IIR 16-245: Chronic Antibiotic Suppression after Prosthetic Joint Infection: A Target for De-implementation

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Background / Rationale:
The VA has pledged to reduce overuse of antibiotics, and is a partner in the National Action Plan to combat antibiotic-resistant bacteria. Overuse of antibiotics can lead to Clostridium difficile infections among the individuals receiving antibiotics, as well as antibiotic resistance that can complicate treatment of future infections for all patients. Chronic antibiotic suppression (CAS) is defined as indefinite use of oral antibiotics following initial guideline recommended intravenous and oral antibiotics. There is evidence that CAS may be inappropriately used and overused. Thus, there is a critical need to examine how CAS is prescribed, and who benefits the most, and who is harmed, from CAS therapy. This knowledge can be used to develop an intervention to de-implement and optimize CAS use. In this study, we will examine CAS treatment for prosthetic joint infections (PJIs).

Objective(s):
The specific aims of this study are: (1) Define patient, infection, and treatment characteristics that identify patients who would benefit from de-implementation of CAS; (2) Define current provider CAS prescribing processes and evaluate barriers and facilitators to changing those practices through interviews with health care providers; and (3) Create a decision model to conduct an economic evaluation of CAS use and different interventions to de-implement inappropriate CAS use. We expect to document significant variations in CAS prescribing and identify cost-effective interventions to de-implement CAS or reduce its duration.

Methods:
We propose a 3-year mixed methods study to inform efforts for CAS de-implementation. Aim 1 will use a Corporate Data Warehouse (CDW) database of ~7,500 PJI patients treated at all VA hospitals in a retrospective cohort comparative effectiveness study to determine specific characteristics that identify those PJI patients who will benefit from CAS de-implementation. These characteristics may include young age, infection with a non-virulent pathogen, initial receipt of appropriate antibiotics for PJI caused by Staphylococcus aureus, or receipt of 2-stage exchange surgery. In Aim 2, we will visit 8 diverse hospitals, qualitatively explore the contexts that contribute to CAS use, and elicit barriers and facilitators to changing prescribing practices. Aim 3 will create an innovative decision analytical model of potential interventions to de-implement CAS or reduce its duration. Our findings will be provided to the VA Antimicrobial Stewardship Task Force to assist in antibiotic de-implementation efforts and will provide needed data to design a future randomized controlled trial of an intervention to de-implement CAS among patients who do not need it.

Findings / Results:
Pilot interviews with an infectious disease physician and a surgeon have demonstrated that physicians desire more evidence so that they can make informed decisions when decided whether to prescribe CAS.

Status:
We completed the Just-in-Time process and the start date of the grant is September 1, 2018. We have obtained IRB approval from the University of Iowa IRB/Iowa City R&D for Aim 1 and

from the Salt Lake City VA IRB for Aim 3. We are currently drafting interview guides and assent forms that will be needed for IRB submission for Aim 2.

Impact:
Our study will provide important insights into the organizational culture and broader external context (e.g., professional, social) associated with over-prescribing antibiotics for infections after surgery. We will identify targets for antimicrobial stewardship and identify clinical situations in which antibiotic use can be de-implemented. Given the increasing use of implants such as prosthetic joints, cardiac pacemakers, and left ventricular assist devices, the use of CAS is expected to rise. Our research will help VA providers de-implement antibiotics for patients who do not need them, in order to decrease antibiotic resistance in the VHA and prevent adverse events such as C. difficile infections.