A substantial proportion of antibiotics used in healthcare may be inappropriate or unnecessary, which can lead to adverse drug reactions, C. difficile infection, and antimicrobial resistance. A major contributing factor is the 2-4 day delay with current lab procedures for positive blood cultures, resulting in overuse of empiric therapy. Faster diagnostic tests can provide these results in less than 7 hrs. Effective clinical adoption can be achieved using implementation science with action-oriented & mission-driven teamwork enhancing communication among diverse clinical team members.

Objectives

• To describe four tools used in clinical implementation stages
• To describe how antimicrobial stewardship programs can be more effective with the use of implementation science
• To describe how fast phenotypic diagnostics for bloodstream infections can play a significant role in reducing the inappropriate use of antibiotics and adverse outcomes

Description of the Project

• Antimicrobial stewardship programs (ASPs) have been at the forefront of the effort to curtail inappropriate antibiotic use.
• With faster identification and susceptibilities, clinicians can de-escalate or target appropriate therapy, thereby reducing mortality, length of stay, days on therapy, adverse outcomes, and cost.
• The use of implementation science can be an effective method to guide clinicians in clinical adoption sessions for successful use of molecular diagnostics for blood cultures in septic patients.

Methods/approaches

During the exploration stage, readiness is assessed by a clinical intervention solution team including:
1. A retrospective chart review of current lab procedure for 30 positive blood cultures
2. A process analysis of the lab, pharmacy, infectious disease, and infection prevention
3. A business analysis using publicly reported metrics, such as length of stay, mortality, sepsis readmissions,
4. A process analysis of the lab, pharmacy, infectious disease, and infection prevention and staff utilization
• Less use of bugs
• Reduced morbidity/
• Improved drug/bug
• Improved drug/bug
• Improved drug/bug
• Accelerate Workflow
• Typical ID & AST Workflow

Lessons learned

• The adoption of faster phenotypic diagnostic technologies can decrease the time to critical lab results.
• The use of implementation science can maximize the benefits of obtaining ID and AST results for optimizing antibiotic therapy and instilling isolation precautions for MDROs.

References


Figure 1. Mind-maps visually organize hierarchical information around a central concept. Major ideas are connected directly to the central concept, and other ideas branch out from the major ideas.

Figure 2. Process pathways describe the sequence of steps in a procedure and are useful in identifying weaknesses before implementation.

Figure 3. Fishbone Diagram is a visualization tool for categorizing potential sources of a problem to identify its root causes.

Figure 4. Gap Analysis compares the actual performance with potential or desired performance, and identifies areas of potential improvement.