Correlation between Pediatric Intern Inpatient Volume and Milestones-Based Clinical Competency

Daniel J. Sklansky, MD, Ryan J. Coller MD, MPH, Sabrina M. Butteris, MD, Kristin A. Shadman, MD, Kirstin Nackers, MD, Ann Allen, MD, Mary L Ehlenbach, MD, Sarah A. Webber, MD, Kristin Tiedt, MD, Carrie Nacht, MPH, and Michelle M. Kelly, MD, MS

University of Wisconsin – Madison

School of Medicine and Public Health, Department of Pediatrics

UW Health
American Family Children's Hospital

Department of Pediatrics
UNIVERSITY OF WISCONSIN
SCHOOL OF MEDICINE AND PUBLIC HEALTH

BACKGROUND

- Time-based training assumes that clinical skills improve with experience.
- The ACGME requires "a [patient] volume...to achieve all of the required educational outcomes,"
- There is no evidence that inpatient volume correlates with clinical competency

METHODS

- Retrospective cohort study of pediatric residents completing six 4-week inpatient blocks as interns on general and specialty inpatient teams from July 2016-June 2017
- High-fidelity tracking via intern self-designation of intern-patient pairing in the Electronic Health
- Patient Care (PC) core competency score was generated for each intern by calculating a mean of PC sub-competency domains from milestones-based assessments completed by attending physicians
- Correlation between patient clinical experience (unique patients, patient days) and PC score (intern year, senior year, change over time) was assessed by multivariate linear regression, adjusting for gender and local medical school matriculation

Intern inpatient volume was only **weakly** correlated with perceived clinical competency. There may be diminishing, non-linear, and/or floor-effects on competency gains associated with inpatient volume.

RESULTS

- 15 interns in this cohort cared for 1,655 inpatients with a mean (SD) of 110 [24] per intern
- Residents had a mean (SD) of 141 [17] discrete PC sub-competency assessments as interns and 92 [27] as seniors.
- Mean (SD) PC scores were 3.1 [0.23] and 4.1 [0.24] during their intern and senior years, respectively
- Correlation between unique patients cared for as interns and PC scores during intern and senior years was minimal (r^2 0.05 [p=0.74, linear trend] and 0.15 [p=0.49], respectively). Intern patient days and PC scores during intern and senior years had similarly weak associations (r^2 0.04 [p=0.98] and 0.13 [p=0.56], respectively)
- Correlation between volume (unique patients, patient days) and PC score improvement from intern to senior year was stronger but still weak, with r^2 0.23 [p=0.60] and 0.24 [p=0.51], respectively

CONCLUSIONS

- The relationship between clinical volume and perceived clinical competency may be overestimated
- Next steps are to study this correlation in: 1.) Larger number of residents in multiple classes, 2.) Other care settings, and 3.) Other institutions

ADDITIONAL KEY INFORMATION

- Anticipate changes in milestone competency reporting with *Milestones 2.0* in the next academic year
- Best accounting of inpatient care interactions is unclear in the literature. Order entry alone was deemed insufficient as a marker of meaningful care interaction for this study
- This study supports the ACGME's effort to move to competency-based promotion over time-based promotion