

Do Post-call Residents Make More Errors in Medication Orders?

Bradley E. Barth, MD, Gregory Hendey, MD, Tricia Soliz, MS, RN — UCSF-Fresno Medical Education Program, University Medical Center, Fresno, CA

Introduction

- ◆ Errors in Medicine have recently received much attention. Prior studies show that people who are sleep-deprived make more errors in simple cognitive tasks. However most prior studies looking at physicians used surrogate markers for error making. Additionally, these studies have had conflicting results.

Objective

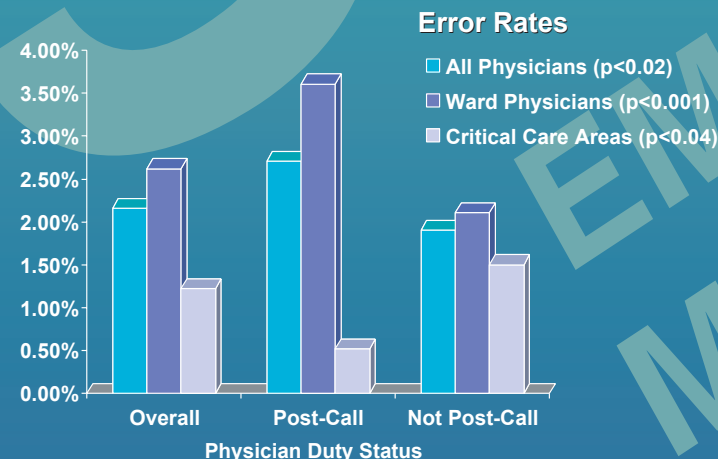
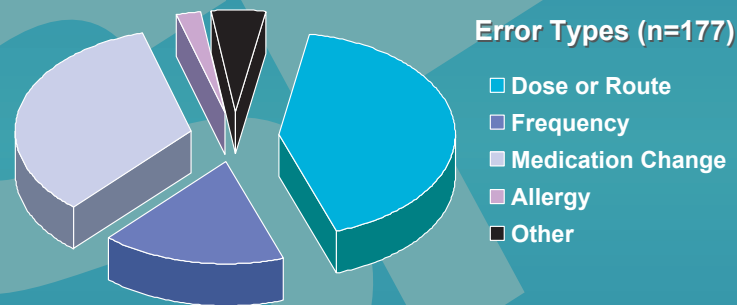
- ◆ Our objective was to compare the medication-ordering error rates in resident physicians who are post-call versus those who are not.

Methods

- ◆ We analyzed all inpatient medication orders written by resident physicians in the ICU, medical, and surgical wards during a one-month period (based on power calculations).
- ◆ Physician call schedules and pharmacy medication error logs were also entered into a database.
 - An "error" was defined as anytime a pharmacist contacted a physician if it resulted in a change in a medication order.
 - "Post-call orders" were defined as those written after midnight by a physician on call the previous day.
- ◆ Two trained data abstractors using standardized forms gathered data. Error rates and descriptive statistics were calculated, and Chi-squared tests were used to compare error rates.

Results

- ◆ 8,195 orders were entered
 - 2,620 (32%) written by post-call physicians
 - 5,575 (68%) were not post-call
- ◆ There were 177 medication-ordering errors (including incorrect dosing schedules, interactions, allergies, etc.)
- ◆ The error rate was higher when physicians were post-call (2.7% vs. 1.9%, $p < .02$), and higher on the General Wards than in the Critical Care Units (2.6% vs. 1.2%, $p < .00001$).
- ◆ The post-call error rate in particular was higher on the general wards than in the critical care units (3.6% vs. 0.5%, $p < .0001$).



Limitations

- ◆ Retrospective design
- ◆ Only includes errors detected by Pharmacist
- ◆ May not extrapolate to other medical decision making
- ◆ Unable to determine clinical significance of errors
- ◆ Possible last minute changes to call schedule

Conclusions

- ◆ Medication-ordering error rates were higher when physicians were post-call.
- ◆ This effect was especially pronounced on the General Wards.
- ◆ Additionally, errors were more common on the General Wards than in the Critical Care Units.
- ◆ Although the absolute differences were small, and the errors were generally minor, this study provides one possible area for reduction of errors in medicine.
- ◆ This study suggests that sleep-deprived, post-call house officers make more errors in cognitive tasks.

Acknowledgments

- ◆ Thanks to our research assistants, Damara Ortiz and Lily Lou, and the Medical Information Resources Department at UCSF-Fresno. Thanks also to Ron Immoto Pharm.D. and the staff of the University Medical Center Pharmacy.

