# The effect of a 16-hour intern cap on patient outcomes: a retrospective analysis.

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CRC Proposal

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# Rationale

- New work hours in place since July 2011 mandate 16-hour caps for interns
- Overnight call → Night float system
- Patients admitted overnight by one intern and cared for on the floor by another

# Rationale

- Trade-offs: housestaff well rested but more handoffs
- Does increased handoffs lead to worse patient outcomes?
- Very topical, and any clinically difference stemming from a scheduling change is relevant

# Background

- NEJM prospective trial from 2004 looked at change from >24h calls to 15-16h day and night shifts in MICU setting
- Interns made 36% more serious errors in 24h call arm than shift work arm
- No difference in LOS / mortality
- However  no equivalent study in floor patients

# Hypothesis

- Patients admitted under the new NF paradigm (July 2011 onwards) will have higher LOS and increased in-hospital complication rates

# Methods

- Retrospective analysis
- Patients admitted **overnight** to general medical / cardiology services at Milstein Hospital

# Definitions

Two time periods of interest

1. OC (before July 2011): the old overnight call system
2. NF (after July 2011): the new night-float system

# OC system (up to July 2011)

- Long-call intern present from morning
- PGY2 night resident arrives at 9pm
- Two subgroups
  1. OCI. Patients admitted by the intern overnight.
  2. OCR. Patients admitted by the PGY2 overnight (control arm)

# NF system (July 2011 on)

- Night intern now arrives at 9pm
- PGY2 night resident arrives 9pm (unchanged from OC)
- Two subgroups
  1. NFI. Patients admitted by the intern overnight.
  2. NFR. Patients admitted by the PGY2 overnight (for control comparison with OCR)

# Outcomes

- Primary: mean length-of-stay (ALOS)
- Secondary: in-hospital complications

# In-hospital complications

- Composite endpoint of:
  - mortality
  - ICU/SDU transfer
  - ARF
  - MI

# Statistical Analysis

- ALOS: unpaired t-test
- In-hospital complications: chi-square

- Possible: comparison with PGY2 groups, subgroup analysis (service, diagnosis), multivariate model, correction for CMI

# Sample Size

- ALOS at NYP this year: 6.58 days (variance 0.6, SD 0.77).
- Clinically significant difference: 0.5 days.
- Unpaired t-test with 80% power at $p<0.05$ gives n = 39 patients:

- $n = 1 + 16\ (SD/effect)^2 = 1 + 16\ (0.77/0.5)^2 = 38.9$

# Sample Size

- Difficult to find data on in-hospital complication rates
- Empiric observation: 15% prevalence
- Clinical significance of 2% effect
- Chi-squared for 80% power at $p<0.05$ requires n of 4815

# Subjects

- 3 patients admitted each night by interns
- ~800 patients so far this year
- Can delay date of sampling to increase n
- Can oversample OC group (however diminishing returns)

# Inclusion/exclusion

- Not applicable: patients admitted to medicine service within the specified time frame are automatically included

# Questions

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