



# ACOG COMMITTEE OPINION

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## Committee on Patient Safety and Quality Improvement

This Committee Opinion was developed by the American College of Obstetricians and Gynecologists' Committee on Patient Safety and Quality Improvement in collaboration with committee member Laurie C. Gregg, MD.

## Fatigue and Patient Safety

**Abstract:** Fatigue and sleep deprivation may affect a health care provider's skills and communication style, and also may affect clinical outcomes. The National Sleep Foundation recommends 7–9 hours of sleep per night for an adult. However, there are no current guidelines limiting the volume of deliveries and procedures performed by a single individual or on the length of time he or she may be on call. Medical literature has shown that even a single night of missed sleep measurably affects cognitive performance. When adults do not sleep at least 5 hours per night, language and numeric skills, retention of information, short-term memory, and concentration all decrease on standardized testing. Speed of performance may be affected more than accuracy. Sleep deprivation may affect mood to a greater degree than it affects cognitive or motor performance, and, thus, may have a significant effect on a physician's ability to communicate effectively. To help mitigate resident fatigue, programs must train all faculty members and residents to recognize the signs of fatigue and sleep deprivation. The medical directors of outpatient units and chairs of hospital departments of obstetrics and gynecology may consider developing call schedules and associated policies that balance the need for continuity of care and the health care providers' need for rest. Designing standardized procedures also may protect against fatigue-related errors. Physicians at all stages in their careers need to be conscious of the demands placed on them professionally and personally and should balance those demands with rest to avoid excessive fatigue or overcommitment.

## Recommendations

The American College of Obstetricians and Gynecologists makes the following recommendations regarding fatigue and patient safety:

- Physicians at all stages in their careers need to be conscious of the demands placed on them professionally and personally and should balance those demands with rest to avoid excessive fatigue or overcommitment.
- The medical directors of outpatient units and chairs of hospital departments of obstetrics and gynecology may consider developing call schedules and associated policies that balance the need for continuity of care and the health care providers' need for rest.
- With the growing concern about the potential consequences of health care provider fatigue on patient safety, physicians should commit to evaluating the effects that fatigue has on their professional and

personal lives and should demonstrate willingness to adjust workloads, work hours, and time commitments to avoid fatigue when caring for patients.

## Introduction

Physicians are expected to offer safe and effective care to their patients. While individuals develop their clinical skills, they become aware of their own unique strengths and weaknesses. Professionals regularly seek consultations when a problem exceeds their experience or expertise. Seeking assistance when one is fatigued can be viewed similarly. Fatigue may affect a health care provider's skills and communication style, and also may affect clinical outcomes. However, there are no current guidelines limiting the volume of deliveries and procedures performed by a single individual or on the length of time he or she may be on call. Physicians at all stages in their careers need to be conscious of the demands placed on them professionally and personally and should



balance those demands with rest to avoid excessive fatigue or overcommitment.

## Considerations

In July 2003, the Accreditation Council for Graduate Medical Education enacted resident duty-hour limits to promote high-quality learning and safe care in teaching institutions. In its 2008 report, the Institute of Medicine (now known as the National Academy of Medicine) made several recommendations related to resident duty hours, including one that duty hours not exceed 16 hours per shift unless an uninterrupted 5-hour break for sleep is provided (1). In 2011, the Joint Commission published a Sentinel Event Alert describing the effect of fatigue on health care delivery and proposed organizational changes to mitigate its effect on patient safety (2). The 2017 revised Accreditation Council for Graduate Medical Education duty-hour recommendations established new limits on resident duty hours and emphasized the importance of faculty supervision, handoff processes, management of alertness, and fatigue mitigation (3). Clinical and educational work periods for residents must not exceed 24 hours of continuous scheduled clinical assignments and must be limited to no more than 80 hours per week, averaged over a 4-week period. To help mitigate resident fatigue, programs must train all faculty members and residents to recognize the signs of fatigue and sleep deprivation.

Although resident duty-hour limits have attempted to tackle the issue of fatigue in trainees, these limits have not translated conclusively into safer patient care. The hour limits lead to increased sleep duration during the on-call period but are associated with deterioration in education opportunities and interruption in continuity of patient care (4). Increased number of handoffs may be one reason that duty-hour restrictions have not translated into better quality of care. Attention given to quality handoffs in transitions of care is an issue that is becoming more prominent in an era of added work-hour restrictions.

