

Physicians' Acceptable Treatment Failure Rates and Interpretation of Antibiograms for Gram-Negative Infections: A Pilot Survey Study of Infectious Diseases Specialists

BACKGROUND and OBJECTIVE

- The recommendations of many clinical guidelines include utilizing an antibiogram as a key component when making empiric therapy decisions
- Little is known about how clinicians interpret antibiograms
- We aim to characterize thresholds of the acceptable risk of selecting inappropriate antibiotics among clinicians through clinical case-based questionnaires in several clinical settings

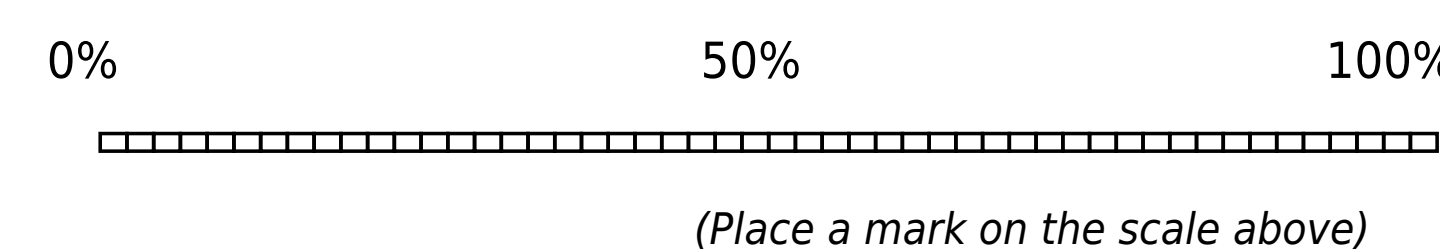
MATERIALS and METHODS

- We conducted an online survey of infectious diseases (ID) specialists at the University of Iowa, as an internal pilot study
- We created realistic clinical case scenarios and asked clinicians to provide the desired minimum percentage of susceptible isolates on an antibiogram for them to feel comfortable with selecting that agent for empiric therapy
- We included four scenarios in the questionnaire:
 - a patient with urinary tract infection (UTI) in an outpatient setting (Table 1)
 - a patient with UTI in an inpatient setting
 - a patient with Gram-negative rod bloodstream infection (GNR-BSI) in an intensive care unit (ICU) setting
 - a patient with GNR-BSI in a non-ICU setting

Table 1. Example of Case-Scenario-Based Survey

i) A 46-year-old woman presents to your outpatient clinic with symptoms of fever and right-sided back pain. She had had dysuria and change in urine color for last 5 days. No history of kidney stone and her vital signs were normal except for fever of 101.8F. Urinalysis is consistent with urinary tract infection, which is most commonly caused by *E. coli*. Based on the antibiogram at your facility, --% of *E. coli* isolates were susceptible to Antibiotic X.

To select antibiotic X as an empiric therapy for this patient, what minimum percentage would you like to see on the antibiogram to feel comfortable with your decision?



