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## New Harvard Study Shows that Limiting Physicians' Work Hours Can Dramatically Reduce Medical Errors

The American Medical Association is fiercely advocating limiting the ability of patients to hold physicians accountable for medical malpractice. Instead, it should be working hard to reduce the number of hours interns (doctors in their first year of training after completing medical school) and residents work in order to dramatically reduce medical errors.

American medical residents and interns work among the highest – if not the highest – number of hours in the professional world. After 24 hours of wakefulness, cognitive function deteriorates to a level equivalent to having a 0.10 percent blood alcohol level,<sup>1</sup> above the legal drinking limit in most states. Doctors who would be considered too unsafe to drive are often entrusted with the safety of patients. Last year, the Accreditation Council on Graduate Medical Education (ACGME), facing pressure from a petition by Public Citizen and others and legislation pending in Congress, finally took up this problem by implementing a guideline stating that residents cannot work more than 80-88 hours per week (based on a four-week average). However, the guideline preserved traditional extended shifts that can reach 30 hours in length.

A new study published in *The New England Journal of Medicine*<sup>2</sup> is the first randomized trial analyzing the impact of the sleep deprivation of physicians on the rate of serious medical errors committed. The Intern Sleep and Patient Safety Study, conducted as part of the Harvard Work Hours, Health and Safety Study, examined the relationship between interns' work schedules and the serious medical errors committed over the course of one year in the medical intensive care and coronary care units of Brigham and Women's Hospital, a large academic hospital in Boston. The study showed that interns made substantially more serious medical errors when they worked the traditional shift (averaging 85 hours per week) compared to when they worked in a redesigned schedule (averaging 65 hours per week). Among the findings:

- **Interns made 35.9 percent more serious medical errors during a traditional work schedule than during an intervention schedule that eliminated extended work shifts.** Rates of serious medical errors made by interns were compared while they worked traditional schedules of eight hour shifts alternating with 29 hour shifts (though the interns often worked longer) and interventional schedules that eliminated extended work shifts (consecutive hours of work were limited to 16). There were 136 serious medical errors committed per 1,000 patient days under the traditional schedule and 100.1 serious medical errors per 1,000 patient days under the intervention schedule. Since most of the 100,000 physicians currently being trained in the United States are regularly scheduled to work 30-hour shifts, eliminating extended work shifts is necessary in order to improve patients' safety.

- **Interns made 56.6 percent more nonintercepted serious errors during the traditional schedule.** A nonintercepted serious error was defined as a medical error with substantial potential to cause harm that reaches the patient but luckily causes no clinically detectable harm. There were 44.8 serious errors that reached a patient per 1,000 patient days during the traditional schedule and 28.6 per 1,000 patient days during the intercepted schedule. An example of a nonintercepted serious error was an intern who tried to force a catheter into a patient's vein that was already occupied by a wire from a defibrillator. In the middle of the placement a doctor entered the operating room and asked the intern to abort the procedure.
- **Interns made 20.8 percent more serious medication errors during the traditional schedule.** There were 99.7 serious medication errors committed per 1,000 patient days during the traditional schedule and 82.5 per 1,000 patient days committed during the intervention schedule. An example of a serious medication error was an intern who ordered an antibiotic for a patient with a listed allergy to that medication. A dose of the medication was given before the error was detected.
- **Interns made 5.6 times as many serious diagnostic errors during the traditional schedule.** There were 18.6 serious diagnostic errors committed per 1,000 patient days during the traditional schedule and 3.3 per 1,000 patient days during the intervention schedule. An example of a serious diagnostic error was an intern who reported that a patient with congestive heart failure was in stable condition. A nurse later found that the patient was overloaded with fluid and was having trouble breathing.
- **The total rate of serious errors on the critical care units was 22 percent higher during the traditional schedule.** The overall rates of serious medical errors (committed by interns and all other medical personnel) were compared in order to track the effects of interns' schedules on the system as a whole. There were 193.2 serious errors per 1,000 patient days during the traditional schedule and 158.4 serious errors per 1,000 patient days during the intervention schedule. The reduction in overall errors shows that the substantially lower rates of errors made by interns during the intervention schedule cannot be due to the shifting of errors to other staff.

For more information about Public Citizen's work regarding medical residents' work hours, visit: <http://www.citizen.org/hrg/healthcare/articles.cfm?ID=6666>.

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<sup>1</sup> D. Dawson and K. Reid, "Fatigue, Alcohol and Performance Impairment," *Nature* 1997;388:235.

<sup>2</sup> Christopher P. Landrigan, Jeffrey M. Rothschild, John W. Cronin, Rainu Kaushal, Elisabeth Burdick, Joel T. Katz, Craig M. Lilly, Peter H. Stone, Steven W. Lockley, David W. Bates, Charles A. Czeisler, for the Harvard Work Hours, Health and Safety Group, "Effect of Reducing Interns' Work Hours on Serious Medical Errors in Intensive Care Units," *New England Journal of Medicine*, 2004;351:1838-48.