Abstract #2253

Hospitalist Antibiotic Prescribing Patterns by Hour and Weekday

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aset
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Background

- Hospital medicine physicians providing coverage during evening and night shifts are often responsible for higher patient volumes during these busy shifts
- Data on decisions to start or broaden antibiotic therapy by covering physicians are limited

Methods

- Retrospective, IRB-approved analysis of antimicrobial administration data from Duke University Health System between 7/1/21 and 3/31/23 to identify antibiotic "starts" and "escalations" attributed to hospitalists.
  - Patients admitted from the emergency room who began antibiotics there were excluded from the analysis.
- **Antibiotic Starts** were defined as the first administration per patient encounter without antibiotics on the preceding calendar day
- **Antibiotic Escalations** were defined as an increase in cumulative spectrum score (using a previously validated antibiotic spectrum index[1]) 48 hours following administration compared to the score 48 hours prior (excluding a 4 hour 'buffer' period)
- Heat map visualization based on weekday-hour combinations, then comparing the median number of starts and escalations among shifts:
  - Daytime (Referent): weekdays 7AM to 5PM, weekends 7AM to 2PM
  - Cross-Cover: weekdays 5PM to 10PM, weekends 2PM to 10PM
  - Overnight: remaining times
- Statistical Test: Mann-Whitney U nonparametric test.

Figure 1. Antimicrobial Start/Escalation Heatmaps

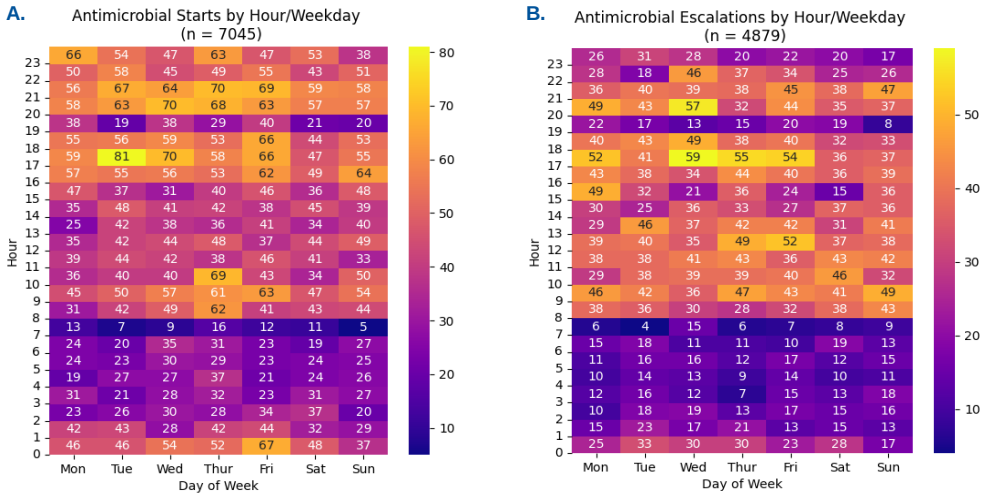
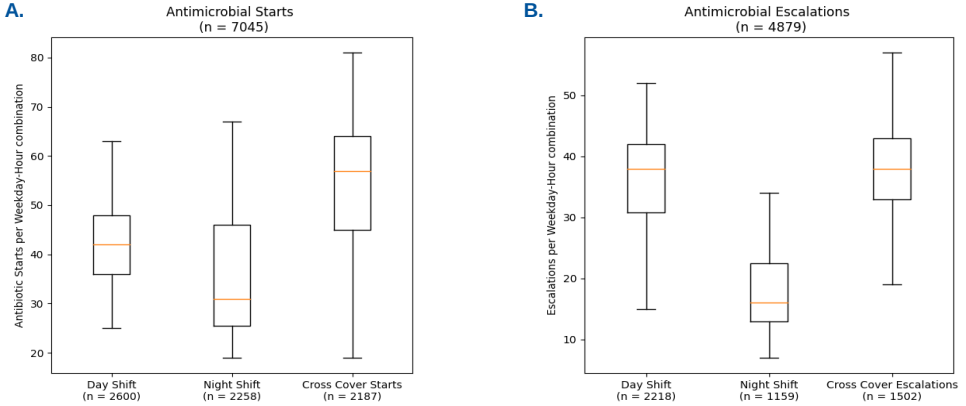


Figure 2. Boxplot Distribution



Results

- 7,045 antibiotic starts and 4,879 escalations occurred across 78,845 unique patient admissions
- Median starts for night shift were significantly lower than day shift starts, but cross cover starts were significantly higher ($p = 0.011$ and $p < 0.001$, respectively, Figure 2A)
- Night shift escalations were significantly lower than day shift while cross cover shifts were similar ($p<0.001$ and $p = 0.51$, respectively, Figure 2B)

Conclusions

- Antibiotic escalations differed across work shifts:
  - Cross cover shifts had higher antimicrobial starts
  - Night shifts had fewer total antimicrobial starts and escalations
- Visualization of these patterns aids in antimicrobial prescribing pattern recognition and may assist in finding opportunities for supportive antimicrobial stewardship strategies

Duke Center for Antimicrobial Stewardship and Infection Prevention

1. Gerber, J. S. et al. Development and Application of an Antibiotic Spectrum Index for Benchmarking Antibiotic Selection Patterns Across Hospitals. Infect. Control Hosp. Epidemiology 38, 993–997 (2017).