Massachusetts Organization of Nurse Executives

Management of Practice Committee 2005 Report

LESSONS LEARNED: SAFE SCHEDULING PRACTICES FOR NURSING STAFF

The Management of Practice Committee's current purpose is to analyze issues impacting the management of nursing practice that will enable MONE members to make proactive responses to emerging health care trends and or necessary reactive decisions to current practice issues. Each year the committee establishes new charges based on MONE's strategic initiatives. This past year, the Management of Practice Committee reviewed current recommendations regarding safe working conditions, as outlined in the 2004 Institute of Medicine (IOM) report, *Keeping Patients Safe: Transforming the Work Environment of Nurses*. While there were numerous recommendations outlined in this IOM report, the committee opted to narrow the focus on design of work hours. The recent 2004 research article "The Working Hours of Hospital Staff Nurses and Patient Safety" by Rogers et al influenced this decision.

The committee's initial research review focused on nurse scheduling practices such as the number of hours worked within a day, within a week, and shift rotations. The review of resources included nursing specific research, occupational health research outcomes from other industries and clinical references on sleep disorders. What the committee first discovered was the limited amount of current nursing specific research on safe scheduling practices. Earlier nursing research studies in the late 1980's and early 1990's regarding safe scheduling practices were driven by a beginning trend toward alternative scheduling patterns, which were breaking away from the traditional 8-hour shifts. Depending upon the perspective of this common group of nurse researchers, the potential benefits and risks were essentially the same with no clear evidence of any significant safety risks. Nursing research on this subject did not significantly re-emerge again until almost a decade later.
Given that the number of nursing specific studies were limited, the committee began to review research from other disciplines in order to formulate a series of recommendations, as well as a series of questions to consider for future nursing research initiatives around this subject matter.

The following is a synopsis of lessons learned as a result of the committee's research review:

- **Length of Shifts:**

  In general many studies reflect an increase in fatigue and decrease in reaction time and problem solving with longer work hours in a shift. Upon examining studies from Occupational & Environmental Medicine, there were few significant differences noted between 8 and 12 hour shifts in the areas of fatigue, job performance, safety, sleep patterns and physical/psychological well being. However, studies in a variety of

industries did show that job related accident rates significantly increased during overtime hours and work shift hours that exceeded 12 hours per shift.

Of particular interest was a study that examined the differences in performance between younger and older subjects. In this 2001 study authored by K. Reid and D. Dawson in ***Occupational and Environmental Medicine***, the authors observed neurobehavioral performance during six consecutive 12-hour shift rotations in a controlled laboratory situation between younger (mean age 21.2) and older (mean age 43.9) subjects. Results indicated "performance for the older subjects was consistently lower than for the younger subjects. There was significant difference across the shift between older and younger subjects. There was a significant change in performance across the shifts in older subjects, such that performance significantly increased during the day shifts and decreased across the night shifts. By contrast the younger subjects were able to maintain performance across both day shifts and the second night shift." (Reid, 2001, pg. 58) Even though the Rogers et al article suggests that the relationships of errors or near errors and work hours and overtime were not affected by age, it was interesting to note that the median age of this study group was 44.8.

- **Number of Work Hours in a Week:**

  The IOM Report recommends that a nurse should not exceed 60 hours of work within a seven-day period. The Rogers et al article cited research findings that indicated a significant increase in the risk of making an error when nursing staff worked more than forty hours a week. None of the studies reviewed by the committee looked specifically at the impact of the number of days worked in a row.

- **Rotating Shift Work:**

  Research in a variety of fields reports concerns that staff rarely get optimal amounts of quality sleep, i.e. sleep is shorter, lighter and more fragmented, when working rotating shifts. Other commonalities of the impact of night shift work, even for staff that work permanent nights, include a decrease capacity for physical work and a worsening in reaction times, visual search, perceptual-motor tracking and short-term memory. A few studies noted that for night shift workers and/or staff who work a day/night shift rotation, increased signs of sleep debt emerged after 5-10 days of shortened sleep periods. Of note, those who work rotating shifts are also apt to make errors during the first or second day on a night rotation. Most of the study results also highlighted the importance of a clockwise, day-evening-night shift rotation.

Based on the research evidence reviewed, the Management of Practice Committee strongly recommended supporting the key elements of the 2004 IOM Recommendation 6-1. These elements include reducing error-producing fatigue by <u>discouraging</u> nursing staffing patterns that would support "providing patient care in any combination of scheduled shifts, mandatory overtime, or voluntary overtime in excess of 12 hours in any given 24 hour period and in excess of 60 hours per 7-day period." (IOM Report, 2204, Pg 12-13)

Given the research outcomes that addressed the potential significant increase in job related errors after working overtime hours, the Management of Practice Committee also recommended revising the MONE Mandatory Overtime statement to incorporate basic safe scheduling principles. As a result, the MONE Mandatory Overtime Position Statement was revised to include the following statement:

> "MONE recognizes the recent research findings that demonstrate the correlation between fatigue and the increase in medication errors and near errors by nursing. Therefore, when faced with extreme situations, nursing leadership, *in collaboration with staff,* should establish a plan that ensures safe, quality patient care. As part of the plan, the nurse manager and staff must consider the total number of hours worked and the effects of fatigue on human performance when making decisions and assignments."

