MEDICATION ERRORS

An Exhausted Workforce Increases the Risk of Errors

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PROBLEM: At some point during their careers, health care professionals have surely experienced that mind-numbing, body-draining fatigue that makes it difficult or impossible to stay focused on the task at hand or to remain vigilant when it comes to patient safety. Here are some all-too-typical scenarios:

After a busy 12-hour day shift, a nurse is required to stay four more hours to help care for a patient who has unexpectedly developed serious complications. The nurse then returns early the next morning for another scheduled 12-hour shift.

A nighttime pharmacist is fighting to stay awake at 5:30 a.m., 11 hours after the beginning of his shift. He is now required to prepare multiple complex admixtures for an influx of patients in the emergency department for another two hours.

After working for a full 12-hour day, a surgeon in the operating room is called back to the hospital that evening to consult about a patient in the emergency department who needs surgery right away.

An on-call nurse has spent nine hours in the operating room. She is called back to the hospital to assist with a lengthy emergency surgical procedure, only to return to the hospital the next morning for another eight hours in the operating room.

A pediatric resident, after a 17-hour workday, is resting in a cramped on-call room when a nurse calls him to attend to a neonate whose condition is rapidly deteriorating.

Long work hours and the weariness that results represent a serious threat to patient safety. The detrimental effects of fatigue on performance are well documented.[1-3] Prolonged wakefulness can degrade performance, leaving health care professionals with the equivalent of a blood alcohol concentration of 0.1%, which is above the legal limit for driving in most states.[4] When people experience exhaustion, their performance varies widely. One moment performance might be good; the next moment, it's inadequate as perceptions begin to disengage during episodes of microsleep (intermittent lapses in consciousness).[5]

When people are tired, the physiological drive to sleep can result in sleep that lasts a few seconds to a few minutes. Their eyes might even be open without their awareness.[5] Microsleep impairs performance and often leads to errors resulting from missed information or even from a loss of situational awareness. In one study, a videotaped, sleep-deprived anesthesiologist exhibited behaviors indicative of microsleep episodes during more than 30% of a four-hour procedure.[6]

Other industries have taken action to combat the effects of fatigue; however, the health care industry in general has largely disregarded the problem, especially because of the ongoing shortage of licensed practitioners. Several years ago, the Accreditation Council for Graduate Medical Education limited work schedules for medical residents to 80 hours per week (the European Union allows just a 56-hour weekly limit), and the Institute of Medicine recommended that nurses work no more than 12 hours a day and 60 hours per week, in any combination of scheduled shifts, mandatory overtime, and voluntary overtime.[7] However, more needs to be done.

SAFETY PRACTICE RECOMMENDATION: The Anesthesia Patient Safety Foundation has called upon its members to work jointly toward reducing fatigue in the practice of anesthesiology. Through the advice of a group of experts, the organization recommends these steps to all health care providers to defend against fatigue:[3]

1. *Education.* Forums should be created to educate practitioners and managers about the science of sleep, the risks associated with fatigue, mechanisms that underlie sleep disorders and fatigue, disturbances of circadian rhythm (our "biological clock"), and approaches to improve performance. An assessment of the staff's perceptions about the impact of fatigue on safety may be a helpful starting point for ongoing education in this area.

2. *Scheduling.* An analysis can be conducted to evaluate current staffing patterns, minimum off-duty time, consecutive work periods, and rest and recovery opportunities. Work schedules should be established with mandatory off-duty periods (intended for rest), limitations on hours worked each day and week, and time limitations for potentially exhausting physical and mental tasks within each workday. Disruptions in circadian rhythms can also result in fatigue. When possible, the principles of circadian rhythm should be considered when work schedules are designed. Contingency plans should be developed to assist staff members who have experienced a particularly demanding work schedule and who consider themselves unfit to continue work.

3. *Planned naps.* Establish policies that include naps in the workplace for employees with fatigue-inducing schedules and implement procedures that address the timing of naps and required coverage. Even short naps of 45 minutes can be beneficial in improving alertness without excessive grogginess upon awakening. Quality accommodations and space should be created for these planned rest periods.

4. *Routine rest and meal breaks.* Periodic rest periods, such as a 15-to 30-minute break away from the work area, decrease the negative effects of sleep deprivation. If the employee is unable to take breaks, this situation should be reported to a supervisor. Good-quality meals and nutritious refreshments should be available at all times, including at night, for health care workers.

5. *Light therapy.* Application of higher

levels of ambient light may help reduce the effects of disrupted circadian rhythms for workers on the night shift. Special facilities may be needed to allow workers to obtain light therapy at designated times, although timing is crucial to its success.

6. *Evidence-based safety practices.* Although not a replacement for a well-rested health care team, proven safety practices (e.g., computerized prescriber order entry, bar coding, smart pumps) may help reduce the incidence of errors caused by impairment from fatigue.

Fatigue might never be fully remedied in a health care industry that must provide 24 hours of continuous care every day, but it can be better managed. Nevertheless, human errors will still happen. The best solution probably requires a systems approach that both limits the causes of fatigue in the workforce and reduces the potential for human error.

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