A Novel Approach to Antibiotic Stewardship in Outpatient Dialysis Units

Study Personnel

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Problem & Goals

Problem
- 42% of hospitalizations in CHD Patients Due to Infection
- Hospitalizations due to infection are increasing
  - 43% higher in 2009 than in 1993
  - Hospital days related to infection have increased 19.2% since 1993
- Mortality rates due to infections caused by ARBs are 2-5 X higher than infections caused by susceptible bacteria
- Antimicrobial resistance rates are among the highest in patients requiring chronic hemodialysis

Study GOALS/Aims
To demonstrate the effectiveness of an antimicrobial stewardship program in reducing inappropriate antimicrobial use in outpatient hemodialysis centers

Overuse & Inappropriate Use of Antibiotics in Dialysis Units

- 30% of antibiotic doses are “inappropriate”
  - Criteria for infection not met (vs lack of documentation)
- Vancomycin and 3½/4th generation cephalosporins most common inappropriately prescribed antibiotics
- Most common inappropriate indications
  - Criteria for infection not met
  - Bloodstream infections
  - Skin and soft tissue infections
  - More narrow spectrum not chosen

Snyder, D’Agata Infect Control Hosp Epidemiol 2013
4 Components of the Intervention

1. Engagement of dialysis unit leaders and staff to help guide the process
   - Everyone Included!
   - Frequent Interaction
2. Education of all staff on evidence-based guidelines for optimizing antibiotic use
   - Educational Sessions for Unit Staff and Physicians/NPs
   - 2 per unit + 1 for MDs/NPs
   - Continuing education credits offered
3. Collection of patient antibiotic use information to foster communication, tracking and learning
   - Antibiotic Log
   - Antibiotic Calls
4. Implementation of Positive Deviance process to support use of guidelines
   - Supports behavioral change
   - Discovery of PD practices
   - Scenarios for “Practice”

Antibiotic Log Created by Research Team and Unit Managers

Positive Deviance: What is PD Anyway?

- Positive deviance is a change process founded on the observation that there are individuals in organizations whose uncommon (deviant) practices generate better (positive) results than peers.

- It differs from traditional methods for healthcare improvement which focus implementing newly designed processes, educating staff, or importing best practices developed elsewhere.

- The focus of PD is the discovery and diffusion of what is already working.
Why PD?
Dramatic decline in BSI rate in an outpatient hemodialysis unit in NJ

- In 16 months the incidence of access-related bloodstream infections dropped 88%, from 2.04 to 0.24 per 100 patient-months at AtlantiCare’s outpatient hemodialysis center.

- This dramatic improvement was achieved through implementation of a panel of CDC-developed infection prevention strategies supported by the change process Positive Deviance.

Steps in PD Process

- Define the problem and establish a measurable outcome goal.

- Determine if there are certain people or groups, positive deviants, who are achieving better outcomes than is the norm.

- Discover the behaviors and strategies that enable the positive deviants to achieve the better outcomes. These are labeled PD practices.

- Design a process for people to practice PD practices and behaviors.

Implementation of Positive Deviance Process on 6 Dialysis Units

- Engagement of staff in the process

- Identification of positive deviants, their behaviors and strategies
  - Discovery and action dialogues

- Practice Positive Deviant Behaviors and Strategies
  - Development of scenario based on PD behaviors
  - Practice scenario with staff at each facility

Discovered PD Practices

- Patient Assessment/2nd Opinion and Recommendation to Prescriber - Conducting a thorough patient assessment and gathering all needed background information in preparation for talking with a nephrologist or nurse practitioner, and sharing this assessment and specific recommendations with the prescriber. If there is uncertainty about assessment or recommendations, obtain a second opinion from a colleague.

- Outside Prescriber Outreach, Engagement and Education - Developing relationships with outside prescribers, such as podiatrists and infectious disease physicians, providing background information to them on the antibiotic stewardship research study and soliciting their collaboration.
Results: 5 Themes from Debriefing Interviews

1) Changes in clinical practice related to antibiotic decision-making and administration

2) Establishment of new partnerships and communication patterns related to antibiotic use

3) Key role of widespread, inclusive engagement in the PD process in fostering change related to antibiotic use

4) Effectiveness of multiple, reinforcing learning activities in fostering change

5) Accountability and communication facilitated by the antibiotic log.

Challenges

- Staffing

- Communication with nephrologists and nephrology NPs regarding antibiotic prescribing
  - Short term problem

- Communication with “Outside” providers including healthcare facilities and specialists
  - Obtaining results from culture & sensitivity tests done out of dialysis facility
  - Transfer of care between facilities most problematic