Lastly, the Management of Practice Committee also acknowledged that a great deal of ongoing nursing research needs to be actively pursued, which will more accurately reflect the realities of the present work environment and it's impact on safe nursing care and quality patient care outcomes. Given the lack of and/or conflicting outcomes in current nursing specific research around the impact of these scheduling practices, there were additional questions that the Management of Practice Committee generated. Examples of questions that emerged were as follows:

1. Given the outcomes of the study comparing the effects of extended shift work between the younger and older workers, how much of the current research outcomes are more a reflection of the increased average age of a staff nurse?
2. Is there an impact on fatigue and/or staff performance based on how many days in a row staff work?
3. What specifically is the nature of patient care activities in an 8 hour versus a 12-hour shift? How are these activities affected when nurses exceed 8 hours or more during a shift?

In summary, nurse leaders should be encouraged to re-examine their staff scheduling practices as well as educate nursing staff on current recommendations for safe scheduling principles, in order to assure safe patient care outcomes. In addition, nurse leaders should also promote nursing research efforts to further understand the impact of scheduling practices on safety and quality patient care outcomes as well as on the nurse-patient relationship.

References:

Institute of Medicine (2004***).*** *Keeping patients safe: Transforming the Work Environment of Nurses*.

Reid, K. & Dawson, D. (2001). "Comparing performance on a simulated 12 hour shift rotation in young and old subjects". *Occupational and Environmental Medicine,* 58(1), 58-62.

Rogers, A., Hwang, W., Scott. D., Aiken, L. & Dinges,D. (2004). The working hours of hospital staff nurses and patient safety. *Health Affairs,* 23(4), 202-212.

ADDITIONAL RESOURCES

Akerstedt, T. (1994). Work injuries and time of day -National Data. *Proceedings of a Consensus Development Symposium Entitled Work Hours, Sleepiness, and Accidents.* Stockholm, Sweden.

Bloodworth, C., Lea, A., Lane, S. & Ginn, R. (2001). Challenging the myth of the 12-hour shift: a pilot evaluation. Nursing Standard, 15(29), 33-36.

Dingley, Jane (1996). A computer-aided comparative study of progressive alertness changes in nurses working two different night-shift rotations. *Journal of Advanced Nursing*, 23(6), 1247-1253.

Fields, W. & Loveridge, C. (1988). Critical thinking and fatigue: how do nurses on 8 & 12-hour shifts compare. *Nursing Economics*, 6(4), 189-191.

Gaba, D. & Howard, S. (2002). Fatigue among clinicians and the safety of patients. *The New England Journal of Medicine Boston,* 347(16), 1249-1255.

Gold, D. et al. (1992). Rotating shift work, sleep, and accidents related to sleepiness in hospital nurses. *American Journal of Public Health,* 87(7), 1011-1014.

Gillespie, A. & Curzio, J. (1996). A comparison of a 12-hour and 8-hour shift system. *Nursing Times*, 92(39), 36-39.

Hanecke, K., Tiedemann, S., Nachreiner, F., Grzech-Sukalo, H. (1998). Accident risk as a function of hour at work and time of day as determined from accident data and exposure models for the German working population. *Scandinavian Journal of Work Environment Health,* 24 (supplement), 43-48.

Hughes, R. & Stone, P. (2004). The perils of shift work: Evening shift, night shift and rotating shifts: are they for you? *American Journal of Nursing,* 104(9), 60-63.

Institute of Medicine (2004). Keeping patients safe: Transforming the Work Environment of Nurses.

Kogi, L. (1991). Job content and working time: The scope for joint change. *Ergonomics*, 34, 757-773.

Mills, M., Arnold, B. & Wood, C. (1983). Core-12: A controlled study of the impact of 12-hour scheduling. *Nursing Research,* 32(6), 356-361.

Reid, K. & Dawson, D. (2001). Comparing performance on a simulated 12 hour shift rotation in young and old subjects. *Occupational and Environmental Medicine,* 58(1), 58-62.

Reid, N. Robinson, G. & Todd, C. (1993). The quantity of nursing care on wards working 8-12 hour shifts. *International Journal of Nursing Studies*, 30(5), 403-413.

Richardson, A. (2003). Twelve-hour shift on ITU: a nursing evaluation. *Nursing in Critical Care*, 8(3), 103-108.

Rogers, A., Hwang, W., Scott. D., Aiken, L. & Dinges,D. (2004). The working hours of hospital staff nurses and patient safety. *Health Affairs*, 23(4), 202-212.

Todd, C. Robinson, G. Reid, N. (1993). 12 hour shifts: job satisfaction of nurses. *Journal of Nursing Management*, 1(5), 215-220.

Wilson, J. (2002). The impact of shift patterns on healthcare professionals. *Journal of Nursing Management,* 10(4), 211-219.

Wootten, N. (2000). Professional issues. Implementing 12 hour shifts on a cardiology nursing development unit. *British Journal of Nursing*, 9(19), 2095-2099.

Wootten, N. (2000). Professional issues. Evaluation of 12 hour shifts on a cardiology nursing development unit. *British Journal of Nursing*, 9(20), 2169-2174.