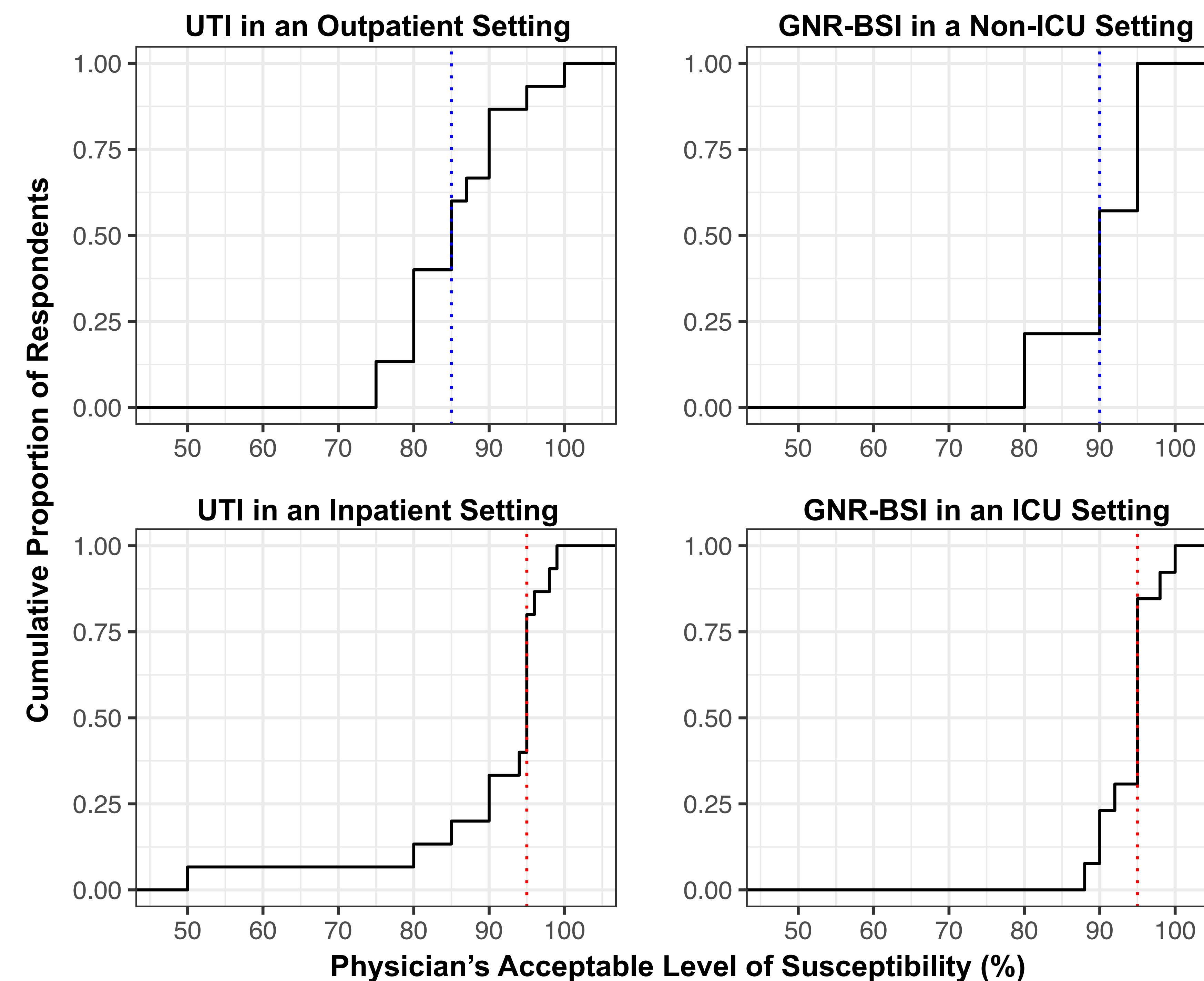
RESULTS

- Of the 16 of 26 providers (62%) who responded, 15 provided complete responses

| Gender | Number of respondents |
|--------|-----------------------|
| Male | 11 (73.3%) |
| Female | 4 (26.7%) |

| Years in practice (years) | Number of respondents |
|---------------------------|-----------------------|
| 1-5 | 3 (20.0%) |
| 6-10 | 4 (26.7%) |
| 11-20 | 4 (26.7%) |
| >20 | 4 (26.7%) |

Fig. The Distribution of Physicians' Acceptable Level of Susceptibility in Four Realistic Clinical Case-Scenarios. (Dotted-line indicates median.)



DISCUSSION

- ID physicians reported wide ranges in thresholds of minimum percentage of susceptibility to feel comfortable with prescribing a hypothetical antibiotic and higher thresholds for patients with more severe illnesses
- To date, there is no formal guidance regarding how clinicians should interpret antibiogram data
- We confirmed that some clinicians might have very low tolerance for therapeutic failure risk, even for patients with less severe illnesses
- Understanding physicians' antibiogram usage can be helpful to determine how and if antibiograms guide clinicians toward more appropriate empiric therapy decisions

CONCLUSION

- There were wide ranges in thresholds for interpretation of antibiograms among frontline clinicians, especially for less severe infections
- As this was a preliminary study, we plan to conduct a study with a larger sample size to better characterize the use of antibiograms among clinicians from diverse practice settings