The National Sleep Foundation recommends 7–9 hours of sleep per night for an adult (5). The average U.S. adult sleeps only approximately 7 hours per night. Sleep deprivation can be caused by insufficient sleep, or fragmented sleep, or both. Although there is wide variation in sleep needs, individuals do not get accustomed to less sleep than what is biologically required. One cannot accumulate sleep, and recovery from a period of insufficient sleep requires at least two or three full nights of uninterrupted sleep (6).

Several uncontrolled studies have analyzed the effect of sleep restriction on cognitive function (7–9). One small study compared reaction times and performance on a driving simulator between residents who had ingested alcohol to achieve a blood alcohol level of 0.05 g% but were rested and residents who were on a call rotation every fourth night. They found that performance

was comparable (7). Emergency department physicians who were rested have been compared with others on sequential night call (10, 11). The disruption of sleep produced by sequential night call had a significant effect on visual memory and cognitive performance. Study conclusions are mixed regarding the effect of fatigue on performance. One study that examined the risk of complications by attending physicians after performing nighttime procedures found an increased rate of surgical complications when physicians had sleep opportunities of less than 6 hours (12). Conversely, another large study found that the risks of adverse outcomes of elective daytime procedures were similar whether or not the physician had provided medical services the previous night (13). The different outcomes in these studies may be explained by the complexity of the postcall procedure being performed. In a study from a busy obstetric unit, a larger percentage of infants with a cord pH of 7.1 were born between midnight and 8 AM; in the same study, there was a trend toward a larger number of anal sphincter injuries between those hours (14). In one study looking at the patient's point of view, 80% of patients would request a different treating physician if they were informed that their physician had been working longer than 24 hours (15).

Several reviews of the medical literature show that even a single night of missed sleep measurably affects cognitive performance (16–18). When adults do not sleep at least 5 hours per night, language and numeric skills, retention of information, short-term memory, and concentration all decrease on standardized testing. Speed of performance may be affected more than accuracy. For example, surgeons operated more slowly in simulated procedures when sleep deprived, and emergency department physicians took longer to intubate a mannequin (18).

However, in the health care delivery arena, there is no clear evidence that restricting work hours improves patient outcomes. Several potential explanations for this exist. In the residency training setting, work-hour restriction with the creation of a night-float system has not been shown to decrease fatigue. Repeated episodes of working at night may result in sleep deprivation because physicians find themselves unable to fully rest during the day. Even a single night of complete sleep loss can require up to 3 days for recovery (11, 19).

Memory consolidation and insight formation require sleep. Sleep-deprived adults tend to exhibit impaired complex problem-solving skills and continue using solutions that do not work (20). The need for sleep, like the need for food, can affect decision making. Fatigue may drive individuals to avoid certain work responsibilities as a way to deal with sleep deprivation. Safe and effective care requires mindful communication between the patient and the physician and between the physician and other caregivers. Sleep deprivation may affect mood to a greater degree than it affects cognitive or motor performance and may have a significant effect on a physician's ability to communicate effectively (17). Emotionally



exhausted clinicians are less capable of engaging in positive interpersonal teamwork (21).

Medical directors of outpatient units and chairs of hospital departments may consider developing call schedules and associated policies that balance the need for continuity of care and the health care providers' need for rest. Because some physicians may not be able to gauge the extent of their own fatigue or may be reluctant to voice it, it may be helpful for hospital leadership to establish processes that provide the necessary support for those who either self-identify or are recognized by others to be fatigued. It may be prudent to give physicians the opportunity to postpone tasks that can be performed more safely later. Fatigue may arise from obligations outside the workplace. Some hospital departments have systems that encourage collaboration between independent practices when a health care provider has not had a sufficient period of uninterrupted sleep. Hospital leadership could consider designing standardized procedures that protect against fatigue-related errors. However, all fatigue is not avoidable in a specialty attending to births and emergencies that occur at all hours.

## Conclusions

There is increasing awareness within the patient safety movement that fatigue, even as partial sleep deprivation, can impair performance. Although many of the studies cited imply that increased physician rest may enhance quality of care, the data from those studies are mixed in their ability to support this claim. Additional research on the effects of fatigue on the performance of experienced health care providers is necessary to obtain evidence-based data to guide the formulation of national guidelines around this issue. The ultimate effect on clinical patient outcomes remains inconclusive. With the growing concern about the potential consequences of health care provider fatigue on patient safety, physicians should evaluate the effects that fatigue has on their professional and personal lives and should demonstrate a willingness to adjust workloads, work hours, and time commitments to avoid fatigue when caring for patients.

