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Project:
"Critical Physician Decision Factors Influencing Appropriate Antimicrobial Prescribing in the Hospitalized Elderly"

ASP–Infectious Diseases Society of America Young Investigator Award in Geriatrics

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Inappropriate antimicrobial use contributes to the development of multidrug-resistant organisms as well as other iatrogenic complications, such as *Clostridium difficile*-associated diarrhea. Older adults are at an increased risk for adverse effects of antimicrobial use, in that they are more likely to require hospitalization, suffer greater morbidity and mortality, and have deterioration in functional status, as compared to their younger counterparts. Due to the higher rate of these antimicrobial-associated complications in older adults, it is imperative that the use of antimicrobial agents in this population be rational and appropriate. In spite of this, studies reveal that up to 50% of antimicrobial use in the United States is inappropriate.

Often, inappropriate antimicrobial therapy is attributed to a lack of a physician's medical knowledge. However, physicians will frequently overprescribe antimicrobials even when there is not a deficit in medical knowledge. Further, education or promotion of professional society guidelines, without an active intervention, is only marginally effective in improving antimicrobial prescribing.

Variation in medical practice and deviation from clinical guidelines in other areas of medicine have been explained by certain physician decision factors that impact how physicians interpret and respond to clinical situations. It is likely that these factors influence antimicrobial prescribing in older adults as well. Furthermore, the complexity and uncertainty inherent in geriatric care due to comorbidity, atypical disease presentations, and cognitive impairment, make the role of decision factors, other than medical knowledge, critically important for understanding inappropriate antimicrobial prescribing in the elderly.

To address this issue, we propose the following aims and strategies:

1. Define specific physician decision factors, outside of medical knowledge, that govern physician antimicrobial prescribing and the decision to de-escalate therapy in hospitalized elderly patients.
We will enroll 70 internal medicine physicians and identify inherent and situational physician decision factors that influence antimicrobial prescribing in non-intensive care unit, hospitalized elderly patients. Participants will complete a baseline inventory assessing geriatric awareness, medical knowledge on appropriate antimicrobial use in older adults, and a decision questionnaire comprising of six published and validated measures.

2. Validate specific physician decision inventories and a medical knowledge quiz for predicting inappropriate antimicrobial decision-making in such patients.
To assess situational and "real-time" physician antimicrobial decision factors, we will add two brief "pop-up" surveys to the computerized physician order entry system. These will assess "real-time" decisions on initial antimicrobial choice and de-escalation of therapy.

3. Generate pilot data on the impact of inappropriate antimicrobial prescribing on functional status and recovery after infection in older adults.
A chart review will be performed and the appropriateness of both initial and de-escalation choices of antimicrobial therapy will be determined by a blinded, independent expert panel. A six-month follow-up chart review and telephone interview will gather data on patient outcomes and functional status.

The support of the ASP-Infectious Diseases Society of America Young Investigator Award in Geriatrics will allow me the opportunity to study medical decision-making for antimicrobial decisions in older adults. It is anticipated that data from this study will aid in the development of strategies to improve geriatric antimicrobial prescribing and ultimately impact the untoward effects that accompany inappropriate antimicrobial use.