Research Linking Nurses’ Work Hours to Errors Prompts More State Restrictions

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Based on evidence that links nurses’ long work hours to a higher risk of medical errors, nursing groups and patient safety researchers are finding that their calls to end mandatory overtime have been answered through legislation in several states. Research funded by the US Agency for Healthcare Research and Quality (AHRQ) has been instrumental in providing evidence on the impact of sleep deprivation and fatigue on both physicians and nurses. As new investigations examine factors that hinder nurses’ recovery from work-related sleep deprivation, more states may look to follow this trend of minimizing the use of mandatory overtime.

Today, many US hospitals use mandatory overtime, a staffing practice in which nurses work beyond their scheduled eight-, 12- or even 16-hour shifts to keep their patient units fully staffed in a tight labor market. In specialized units, such as surgery and critical care, nurses often are required to be on call in addition to working their regularly scheduled shifts.

Concerns about the impact of mandatory overtime on patient safety have become widespread. More than a dozen states now prohibit or restrict mandatory overtime. According to the American Nurses Association (ANA), as of mid-2007, 10 states (ie, Connecticut, Illinois, Maine, Maryland, Minnesota, New Jersey, New Hampshire, Oregon, Washington State, West Virginia) had enacted laws to prohibit mandatory overtime. Regulations in three states (ie, California, Missouri, Texas) restrict mandated overtime hours. In May 2007, Rep Pete Stark (D-California), chair of the House Ways and Means Health Subcommittee, introduced a bill (ie, HR 2122) that would limit mandatory overtime for nurses in cases declared as federal, state, or local states of emergency. This bill, known as the Safe Nursing and Patient Care Act of 2007, would not apply to nursing homes.
however. The bill has been endorsed by the ANA and several labor organizations.

**Long Work Hours and Risk for Errors**

Ann E. Rogers, PhD, RN, FAAN, an associate professor at the University of Pennsylvania School of Nursing, Philadelphia, and a proponent of limits on mandatory overtime, is one of the nation’s leading researchers on the impact of nurse fatigue and medical errors. Her work, supported by the AHRQ, has identified the prevalence, nature, and impact of fatigue-related medical errors. She currently is studying factors that affect nurses’ recovery from work-related sleep deprivation and the impact of interventions, such as scheduled napping during a shift, on the occurrence of errors.

A tragic example of a nurse’s error attributed to the impact of cumulative work hours occurred last year at St Mary’s Hospital in Madison, Wisconsin. A nurse who had worked two consecutive eight-hour shifts the previous day mistakenly administered an epidural anesthetic intravenously to a 16-year-old patient, and the patient died as a result. The nurse had ended her two shifts the previous day at midnight and began her next shift at 7 AM the day of the incident, according to news reports.

Common errors, which also applied to nurses who worked unplanned overtime at the end of a scheduled shift, included giving patients incorrect medications or dosages, according to the study.

**Compromised Vigilance in Critical Care Units (CCUs)**

Dr Rogers’ recent studies have linked overtime hours to a three-fold risk of medical errors and with compromising nurses’ ability to remain vigilant during long working shifts in CCUs. Critical care nurses must be alert to subtle changes in patients’ conditions and be able to respond appropriately. Patients in CCUs may be more vulnerable to the effect of medical errors because they are more seriously ill and are exposed to more medications and treatments than patients in general care units. Of the five million patients admitted to CCUs each year, all will experience at least one preventable adverse event.

To examine the impact of nurses’ long work hours on vigilance in CCUs, Dr Rogers and her colleagues collected data from 502 randomly selected critical care nurses in the United States during a 28-day period. Information included the number of hours worked, time of day worked, overtime hours, days off, and sleep/wake patterns.

Nearly two-thirds (65%) of the nurses included in the study reported that they struggled to stay awake at work at least once during the study period, and 20% said they fell asleep at least once during their work shift. In total, nurses reported that they struggled to stay awake during 1,203 shifts and actually fell asleep during 178 shifts.

More than one-quarter (27%) reported making at least one error, and more than one-third (38%) reported that they almost made a mistake during the study period. The majority of errors (56%) and near errors (28%) involved administering medication; in one instance, a medication error resulted in the patient’s return to the OR.

Consistent with reports of long work hours by nurses in other hospital units, critical care nurses who participated in the study said that...
they rarely left the hospital at the end of their scheduled shift. Although shifts were extended by a mean of 49 minutes, the overtime came on top of an average 12.5-hour shift, exceeding the length recommended in the IOM report.

**CONCLUSION**

In a world where a nursing shortage did not exist, where patients’ acuity levels did not all skew to the high end of the range, and where we could predict periods of peak demand, most hospitals would not mandate overtime. This, of course, is not the world we live in.

Nonetheless, we cannot turn a blind eye to the research of Dr Rogers and others that shows the significant risk to patient safety when nurses work beyond 12 hours. A one-size-fits-all prohibition on mandatory overtime may not be the ideal solution for all nursing staff members in all hospitals; however, hospitals and nursing leaders cannot ignore the accumulating evidence that links fatigue with medical errors, including tragic, irreversible errors. Whether the solution is a ban or a restriction on mandatory overtime, we are obligated to create the working conditions that ensure the safety of our patients and the wellbeing of our nursing staff members.

**REFERENCES**


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**New Therapy Developed to Reduce Surgical Bleeding**

A new blood-clotting treatment using recombinant human thrombin (rhThrombin) may be equally effective at stopping moderate surgical bleeding and may have fewer side effects than thrombin therapy that uses plasma-derived bovine thrombin (bThrombin), according to an August 10, 2007, news release from the American College of Surgeons. Currently, bThrombin, the only commercially available stand-alone thrombin used to improve clotting during surgical procedures and to stop bleeding, is used to treat more than one million surgical patients each year. Approximately 20% of these patients, however, develop antibodies against bovine coagulation factors. These antibodies can cross-react with human coagulation proteins, which may lead to complications including severe bleeding and thrombosis.

Researchers studied 411 patients who underwent surgical procedures at 34 medical centers across the United States. Patients in one group (n = 206) were treated with bThrombin and patients in a second group (n = 205) were treated with rhThrombin. Results showed that both bThrombin and rhThrombin had comparable efficacy, with hemostasis achieved within 10 minutes for 95% of patients in both groups. Antibody development, however, was significantly lower in patients treated with rhThrombin (ie, 1.5%) compared with bThrombin (ie, 21.5%).