## References

1. Institute of Medicine. Resident duty hours: enhancing sleep, supervision, and safety. Washington, DC: National Academies Press; 2009. ↵
2. The Joint Commission. Health care worker fatigue and patient safety. Sentinel Event Alert Issue 48. Oakbrook Terrace (IL): Joint Commission; 2011. ↵
3. Accreditation Council for Graduate Medical Education. ACGME common program requirements. Chicago (IL): ACGME; 2017. ↵
4. Desai SV, Feldman L, Brown L, Dezube R, Yeh H, Punjabi N, Afsh K. Effect of the 2011 versus 2003 Duty Hour Regulation-Compliant Models on Sleep Duration, Trainee Education, and Continuity of Patient Care Among Internal

Medicine House Staff Randomized Trial. *JAMA Intern Med* 2013;173:649–55. ↵

5. Hirshkowitz M, Whiton K, Albert SM, Alessi C, Bruni O, DonCarlos L, et al. National Sleep Foundation's sleep time duration recommendations: methodology and results summary. *Sleep Health* 2015;40–3. ↵
6. Malik SW, Kaplan J. Sleep deprivation. *Prim Care* 2005;32:475–90. ↵
7. Arnedt JT, Owens J, Crouch M, Stahl J, Carskadon MA. Neurobehavioral performance of residents after heavy night call vs after alcohol ingestion. *JAMA* 2005;294:1025–33. ↵
8. Dawson D, Reid K. Fatigue, alcohol and performance impairment. *Nature* 1997;388:235. ↵
9. Australian Transport Safety Bureau. Development of measures of fatigue: using an alcohol comparison to validate the effects of fatigue on performance. Road Safety Research Report CR 189. Canberra: Australian Transport Safety Bureau; 2000. ↵
10. Rollinson DC, Rathlev NK, Moss M, Killiany R, Sassower KC, Auerbach S, et al. The effects of consecutive night shifts on neuropsychological performance of interns in the emergency department: a pilot study. *Ann Emerg Med* 2003;41:400–6. ↵
11. Dula DJ, Dula NL, Hamrick C, Wood GC. The effect of working serial night shifts on the cognitive functioning of emergency physicians. *Ann Emerg Med* 2001;38:152–5. ↵
12. Rothschild JM, Keohane CA, Rogers S, Gardner R, Lipsitz SR, Salzberg CA, et al. Risk of complications by attending physicians after performing nighttime procedures. *JAMA* 2009;302:1565–72. ↵
13. Govindarajan A, Urbach DR, Kumar M, Li Q, Murray BJ, Juurlink D, et al. Outcomes of daytime procedures performed by attending surgeons after night work. *N Engl J Med* 2015;373:845–53. ↵
14. Hehir M, Walsh JM, Higgins S, Mahony R. Maternal and neonatal morbidity during off peak hours in a busy obstetric unit. Are deliveries after midnight more complicated? *Acta Obstet Gynecol Scand* 2014; 93:189–93. ↵
15. Blum, AB, Raiszadeh F, Shea S, Mermin D, Lurie P, Landrigan CP, et al. US public opinion regarding proposed limits on resident physician work hours. *BMC Medicine* 2010;8:33. ↵
16. Pilcher JJ, Huffcutt AI. Effects of sleep deprivation on performance: a meta-analysis. *Sleep* 1996;19:318–26. ↵
17. Friedman WA. Resident duty hours in American neurosurgery. *Neurosurgery* 2004;54:925–31; discussion 931–3. ↵
18. Smith-Coggins R, Rosekind MR, Hurd S, Buccino KR. Relationship of day versus night sleep to physician performance and mood. *Ann Emerg Med* 1994;24:928–34. ↵
19. Kuhn G. Circadian rhythm, shift work, and emergency medicine. *Ann Emerg Med* 2001;37:88–98. ↵
20. Ellenbogen JM. Cognitive benefits of sleep and their loss due to sleep deprivation. *Neurology* 2005;64:E25–7. ↵
21. Welp A, Meier LL, Manser T. The interplay between teamwork, clinicians' emotional exhaustion, and clinician-rated patient safety: a longitudinal study. *Crit Care* 2016 20:110. ↵



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