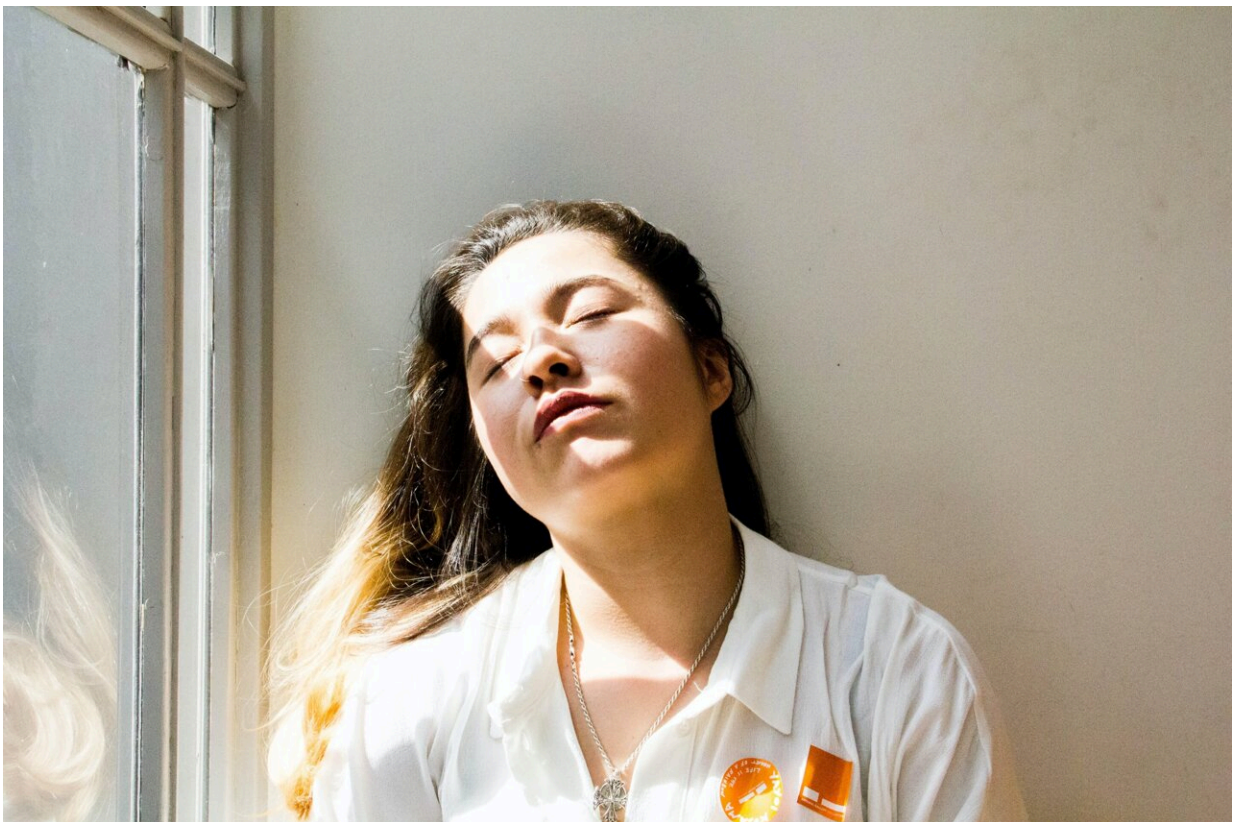


# National study of resident physicians suggests need for federal work hour guideline changes

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More experience on the job does not protect resident physicians or their patients from the increased safety risks associated with long work weeks

and extended-duration work shifts, according to a new study led by investigators from Brigham and Women's Hospital. To date, nationwide work hour guidelines in the United States have largely focused on resident physicians in their first year of residency (known as PGY1), omitting more experienced resident physicians in their second year (PGY2) or beyond (PGY2+).

Brigham researchers analyzed national survey results from more experienced resident physicians and found that much like PGY1 residents, those who worked more hours per week or worked extended-duration shifts reported higher rates of safety events affecting patients, such as medical errors and preventable adverse events, as well as safety events affecting themselves, such as near-miss vehicle crashes and occupational exposures. Results are published in *BMJ Medicine*.

"More experienced residents need sleep, just like anyone else, and when they work extended shifts or put in long weekly hours, they often do not have the opportunity to get the sleep that they need and are just as susceptible to these risks as first-year resident physicians," said corresponding author Laura K. Barger, Ph.D., of the Division of Sleep and Circadian Disorders in the Departments of Medicine and Neurology. "Our research shines a light on an issue that affects both resident physicians and their patients, and should prompt a reexamination of national guidelines."

In the U.S., the Accreditation Council for Graduate Medical Education (ACGME) set guidelines that went into effect in 2011, limiting first-year resident work shifts to 16 hours or less, based on recommendations made by the National Academy of Medicine and informed by studies conducted by Brigham investigators over the last four decades. But the ACGME endorsed extended-duration work shifts of up to 28 consecutive hours for more experienced resident physicians and up to 80-hour work weeks for all residents. In countries in the European

Union, resident physicians are limited to work 48 hours or less per week.

Barger and colleagues conducted a nationwide prospective cohort study of resident-physicians in the U.S., collecting responses over eight academic years (2002-2007, 2014-2017) from 4,826 resident physicians in their second year or beyond. Survey respondents answered questions about patient safety outcomes and about their own health and safety outcomes.

Even after adjusting for hours spent in patient care, the researchers found that residents who worked more weekly hours or worked extended-duration shifts were at greater risk of making errors that endangered patients or themselves. Working more than 48 weekly [work hours](#) was associated with more medical errors, preventable adverse events, as well as near-crashes, occupational exposures, percutaneous injuries, and attentional failures.

Risk continued to rise for residents working 60-, 70- and up to 80-hour work weeks (the current work week limit), with residents exceeding 60 hours of work being more likely to report errors resulting in death to a patient. Weekly work hours at currently permissible limits were associated with approximately three times the risk of a medical error or preventable adverse event, compared to residents working similar hours as those in the European Union.

"Working just one extended-duration shift in a month was associated with increased risk of medical errors as well as having a near-collision on the way home from work," said co-author Matthew Weaver, Ph.D., of the Division of Sleep and Circadian Disorders. "The ACGME currently endorses extended-duration work shifts of up to 28 consecutive hours for all residents, which means they are often working without adequate sleep."

The authors note that their study is based on self-reported data and collected from residents who chose to participate in the survey. But participants were unaware of the study's focus, and questions about safety outcomes were included among others about caffeine usage and physical activity.

In an accompanying editorial, also published in *BMJ Medicine*, the authors call for national policy changes to limit work hours and extended shifts, as well as screening for sleep disorders and providing [sleep](#) health education resources for resident physicians.

"The harm of long work weeks and extended shifts affects experienced senior resident physicians in the same way as it does first-year resident physicians and that harm is reaching patients," said senior author Charles Czeisler, MD, Ph.D., chief of the Division of Sleep and Circadian Disorders. "In other parts of the world, physicians are effectively trained while working safer hours. Our findings provide further evidence that it is time for guidelines in the U.S. to change to ensure that all [resident](#) physicians, regardless of their experience, have safer work-hour limits."

**More information:** Laura K Barger et al, Impact of work schedules of senior resident physicians on patient and resident physician safety: nationwide, prospective cohort study, *BMJ Medicine* (2023). [DOI: 10.1136/bmjmed-2022-000320](https://doi.org/10.1136/bmjmed-2022-000320)

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