Doctors Also Need Sleep: Is It Time to Take Another Look at Our ROSTERS?
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Despite an abundance of data that humans need sleep to perform at their best, the medical profession has lagged behind other service industries, including other health professions, in developing guidelines consistent with current data describing the negative impact of sleep deprivation on physician performance.1,2 This lack of guidelines is likely due to some combination of the heterogeneity of literature, concern about educational outcomes from decreased hours, and financial impact.2,3 In addition, the connections between physician performance, patient safety, and physician sleep deprivation have not always been clear to the public.

Existing guidelines on physician shift lengths are centered on trainees, who account for a minority of the active physician workforce, in part because trainees have historically had more grueling schedules than practicing physicians. The Accreditation Council for Graduate Medical Education (ACGME) determines the maximum educational work hours that residents and fellows can work. ACGME guidelines are influenced by National Academy of Medicine recommendations, seminal studies on the effect of different shift durations on trainee performance and/or patient safety, requests by professional organizations, and public comments.2–7 In 2017, the ACGME reversed a previous decision of limiting first-year residents to 16-hour shifts, again allowing all residents to work shifts of up to 24 hours in duration, with up to 4 additional hours for patient safety, transitions of care, and resident education-related tasks.5,6

In the Randomized Order Safety Trial Evaluating Resident-physician Schedules (ROSTERS) study, researchers compared the patient safety and performance impact of ≥24 hour shifts with that of ≥16 hour shifts on senior residents in PICUs.7 In this issue of Pediatrics, Rahman et al8 add to the large and consistent body of literature demonstrating that sleep deprivation, particularly via shifts lasting >16 hours, has a detrimental effect on physician performance and patient safety.9,10 The authors provide data to support the links between increased shift-length, decreased psychomotor vigilance, and increased rates of serious medical errors. Other studies have revealed a link between extended-duty shifts and attentional failures but have not specifically linked attentional failures to individual providers’ medical errors.11,12 In this study, the link is nicely drawn. By illustrating the link between decreased psychomotor vigilance and an increased rate of medical errors, the authors have also made it easier and less expensive for additional studies to be completed in other fields without the same need for a detailed review of medical errors. Certainly, the cause would be strengthened by doing similar studies on procedural trainees or non-procedural trainees of various specialties and levels, and we hope that others will take this opportunity.

An important point noted in this study by Rahman et al8 is that not all shift durations <16 hours are created equal.

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Intentionality has to be paid to optimal shift timing in the context of the circadian rhythm because shorter shifts that are not physiologically optimized can lead to varied effects on performance. However, we need to extend schedules for individual provider-level sleep benefits like minimizing day-night transitions or aligning shift start and end times with the circadian rhythm, implementing shorter shift durations would most certainly require additional staff: a point acknowledged by the National Academy of Medicine in their recommendations.

Another key detail of the ROSTERS study is that the study population included senior residents. Although the finding that senior residents are subject to sleep deprivation is not surprising, skeptics of the literature have identified this population as a potential gap in existing literature. Given the observed effect in senior residents, this study should further prompt us to question whether similar sleep deprivation-induced performance deficits might be seen in even more experienced, practicing physicians. Past research has revealed that these more advanced physicians are likely not immune to the impacts of sleep deprivation on performance. Importantly, attending physicians receive far less oversight of their work hours than trainees.

Beyond the negative impact on patient safety and performance, sleep deprivation and prolonged shift durations impact physicians’ quality of life. Physician schedules with prolonged shifts are products of dogma that have persisted because of a myriad of factors, including limited funding to hire additional staff, an absence of data demonstrating similar educational outcomes with decreased hours, reticence to extend training, and individual physician preferences for condensed work schedules. Although we acknowledge these barriers, the ROSTERS study serves as a reminder that doctors are not superhuman. Our bodies show the same biological and psychomotor effects of sleep deprivation as our nonphysician colleagues. Put simply, we need sleep like everyone else, not only for our own well-being and optimal performance but also for the safety of our patients.

**ABBREVIATIONS**

ACGME: Accreditation Council for Graduate Medical Education  
ROSTERS: Randomized Order Safety Trial Evaluating Resident-Physician Schedules

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