



**National
Association of
Neonatal
Nurses**

The Effect of Staff Nurses' Shift Length and Fatigue on Patient Safety and Nurses' Health

Position Statement #3066

NANN Board of Directors
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Fatigue, known as the tiredness and reduced capacity for work resulting from cumulative sleep loss and extended work hours, negatively impacts nursing care and places neonates and nurses at risk. The quality and safety of care delivered to neonatal patients is compromised when caregivers are working in a state of fatigue. The optimal shift length and terminology related to shift length are not clear. The so-called long or extended shifts are usually described as those shifts that exceed 8 hours per day. Working 12- to 13-hour shifts per day is common in the United States and is attributed to perceived improvements in work-life balance among nurses (McGettrick & O'Neill, 2006). From an administrative standpoint, 12-hour shifts increase continuity of care and reduce staffing requirements and costs by reducing staff hand-offs and shift overlap (Richardson, Dabner, & Curtis, 2003; Sullivan & Reading, 2002). Overtime is often used to mitigate staffing shortages and results in extended shifts. Despite their perceived benefits, long shifts and the occurrence of overtime raise safety concerns due to the suggested association between fatigue and healthcare errors.

The relationship between working long shifts and safety outcomes is complex and may be influenced by several other factors, such as patient acuity, workload, type of shift, and how effectively fatigue is managed. There is a paucity of

evidence regarding the effects of long shifts on nurse performance, cognitive functioning, and patient outcomes. Available evidence, although inconclusive, points to a link between long shifts and suboptimal patient outcomes, as well as increased healthcare errors (Griffiths et al., 2014; Chen, Davis, Daraiseh, Pan, & Davis, 2014; Rogers, Hwang, Scott, Aiken, & Dinges, 2004). In addition, there are no clear guidelines to inform neonatal nurse administrators and staff nurses about how to manage shift length and overtime, and there are no effective measures that can completely eliminate the negative effects of working long shifts on human physiology, cognition, and performance.

The National Association of Neonatal Nurses (NANN) and its members are committed to efficient, equitable, safe, accountable, and high-quality patient care. As the professional voice of neonatal nurses, NANN recognizes the limitations of current evidence regarding staff nurses' shift length and fatigue and patient outcomes as well as the vulnerability of neonatal nurses to the potential risks of fatigue and sleep disturbances. Therefore, NANN recommends that neonatal nurses and their employers implement a combination of countermeasures to minimize personal and patient safety risks as they relate to fatigue, shift length, and overtime.

Association Position

Nurses are responsible for independent judgement related to patient care and treatment; therefore, it is imperative that they monitor their own fatigue levels. They should be aware of factors that may influence prevalence and intensity of work-related fatigue and take actions to modify those factors. Nurses should

- not work more than 12 hours per day or 48 hours per week
- take a minimum of one 20-minute meal or rest break when working for 6 hours or more
- take a minimum of one 10-15 minute break every 4 hours
- limit the number of consecutive 12-hour shifts to 3 per week and consider having a minimum of 2 rest days in between.

Background and Significance

The National Heart, Lung, and Blood Institute defines sleep deprivation/deficiency as a condition that results from inadequate sleep (National Heart, Lung, and Blood Institute, 2015). Sleep deficiency occurs if one or more of the following factors occur. A person

- does not get enough sleep (sleep deprivation)
- sleeps at the wrong time of the day (out of sync with the body's natural clock)
- does not get enough sleep, including all types of sleep.
- has a sleep disorder preventing him or her from getting enough sleep

The effects of fatigue and sleep deprivation have been studied in a variety of nursing environments (Griffiths et al., 2014; Chen et al., 2014; Rogers et al.,

2004). Persistent concerns regarding shift length promoted several professional organizations and regulators to issue recommendations regarding shift length fatigue and overtime in relation to patient safety (American Nurses Association 2014; The Joint Commission, 2011; Ellis, 2008; Institute of Medicine [IOM], 2004).

The American Nurses Association (ANA) published recommendations in their position statement, “Assuring Patient Safety: The Employers’ Role in Promoting Healthy Work Hours for Registered Nurses in All Roles and Settings,” based on account research linking human fatigue with healthcare errors (ANA, 2006a). The statement also clarifies that nurses have an ethical responsibility and duty to their patients to recognize their level of fatigue before accepting patient assignments that extend beyond their scheduled work time (ANA, 2006b).

The ANA’s 2014 position statement, “Addressing Nurse Fatigue to Promote Safety and Health: Joint Responsibilities of Registered Nurses and Employers to Reduce Risk” addresses nurse fatigue in the interest of promoting safety and nurse well-being. Consistent with findings by Bannai and Tamakoshi (2014), the ANA (2014) acknowledges the relationship between working long hours and increased risk for sleep disturbances, injuries, musculoskeletal disorders, gastrointestinal problems, gastric ulcers, mood disorders, anxiety, obesity, diabetes mellitus, metabolic syndrome, cardiovascular disease, cancer, and adverse reproductive outcomes.

In its December 2011 *Sentinel Event Alert*, The Joint Commission drew attention to the effects of healthcare worker fatigue on patient safety. The Joint Commission provided suggestions on what actions can be taken to help healthcare workers mitigate the risks of fatigue associated with extended work hours and proposed national safety goals related to healthcare worker fatigue (The Joint Commission, 2011).

The IOM report, “Keeping Patients Safe: Transforming the Work Environment of Nurses,” outlines the results from the nurses’ work environment study and patient safety (Scott, Rogers, Hwang, & Zhang, 2006). The report addressed the effects of extended work hours on patient safety. The risk for healthcare errors increases due to decreased vigilance when shift duration exceeds 8.5 hours. The risk for making at least one error increases with overtime regardless of shift duration (Rogers et al., 2004; Scott et al., 2006)

In 2008, the Washington State Nurses Association released a white paper entitled “Quality of Care, Nurses’ Work Schedules, and Fatigue.” The paper highlighted individual and employer actions to be taken so that the goal of patient safety and quality of care can be achieved while retaining expert nurses in the profession (Ellis, 2008).

