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Published for Joint Commission accredited organizations and interested health care professionals, *Sentinel Event Alert* identifies specific types of sentinel events, describes their common underlying causes, and suggests steps to prevent occurrences in the future.

Accredited organizations should consider information in an Alert when designing or redesigning relevant processes and consider implementing relevant suggestions contained in the Alert or reasonable alternatives.

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Health care worker fatigue and patient safety

The link between health care worker fatigue and adverse events is well documented, with a substantial number of studies indicating that the practice of extended work hours contributes to high levels of worker fatigue and reduced productivity. These studies and others show that fatigue increases the risk of adverse events, compromises patient safety, and increases risk to personal safety and well-being.^{1,2,3,4,5} While it is acknowledged that many factors contribute to fatigue, including but not limited to insufficient staffing and excessive workloads, the purpose of this *Sentinel Event Alert* is to address the effects and risks of an extended work day and of cumulative days of extended work hours.

The impact of fatigue

Fatigue resulting from an inadequate amount of sleep or insufficient quality of sleep over an extended period can lead to a number of problems, including:

- lapses in attention and inability to stay focused
- reduced motivation
- compromised problem solving
- confusion
- irritability
- memory lapses
- impaired communication
- slowed or faulty information processing and judgment
- diminished reaction time
- indifference and loss of empathy⁶

Contributing factors to fatigue and risks to patients

Shift length and work schedules have a significant effect on health care providers' quantity and quality of sleep and, consequently, on their job performance, as well as on the safety of their patients and their individual safety. This fact has been borne out in numerous studies. Findings from a groundbreaking 2004 study of 393 nurses over more than 5,300 shifts – the first in a series of studies of nurse fatigue and patient safety – showed that nurses who work shifts of 12.5 hours or longer are three times more likely to make an error in patient care.⁷ Additional studies show that longer shift length increased the risk of errors and close calls and were associated with decreased vigilance,⁷ and that nurses suffer higher rates of occupational injury when working shifts in excess of 12 hours.⁸ Still, while the dangers of extended work hours (more than 12 hours) are well known, the health care industry has been slow to adopt changes, particularly with regard to nursing.

“An overwhelming number of studies keep saying the same thing – once you pass a certain point, the risk of mistakes increases significantly,” says Ann Rogers, Ph.D., R.N., FAAN, a nationally renowned sleep medicine expert with Emory University's Nell Hodgson Woodruff School of Nursing. “We have been slow to accept that we have physical limits and biologically we are not built to do the things we are trying to do.”

Resident physician duty hours have also been the focus of many studies. While the Accreditation Council for Graduate Medical Education (ACGME) implemented duty hour restrictions in July 2003 limiting work shifts to a maximum of 30 hours and no more than 80 hours of work per week, numerous subsequent studies indicate that



risks to patient safety and personal injury remain high for resident physicians working recurrent 24-hour shifts.^{9,10} In September 2010, ACGME published the final version of new standards, which became effective in July 2011. **In 2017, ACGME updated its [common program requirements](#).**

An article in the November 2007 *Joint Commission Journal on Quality and Patient Safety* concludes that evidence strongly suggests that extended duration work shifts significantly increase fatigue and impair performance and safety.¹¹ The article reports that residents who work traditional schedules with recurrent 24-hour shifts:

- Make 36 percent more serious preventable adverse events than individuals who work no more than 16 consecutive hours.¹²
- Make five times as many serious diagnostic errors¹²
- Have twice as many on-the-job attentional failures at night¹³
- Experience 61 percent more needlestick and other sharp injuries after their 20th consecutive hour of work¹⁴
- Experience a 1.5 to 2 standard deviation deterioration in performance relative to baseline rested performance on both clinical and non-clinical tasks¹⁵
- Report making 300 percent more fatigue-related preventable adverse events that led to a patient's death¹⁶

A subsequent 2009 study also reveals an increased rate of complications among post-nighttime surgical procedures performed by attending physicians who had slept less than six hours.¹⁷

"We have a culture of working long hours, and the impact of fatigue has not been a part of our consciousness," says Christopher P. Landrigan, M.D., M.P.H., director of the Sleep and Patient Safety Program, Brigham and Women's Hospital. The author of several research studies exploring the effects of provider sleep deprivation on patient and provider safety, Dr. Landrigan stresses the importance of reduced work hours for all health care workers, and the need for widespread education of health care providers to recognize their limits. "Most are unaware of sleep and circadian biology and the degree that it affects performance. And, most do not realize how much research supports the need to make changes."^{18,19}

Actions suggested by The Joint Commission

There are some evidence-based actions that health care organizations can take to help mitigate

the risks of fatigue that result from extended work hours – and, therefore, protect patients from preventable adverse outcomes.

