverse events led to earlier discharges.


- Hospitals in Europe where nursing staff care for fewer patients and have a higher proportion of bachelor’s degree-trained nurses had significantly fewer surgical patients die while hospitalized according to a new study. These findings underscore
the potential risks to patients when nurse staffing is cut and suggest an increased emphasis on bachelor’s education for nurses could reduce hospital deaths.


- Staffing plans are developed annually and are based on past data, patient volume, acuity, regulatory standards, external and internal benchmarks, nursing skill mix and experience, and budget. Best staffing practices involve a central staffing office that has a hospital-wide perspective and can reallocate RN staffing in real time to accommodate variations in acuity and volume. The best practice to managing unplanned staffing deficits is to take a proactive approach and have a plan available before a crisis occurs. It is vital that nurse leaders critically examine the census and maintain RN ratios when census is high and decrease RN staffing when census is low.


- Mandatory nurse–patient ratios take away flexibility and negatively impact the health care delivery system. The American Organization of Nurse Executives (AONE) made a formal statement that mandated staffing ratios will increase stress an overburdened health care system. AONE supports general standards when viewing the workload for nurses. Staffing ratios could be detrimental to nurses as organization may need to lay off ancillary staff in order to meet mandated ratios, leading to an increased workload for the RN. Staffing committees were found to be one solution to address staffing plans based on unit census, education/preparation of the RN, and unit activity.


- Evidence does not support that the use of mandatory ratios improves patient outcomes. Passing legislation that supports mandated ratios without sufficient is potentially dangerous. Crucial factors such as nurse education, years of experience, knowledge, and skills ought to be considered when examining patient outcomes. In California’s Assembly Bill 394, only 50% of mandated nurses would need to be RNs. Mandatory staffing ratios do not take into account patient acuity, length of stay, required treatments, team dynamics, physician preferences, technology, and the availability of ancillary staff.

Safe Staffing Impacts the Retention of Experienced RNs

- Another study by Aiken and colleagues (see above) also found statistically significant relationships between lower nurse-to-patient ratios and higher levels of reported dissatisfaction and burnout among RNs.


- Researchers have spent decades trying to determine if having more nurse staff lead to better quality of nursing home care. Although the answer may seem to be obviously “yes” the literature fails to give us a clear answer. Bostick and colleagues\(^1\) reached a relatively positive conclusion about the nurse staffing and quality relationship from their review of 87 articles. Spilsbury and colleagues screened studies from 1987 to 2008, were much more critical of methods and findings from these studies.


- Health care administrators need to collaborate in order to develop a viable and sustainable formula for safe staffing. Increased governmental influence by mandated nurse-patient ratios is not the right approach to the staffing issue. Alternatives to mandated ratios include staffing committees with a strong nursing presence, acuity systems, and public nurse–patient disclosure. Many factors should be considered when making staffing decisions such as severity of illness, family situations/needs, observation and intervention requirements, team dynamics, and so forth.

  Douglas, K. (2010). Ratios: If it were only that easy. NursingEconomics, 28(2), 119–125.

- The conclusion of research investigating whether or not patient quality has improved since passage of California’s Assembly Bill 394 is mixed. After the bill was implemented into practice, the Agency for Healthcare Research and Quality’s (AHRQ) reported that its Patient Safety Indicators showed a significant reduction of patient falls, pressure ulcers, and restraint use. Conflicting data was presented by a panel of California hospitals, which found no significant data to support AHRQ’s findings. From 2000 to 2006, studies have reported that there are statistically significant reductions in postoperative respiratory failure and hospital-acquired pressure ulcers.

- A Magnet® hospital used a Nursing Productivity Committee (NPC) to manage staffing by implementing the concept of nursing care hours per patient day (HPPD). HPPD (developed by NDNQI) is a reliable metric that is used to create and manage staffing patterns systematically. HPPD looks at patient flow, the nurse’s workflow, and bed availability through bed census meetings to review actual and projected patient census and staffing over a 24-hour period. The committee was comprised of a nurse manager, the assistant director of staffing, a nursing informatics analyst, and an administrative nursing supervisor.


- The acuity-adaptable model is a model of care that is in alignment with nursing resources. The model is distinctive in that it accommodates the patient on the same unit from admission to discharge, thus eliminating communication errors through frequent hand-offs. The acuity-adaptable model promotes flexibility of patient assignments and to minimize empty beds. Additionally, this model improved nurse engagement in the planning process, improved patient and nurse satisfaction. There were no significant decreases in falls, or hospital-acquired infections.


- Nurse satisfaction and nurse retention rates were observed after passage of the California staffing law. Satisfaction increased for all RNs working in acute care between 2004 and 2008. The significance is that as the nursing workforce ages and retires, there will be a shortage of experienced nurses to care for the increasing demand for health care put forward by the Affordable Care Act. These facts place pressure on the health care system to care for more patients with fewer nurses. California’s staffing legislation is serving to counter mounting pressure.


(Not available online)
• Nurses with a longer tenure in the workforce are more experienced and more prepared to provide care to critically ill patients. Encouraging nurses to stay within the profession by mandating ratios improves job satisfaction, staff morale, and has been proven to save patient lives by decreased patient mortality. After California’s AB394 was put into effect, studies have reported that nurses were more satisfied with their work environment. Adequate staffing has given RNs the time for patient education.


• Staffing models and staff planning processes need to reflect the complexity of patient acuity and should include patient turnover (admissions, discharges, and transfers) and be flexible to allow nurse managers to meet staffing needs within their allocated resources. Using a weight factor added to worked hours per patient day (WHPPD) may be useful when nurse managers plans for accurate staffing.


**Safe Staffing Decreases Hospital Readmission Rates**

• A study of elective cardiac patients documented an association between increased nurse staffing levels and a reduction of cardiac readmissions. Additional benefits of increased staffing included lower in-patient hospital mortality.


• The death rate for older mechanically ventilated who receive care in ICUs is high. A literature review revealed an association between nurse staffing, nurses' education, and the quality of nurse work environments and mortality following common surgical procedures. A distinguishing feature of ICUs is greater investment in nursing care. The goal of the study was to determine the degree to which variation in ICU nursing characteristics-staffing, work environment, education, and experience-is associated with patient death, and to highlight strategies that will assist in improving survival rates.

- Hospitals that support a positive workplace environment with manageable patient workloads have significantly better patient outcomes. When nurses have a patient-to-nurse ratio of 4.95 or less, they had more time for patient teaching and to prepare the patient to transition home. Lower nurse-to-patient ratios reduced heart failure readmissions by 7%, acute myocardial infarction readmissions by 6%, and pneumonia readmissions by 10%.


- Studies have shown that increases in RN staffing levels in general hospital units have resulted in a reduction of 5.7% in patient days. The trend toward higher RN staffing levels has been shown to decrease avoidable never events such as inpatient falls and hospital-acquired pressure ulcers.