Patient Safety Tip of the Week

May 29, 2018

More on Nursing Workload and Patient Safety

There have been numerous studies linking poor nurse:patient ratios with adverse patient outcomes. But in our March 6, 2018 Patient Safety Tip of the Week "Nurse Workload and Mortality" we emphasized that simple nurse:patient ratios may not accurately reflect nursing workload and that it is likely workload that has a closer relationship with patient outcomes.

A recent study from Finland measured nursing workload by the RAFAELA system and compared workload to patient safety incidents and patient mortality (Fagerström 2018). The RAFAELA system uses daily data on patients' care needs and the workload per nurse. It was developed in Finland in the 1990's to help plan for better nursing staffing allocation than a simple nurse:patient ratio.

They found that when workload/nurse was above the assumed optimal level, the adjusted odds for a patient safety incident were 1.24 times that of the assumed optimal level. But when it was below the assumed optimal level the adjusted odds were 0.79. Similarly, when workload/nurse was above the assumed optimal level, the adjusted odds for patient mortality were 1.43 and when it was below the assumed optimal level the adjusted odds were 0.78.

Essentially, that meant that the odds for a patient safety incident were 10% to 30% higher, and for patient mortality about 40% higher, if the nurse workload as measured by the RAFAELA system was above the assumed optimal level. If OPC/nurse was below the level, the odds for a patient safety incident and for mortality were approximately 25% lower.

The authors conclude that in the latter situation nurses have more time for caring and observing each patient, resulting in reduction of the risk for adverse events and preventing the patient's health condition from deteriorating.

The findings were statistically robust and clearly demonstrate the importance of nurse workload, rather than simple nurse:patient staffing levels, in relation to adverse patient events and mortality.

Many state legislatures have or are planning to mandate minimum nurse staffing levels based on number of patients per nurse. Massachusetts is one such state considering this mandate. In support of this mandate, the Massachusetts Nurses Association released results of a survey of a random selection from a complete file of the 100,000 nurses

registered with the Massachusetts Board of Registration in Nursing. 90 percent of nurses responding admitted they lack adequate time to properly comfort and assist patients. An overwhelming majority of respondents felt that having to care for too many patients at one time was their most significant challenge in delivering high-quality care and that unsafe patient assignments were a problem. They linked such circumstances to medication errors, patient readmissions, and other patient injury or harm. Most also said hospital management does not typically adjust patient assignments to meet patients' needs.

The US is not the only country where such concerns have been voiced. In the UK, 55% of 30,000+ nursing staff responding to a 2017 survey reporting a staffing shortfall on the last shift they worked (Royal College of Nursing 2018). The Royal College of Nursing analyzed of nearly 18,000 nurses' responses and identified 6 key themes from responses:

- Care undone (missed care) due to lack of time
- Too much time spent on non-nursing duties
- Time to support relatives and those of importance to patients
- Concern about skill mix of nursing staff
- Are staffing level concerns addressed?
- Morale of nursing staff

36% of nurses said they had to leave necessary patient **care undone** due to lack of time. This resulted in patients having to wait for treatment and care, including having access to toilet and washing, pain relief, and care such as action to prevent bed sores, ulcers and infections. Care left undone correlates with patient mortality. In our July 11, 2017 Patient Safety Tip of the Week "The 12-Hour Shift Takes More Hits" we discussed a study by Ball and colleagues (Ball 2017a), using survey data from the RN4CAST study to correlate measures of nurse-reported quality with shift duration. They found the rate of "care left undone" was 1.13 times higher for nurses working ≥12 hours. A previous study by Ball (Ball 2017b) showed that a 10% increase in the amount of care left undone by nurses was associated with a 16% increase in mortality.

In the UK survey, 41% of all shifts reported being short of one or more health care support workers. And 55% reported they spent too much time on non-nursing activities. This was especially noted when nursing skill mix was suboptimal and when staffing had to be supplemented by agency nurses, who were not familiar either with the patients or the intricacies of the IT systems. In our numerous columns on the "weekend effect" we've pointed out how non-nursing activities (due to lack of non-nursing ancillary personnel and lesser experienced nursing personnel) keep nurses from important patient care activities.

And, of course, it is difficult to divorce the nursing workload issue from the fatigue issue. Given the shortage of nurses in most locations, more and more nurses are working long shifts, whether voluntary 12-hour shifts or overtime. We've done many columns on the (mostly but not always negative) aspects of the 12-hour shift (see full list of columns below). One of the factors contributing to patient safety is collaboration (nurse-nurse and nurse-physician collaboration). A recent study (Ma 2018) found that overtime (more

nurses working overtime or longer overtime hours) was associated with lower collaboration at the unit level. On the other hand, shift length was not. We might anticipate that one unintended consequence of mandated nurse staffing levels may be to increase the amount of overtime worked, perhaps subtracting somewhat from the benefit we expect to see from better nurse:patient ratios. In an ideal world we'd have an adequate supply of nurses so that we could optimize nursing workload without resorting to overtime.

Speaking of the 12-hour nursing shift, a new AHRQ-funded study will attempt to answer some of the lingering questions about the impact of such shifts on both patient safety and nurse health and well-being (Hatch 2018). The Washington State University study will involve 50 nurses working day shift and 50 nurses working night shift. Participants will report to the WSU Health Sciences campus for testing immediately following three consecutive, 12-hour day or night shifts. They'll also be tested following three consecutive days off. Various methods will be used to test reaction times and cognitive capacity of the nurses. Nurses will also wear wrist-worn sensors to monitor sleep cycles. They'll be tested in the College of Nursing's Simulation Laboratory to see how well they perform a range of nursing skills like inserting an IV or monitoring vital signs. They'll be asked to mentally calculate medication dosages. And finally, they'll use simulators in the WSU Sleep and Performance Research Center to test their driving skills. The study will last 3 years but, hopefully, may answer some of our most serious concerns about the impact of 12-hour nursing shifts on patient care.

Efforts, for example by state legislatures, to mandate minimum nurse staffing levels based on number of patients per nurse are appropriate but may not go far enough. We need to refine measures of nurse workload and use such measures to allocate nursing resources more optimally. Even adjustments for patient acuity are not enough. The RAFAELA classification system seems to be a better measure of nurse workload. Given its success in Scandinavian countries, we need to look at adopting and refining it or similar measurement systems in other countries. We hope that hospitals and legislative or regulatory bodies will begin to look closer at measuring nursing workload via RAFAELA or the other measurement systems discussed in our March 6, 2018 Patient Safety Tip of the Week "Nurse Workload and Mortality".

Some of our other columns on missed nursing care/care left undone:

November 26, 2013 "Missed Care: New Opportunities?"
May 9, 2017 "Missed Nursing Care and Mortality Risk"
March 6, 2018 "Nurse Workload and Mortality"

Our previous columns on the 12-hour nursing shift:

November 9, 2010 "12-Hour Nursing Shifts and Patient Safety"

February 2011 "Update on 12-hour Nursing Shifts"
November 13, 2012 "The 12-Hour Nursing Shift: More Downsides"
July 29, 2014 "The 12-Hour Nursing Shift: Debate Continues"
October 2014 "Another Rap on the 12-Hour Nursing Shift"
December 2, 2014 "ANA Position Statement on Nurse Fatigue"
September 29, 2015 "More on the 12-Hour Nursing Shift"
July 11, 2017 "The 12-Hour Shift Takes More Hits"

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