For all organizations:

1. Assess your organization for fatigue-related risks. This includes an assessment of off-shift hours and consecutive shift work, and a review of staffing and other relevant policies to ensure they address extended work shifts and hours.
2. Since patient hand-offs are a time of high-risk – especially for fatigued staff – assess your organization's hand-off processes and procedures to ensure that they adequately protect patients.²⁰
3. Invite staff input into designing work schedules to minimize the potential for fatigue.
4. Create and implement a fatigue management plan that includes scientific strategies for fighting fatigue. These strategies can include: engaging in conversations with others (not just listening and nodding); doing something that involves physical action (even if it is just stretching); strategic caffeine consumption (don't use caffeine when you're already alert and avoid caffeine near bedtime); taking short naps (less than 45 minutes).^{21,22} These strategies are derived from studies conducted by the National Aeronautics and Space Administration (NASA), which state that people can maximize their success by trying different combinations of countermeasures to find what works for them. The NASA studies stress that the only way to counteract the severe consequences of sleepiness is to sleep.²¹ Strategies for determining shift durations and using caffeine to combat fatigue can be found in chapter 40 of "Patient Safety and Quality: An Evidence-Based Handbook for Nurses."²³
5. Educate staff about sleep hygiene and the effects of fatigue on patient safety. Sleep hygiene includes getting enough sleep and taking naps, practicing good sleep habits (for example, engaging in a relaxing pre-sleep routine, such as yoga or reading), and avoiding food, alcohol or stimulants (such as caffeine) that can impact sleep.^{21,22}

Safety culture (for all organizations):

6. Provide opportunities for staff to express concerns about fatigue. Support staff when appropriate concerns about fatigue are raised and take action to address those concerns.
7. Encourage teamwork as a strategy to support staff who work extended work shifts or hours and to protect patients from potential harm.²⁰ For example, use a system of independent second checks for critical tasks or complex patients.

8. Consider fatigue as a potentially contributing factor when reviewing all adverse events.

For organizations with a current policy that allows for sleep breaks for staff defined as essential by the organization:

9. Assess the environment provided for sleep breaks to ensure that it fully protects sleep. Fully protecting sleep requires the provision of basic measures to ensure good quality sleep, including providing uninterrupted coverage of all responsibilities (including carrying pagers and phones, and coverage of both admissions and all continuing care by another provider), and providing a cool, dark, quiet, comfortable room, and, if necessary, use of eye mask and ear plugs.

See relevant Joint Commission requirements:

LD.01.03.01 element of performance 5, LD.03.06.01 EP 3, LD.04.01.01 EP 2, LD.04.04.05 EP 13, PI.02.01.01 EPs 12-14, (hospital and long term care); NR.02.01.01 EP 1-6, NR.02.02.01 EP 1-4, (hospital)

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- ⁹ Landrigan CP, et al: Interns' compliance with Accreditation Council for Graduate Medical Education work-hour limits. *Journal of the American Medical Association*, 2006;296:1063-1070
- ¹⁰ Landrigan CP, et al: Effects of the Accreditation Council for Graduate Medical Education duty hour limits on sleep, work hours, and safety. *Pediatrics*, 2008;122:250-258
- ¹¹ Lockley SW, et al: [Effects of health care provider work hours and sleep deprivation on safety and performance.](#)

The Joint Commission Journal on Quality and Patient Safety, November 2007;33(11)7-18

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¹³ Lockley SW, et al: Effect of reducing interns' weekly work hours on sleep and attentional failures. *New England Journal of Medicine*, Oct. 28, 2004;351:1829-1837

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²⁰ Blum AB, et al: [Implementing the 2009 Institute of Medicine recommendations on resident physician work hours, supervision, and safety.](#) *Nature and Science of Sleep*, 2011;3:1-39

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²³ Agency for Healthcare Research and Quality: *Patient Safety and Quality: An Evidence-Based Handbook for Nurses* <http://www.ahrq.gov/qual/nursesfdbk/>. AHRQ Publication No. 08-0043, April 2008

New resource:

The American College of Obstetricians and Gynecologists: *Fatigue and Patient Safety. ACOG Committee Opinion No. 730. Obstetrics & Gynecology*, 2018;131(2) (accessed April 6, 2018)

Patient Safety Advisory Group

The Patient Safety Advisory Group informs The Joint Commission on patient safety issues and, with other sources, advises on topics and content for *Sentinel Event Alert*.