

The use of surveillance technology to optimize antimicrobial utilization in a community hospital

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Background

The Antimicrobial Stewardship Program (ASP) at Texas Health Arlington Memorial (THAM) was officially recognized in December 2009. Through the use of surveillance technology to concurrently review antibiotic usage, the ASP was able to show improvements in defined daily dose, duration of therapy, and antibiotic costs.

Objectives

The ASP's primary objective through the use of surveillance technology is to optimize antimicrobial utilization while minimizing adverse events associated with the indiscriminate use of antimicrobials. The secondary objective is to reduce healthcare costs without adversely impacting quality of care.

Methods

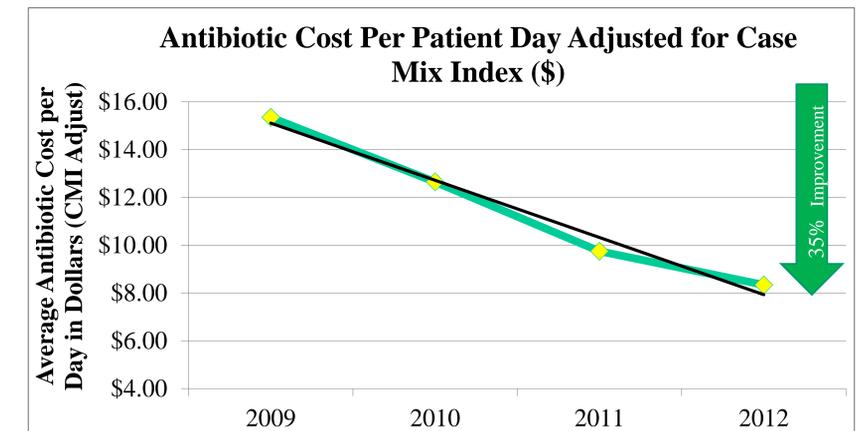
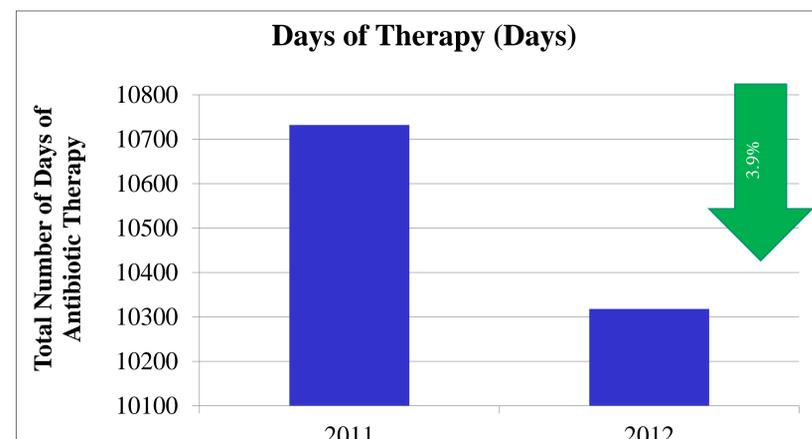
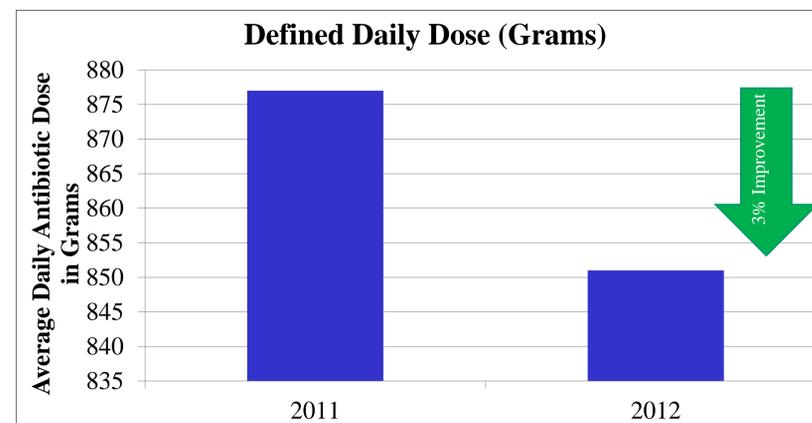
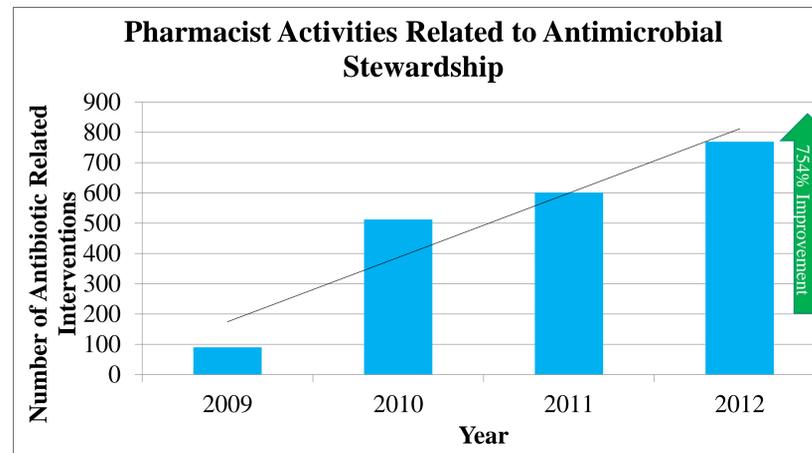
The Antimicrobial Stewardship Committee (ASC) has implemented several initiatives over the past three years, as well as helped to educate hospital staff on the importance of stewardship.