Data suggest (Stimpfel, Sloane, & Aiken, 2012) that nurses who work 10 hours or more are 2.5 times more likely to experience burnout. The prevalence of fatigue in the U.S. workforce is estimated to be 37.9% (Ricci, Chee, Lorandean, & Berger, 2007). Prevalence of fatigue could be higher among registered nurses (Smith-Miller, Shaw-Kokot, Curro, & Jones, 2014). Studies suggest that fatigue plays a major factor in absenteeism and nurses' decision to leave the profession. In a 2014 study conducted by Smith et al., 92% of nurses working in an acute care setting reported occasional fatigue and 71% reported experiencing fatigue often or very often. Fatigued and sleep-deprived nurses are more likely to report regret in their clinical decisions; the nurse perceives these decisions as not aligning with their standards or expectations (Scott, Arslanian-Engoren, & Engoren, 2014).

According to Barker and Nussbaum (2011), there is consistent evidence that working longer than 12 hours increases the probability of errors and that the timing of most errors on a 12-hour shift is during or immediately after the last two scheduled hours. Furthermore, any shift schedule that results in more than a 40-hour week greatly increases the probability for errors as well as employee fatigue (Bannai & Tamakoshi, 2014). Nurses who work longer than 9 hours are two-and-a-half times more likely to experience burnout. (Twelve-hour shifts are defined as scheduled times of 12 hours with an additional allotted time of 30 minutes for lunch break; making actual hours at work 12.5 hours.)

Research on nursing fatigue clearly identifies the need to protect both nurses and patients from the effects of bedside nurses' fatigue and sleep deprivation. NANN concurs with colleagues who represent other nursing organizations in recognizing the need for a healthcare culture that supports the prevention of fatigue and sleep deprivation for nurses, including those who, like its members, provide care for fragile patients in neonatal intensive care units.

Because several modifiable factors at the system, unit, and individual level influence the prevalence and intensity of work-related fatigue, preventing work-related fatigue and its consequences requires a multifaceted approach toward individual lifestyle changes, workplace culture, and organizational policies. Education about fatigue should be incorporated into nursing curricula, and all healthcare employers should implement guidelines to minimize work-related fatigue.

Outcome data from current research on patient safety and length of shift as well as research on sleep deprivation and fatigue provide the basis for the following recommendations.

Recommendations

A number of risk-reduction strategies to decrease nurses' fatigue and sleep deprivation will improve the safety of patients and nurses alike.

For Employers and Nursing Managers and Directors

1. Promote a culture that recognizes nurse fatigue as an unacceptable risk.
2. Schedule sensibly. If an employee works both a day and night shift in the same week, it is recommended that he or she work the day shift first, followed by the night shift. After one night shift on duty, one day of rest is recommended before the nurse returns to the work environment (McGettrick & O'Neill, 2006).
3. Implement guidelines to limit the number of patient-care hours a nurse can provide. Limitations for safe patient care include a maximum of 12 hours in a 24-hour period and no more than 60 hours in a 7-day period (ANA, 2006a). In emergency situations, it may be necessary for a staff nurse to remain on duty for a longer period of time, but this should be an exception required by unusual circumstances, such as severe weather.
4. Consider two rest days after five 8-hour shifts, four 10-hour shifts, and three 12-hour shifts, in addition to limiting the number of consecutive 12-hour shifts to three (ANA, 2014).
5. Implement preplanned arrangements to relieve a staff nurse if he or she is scheduled to be on call for the next consecutive shift to allow time for a minimum of 8 hours of sleep. The number of on-call shifts in a 7-day period should be incorporated into the staff nurse's total scheduled hours (McGettrick & O'Neill, 2006).
6. Consider using permanent shift assignments, which may lessen fatigue effects, instead of rotating shift assignments (Smith-Miller et al., 2014).
7. Promote employee mental health and refer to employee assistance programs when needed. It is not clear whether disrupted circadian rhythm due to shiftwork contributes to depression or whether depression contributes to disrupted circadian rhythms.

For Bedside Registered Nurses

1. Uphold the ethical responsibility of nurses to arrive at work adequately rested and prepared to provide patient care.
2. Consider the finding that multiple workloads and work settings affect nurses' fatigue levels (ANA, 2006a).
3. Limit the number of hours worked to a maximum of 12 hours in a 24-hour period (except in emergency situations) and to no more than 60 hours in a 7-day period (Kenyon et al., 2007).
4. Follow steps to ensure safety while driving.
 - a. Recognize signs of drowsiness (National Sleep Foundation, 2014).
 - b. Realize that strategies to reduce drowsiness, such as putting the window down, do not work.
 - c. Prior to accepting employment consider hours and travel distance to reduce the risk of driving when drowsy.
5. Keep lines of communication open with management if you continue to experience negative consequences despite implementing healthy lifestyle changes.

6. Pay attention to potential addictive behaviors such as smoking, alcohol, caffeine consumption, and excessive internet activity. Such behaviors have been found to be associated with increased fatigue levels (Sahlin, Franklin, Stenlund, & Lindberg, 2009; Theorell-Haglöw, Lindberg, & Janson, 2006; Lin, Tsai, Chen, & Koo, 2013).
7. Develop a personal fatigue management plan.

Conclusions

A given institution's ability to support these recommendations will be affected by the amount and quality of its resources, along with other factors. The recommended strategies should nevertheless be given high priority because of their link with patient safety.

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