

Patient Safety Tip of the Week

April 22, 2014

Impact of Resident Workhour Restrictions

In the late 1980's New York State adopted recommendations of the Bell Commission to limit the number of hours housestaff could work in a week. The Bell Commission was convened after the Libby Zion case had highlighted issues related to fatigue and supervision of physicians in training. At the time we actually asked Dr. Bell what the evidence base was that the change in housestaff hours would have a beneficial effect on patient outcomes. His response was that incidents reported in NYS were more frequent on evenings and weekends. We pointed out that those were also the times where cross-coverage occurred most frequently and that important information was often suboptimally transmitted during handoffs. There is no question that fatigue can result in diminished performance and has been associated with many adverse events (see the list of our prior columns on fatigue in healthcare at the end of today's column). But we suspected that benefits from reduced housestaff fatigue might well be offset by detrimental effects of an increased number of handoffs that would occur after the change in housestaff hours.

NYS proceeded with the 80-hour weekly maximum for housestaff without any formal or systematic measurement of its impact on patient outcomes or for recognition of unintended consequences. Subsequently other states and ACGME have adopted significant restrictions in housestaff hours. The ACGME 80-hour work week restriction was implemented in 2003 and the ACGME in 2011 mandated 16-hour duty maximums for PGY-1 residents.

As you all probably know, the evidence of an impact of restricted housestaff hours on patient outcomes and patient safety has been mixed and contradictory. And any study looking at the impact of restricted work hours needs to look at patient outcomes, adverse events, housestaff wellness and well-being, and how well we educate and prepare our residents for their future practice in healthcare.

A new systematic review looks at the impact of restricted hours in surgical residency programs from all those perspectives ([Ahmed 2014](#)). The authors review the literature on

the impact of surgical resident workhour restrictions from a patient safety perspective and note that the impact is uncertain by objective measures but that overall perceptions of patient safety by residents are worse. And while resident well-being is perceived as being improved the overall impact from their educational and training perspective is worse. They note that while overall numbers of surgical procedures may be unchanged, there is a decrease in the number of emergency procedures they do. Those emergency procedures often help better prepare residents for recognition of rapidly changing circumstances and better deal with unexpected events.

They do note that overall there has been a trend toward increased patient mortality since implementation of resident workhour restrictions but that this has not reached statistical significance. Studies on the impact on morbidity and complication rates have been mixed and inconclusive. Studies in neurosurgery, cardiac surgery and critical care have shown increased complication rates.

Regarding the 16-hour maximum workday they again conclude that there is no conclusive answer from objective measures but, again, outcomes are worse from a subjective perspective. Residents frequently note diminished continuity of care, increased handoffs, and work compression as having negative impacts on patient care, safety and outcomes. They also note that shorter hours result in residents not fully seeing the natural course or trajectory of the patients' conditions, perhaps delaying recognition of early clinical deterioration. From the resident wellness/well-being perspective they note no significant change. From the educational perspective they note decreased readiness for real world practice. They also note that, while resident performance on written board exams has remained unchanged, there has been a substantial decline in resident performance on the oral portion of board exams since implementation of the restrictions.

The authors also note that "night float" systems put in place to deal with care gaps caused by the resident workhour restrictions results in decreased learning opportunities.

They do discuss interventions that should be considered as alternatives or adjuncts to residency programs. These include simulation programs, programs to improve sleep opportunities, wellness programs, more use of other healthcare providers, better handoffs, and maintenance of the 24-hour circadian cycle (eg. no float systems or shift work).

Though many of the conclusions in the Ahmed review weigh heavily on subjective rather than objective measures, this is a very good review of studies to date on the impact of workhour restrictions in surgical training programs.

Note that a UK task force has also just released a report showing European residency workhour restrictions have had a negative impact on training for some specialties, particularly surgery ([Rimmer 2014](#)).

Studies on the impact of the 2011 ACGME workhour changes on medical residents have been mixed. One study ([Sen 2013](#)) found that although interns report working fewer hours under the new duty hour restrictions, this decrease has not been accompanied by an

increase in hours of sleep or an improvement in depressive symptoms or well-being but has been accompanied by an unanticipated increase in self-reported medical errors. A more recent study ([Block 2014](#)) found no change in patient safety outcomes in patients treated by general medicine residents compared to those treated by hospitalists after implementation of the 2011 changes.

Some of our other columns on housestaff workhour restrictions:

December 2008 “[IOM Report on Resident Work Hours](#)”
February 26, 2008 “[Nightmares: The Hospital at Night](#)”
January 2010 “[Joint Commission Sentinel Event Alert: Healthcare Worker Fatigue and Patient Safety](#)”
January 2011 “[No Improvement in Patient Safety: Why Not?](#)”
November 2011 “[Restricted Housestaff Work Hours and Patient Handoffs](#)”
January 3, 2012 “[Unintended Consequences of Restricted Housestaff Hours](#)”
June 2012 “[Surgeon Fatigue](#)”
November 2012 “[The Mid-Day Nap](#)”
December 10, 2013 “[Better Handoffs, Better Results](#)”

Some of our other columns on the role of fatigue in Patient Safety:

November 9, 2010 “[12-Hour Nursing Shifts and Patient Safety](#)”
April 26, 2011 “[Sleeping Air Traffic Controllers: What About Healthcare?](#)”
February 2011 “[Update on 12-hour Nursing Shifts](#)”
September 2011 “[Shiftwork and Patient Safety](#)”
November 2011 “[Restricted Housestaff Work Hours and Patient Handoffs](#)”
January 2010 “[Joint Commission Sentinel Event Alert: Healthcare Worker Fatigue and Patient Safety](#)”
January 3, 2012 “[Unintended Consequences of Restricted Housestaff Hours](#)”
June 2012 “[Surgeon Fatigue](#)”

References:

Ahmed N, Devitt KS, Keshet I, et al. A Systematic Review of the Affects of Resident Duty Hour Restrictions in Surgery: Impact on Resident Wellness, Training, and Patient Outcomes. *Annals of Surgery* 2014; Published ahead-of-print POST AUTHOR CORRECTIONS, 21 March 2014

http://journals.lww.com/annalsofsurgery/Abstract/publishahead/A_Systematic_Review_of_the_Affects_of_Resident.97914.aspx

Rimmer A. Implementation of the working time directive has had an adverse impact on training in the UK, taskforce says. BMJ 2014; 348: g2599 (Published 4 April 2014)
<http://www.bmj.com/content/348/bmj.g2599>

Sen S, Kranzler HR, Didwania AK, et al. Effects of the 2011 Duty Hour Reforms on Interns and Their Patients A Prospective Longitudinal Cohort Study. JAMA Intern Med. 2013; 173(8): 657-662
<http://archinte.jamanetwork.com/article.aspx?articleid=1672284&resultClick=3>

Block L, Jarlenski M, Wu AW, et al. Inpatient safety outcomes following the 2011 residency work-hour reform. Journal of Hospital Medicine 2014; Article first published online 22 FEB 2014
<http://onlinelibrary.wiley.com/doi/10.1002/jhm.2171/abstract>

 The
Truax
Group
Healthcare Consulting
www.patientsafetysolutions.com

<http://www.patientsafetysolutions.com/>

[Home](#)

[Tip of the Week Archive](#)

[What's New in the Patient Safety World Archive](#)