- Identified a strong physician champion to lead the ASP program to assist in gaining approval of the medical staff for protocols and processes planned to impact program success
- Gained support for the ASP program from key hospital committees including Pharmacy & Therapeutics Committee and Infection Prevention Committee
- Educated nursing staff through presentations on antibiotic stewardship
- Developed protocols to impact effective antibiotic usage
 - IV to PO
 - Extended Infusion piperacillin-tazobactam
 - Antibiotic renal dosing protocol
 - Antibiotic dosing and monitoring protocols
 - Antibiotic usage protocols or restrictions.
- Implemented Senti7@ surveillance technology to assist pharmacists in concurrently monitoring antibiotic usage and to promptly initiate interventions to prevent inappropriate antibiotic usage, which might contribute to the development of drug resistant organisms.
 - Within Senti7@ customized rules were developed that could assist in real time identification of any opportunities to optimize antimicrobial utilization.
 - Dose Optimization
 - Pharmacokinetic monitoring and dosing
 - Renal monitoring and dosing
 - Therapeutic duplication
 - Culture Surveillance
 - MDRO Monitoring
 - Drug-Bug mismatch
 - Positive/Negative cultures on antibiotics
 - De-escalation opportunities
 - Route optimization (IV to PO)
 - Timing and duration of therapy
 - Formulary compliance

Results

Over the past three years the ASP has seen improvement in several areas.

- Documented antimicrobial related activities have increased more than 750% since the implementation of Senti7@
- Reduced defined daily dose (DDD) by 3% from 2011 to 2012
- Reduced days of therapy (DOT) by 3.9% from 2011 to 2012
- Antibiotic costs per patient day (case mix index adjusted) decreased by >35% from the start of the ASP



Conclusion

- Initiating an Antimicrobial Stewardship Program requires not only the support of hospital administration, but also the medical staff, pharmacy, and nursing departments.
- Identifying individuals to form the ASP team is key as well as the development of programs and processes to impact the program's success.
- Through the implementation of surveillance technology to concurrently review antibiotic usage, THAM was able to increase antibiotic related activities leading to improved antimicrobial utilization.
- Surveillance technology eliminated the need for pharmacist's manual review of patient records in order to determine appropriateness of antibiotic usage.
- This technology also provided a mechanism for efficient completion of antibiotic evaluation and decreased the risk of missed opportunities associated with a labor intensive, manual process.
- The software provided the clinical pharmacists with accurate, real-time information that could be used to make decisions and initiate appropriate interventions to effectively impact the patient's care.

References

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