

Antibiotic Prescribing for Acute Respiratory Infections Increases as the Clinic Session Wears On



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Background

- Fatigue and stress may deplete clinicians' capacity to resist ordering potentially inappropriate services, such as antibiotics for acute respiratory infections (ARIs)
- We hypothesized that primary care clinicians would be less likely at the beginning and more likely at the end of clinic sessions to prescribe antibiotics for ARIs

Methods

- Examined clinical and billing data from 23 primary care practices in the Greater Boston area between May 2011 and September 2012
- Measured the same-day antibiotic prescribing rate for ARIs, including antibiotic-appropriate diagnoses (e.g., sinusitis) and non-antibiotic-appropriate diagnoses (e.g., acute bronchitis)
- Included patients aged 18 to 64 years old, who made a weekday visit between 8am - 12PM and 1PM - 5PM
- Excluded patients with chronic lung disease, diabetes, cancer, HIV/AIDS, or severe liver disease
- Used multivariable generalized estimating equations to evaluate independent predictors of antibiotic prescribing

- 678,982 total visits, 55,796 ARI visits, and 24,861 ARI visits that met the inclusion and exclusion criteria at 23 practices to 547 clinicians

Table 1: Visit Characteristics

Characteristic	Visits n = 24,861	Antibiotic Prescribing Rate (Overall 43%) %
Gender		
Women	68	43
Men	32	43
Race and ethnicity		
White	71	45
Latino	11	40
Black	7	36
Asian	6	35
Other/Unknown	5	41
Insurance		
Private	87	44
Medicaid	10	40
Medicare	2	40
None	3	46
Antibiotic-appropriate diagnosis		
Yes	35	68
No	65	30

Results

Figure 1: Antibiotic Prescribing by Hour of the Day

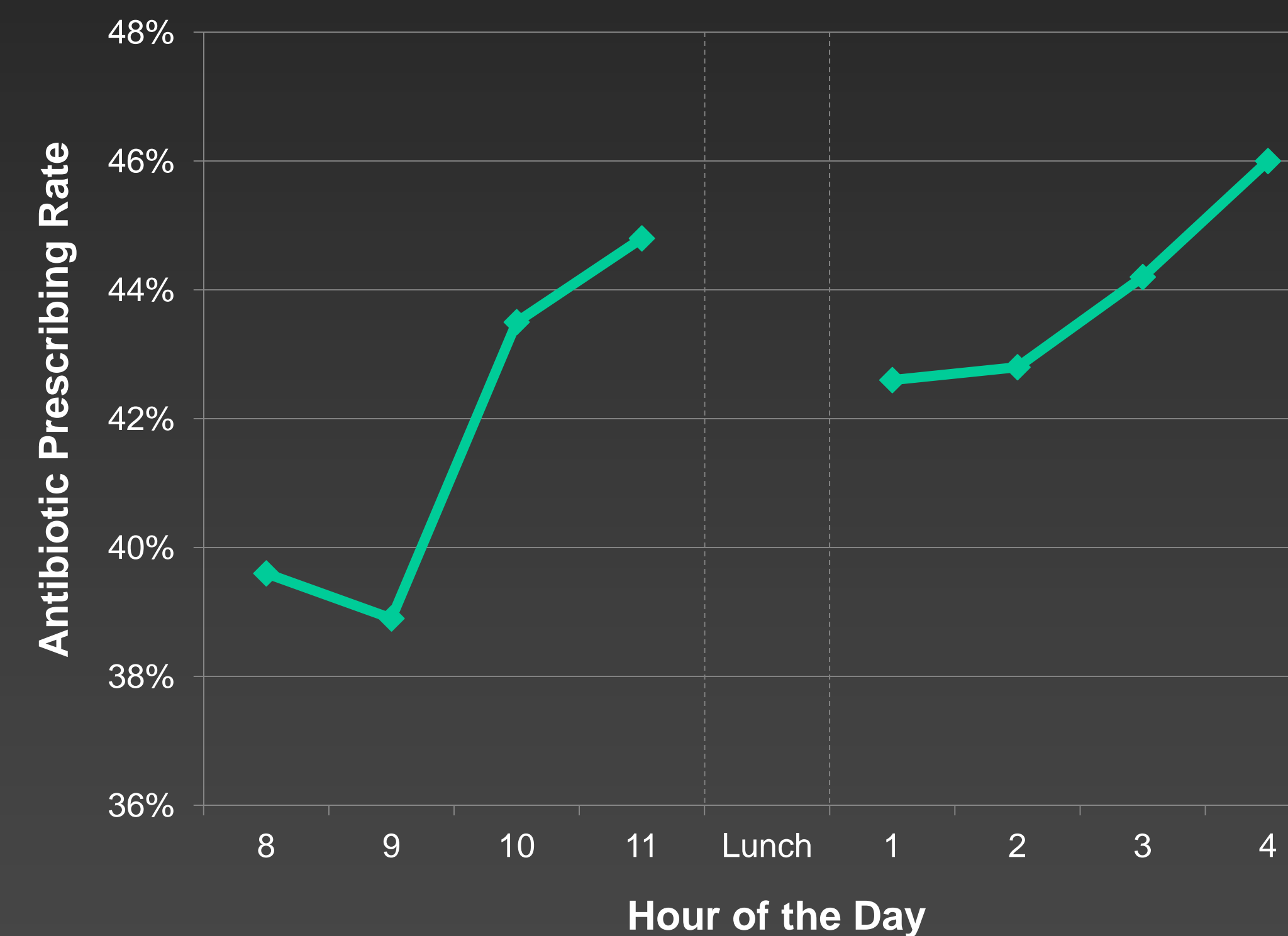


Table 2: Selected Independent Predictors of Antibiotic Prescribing

Characteristic	Odds Ratio (95% CI)
Session hour, per hour	1.07 (1.02 – 1.13)
Friday, versus Wednesday	1.16 (1.02 – 1.32)

Multivariable model adjusted for patient age, sex, and median household income; morning versus afternoon; calendar month; number of visits per half-day session; clinician type; and clustering by clinician

Limitations

- Academically-affiliated practices staffed primarily by general internists
- Dependent on billing data and documentation
- Unmeasured confounding

Conclusions

- Antibiotic prescribing increased progressively throughout morning and afternoon clinic sessions
 - One excess antibiotic prescription per 16 patients seen at the end of the day versus the beginning
- Fatigue or cumulative stress appears to erode clinicians' abilities to resist prescribing potentially inappropriate treatments throughout sessions
- To reduce inappropriate health care utilization, delivery systems should explore strategies to mitigate the effects of clinician fatigue or stress

Funding: Supported by the National Institutes of Health under award number RC4AG039115, "Use of Behavioral Economics to Improve Treatment of Acute Respiratory Infections."