The Impact of a Massachusetts State Sponsored Educational Program on Antimicrobial Stewardship in Acute Care Hospitals

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Introduction

Over the past 30 years, the prevalence of multidrug resistant organisms has been increasing, resulting in significant morbidity and mortality. Ineffective and inappropriate antibiotic use is a key contributing factor in the development of antibiotic resistance.1 Despite this crisis, there are few antimicrobials currently in development.1 Therefore, antimicrobial stewardship programs (ASPs) are regarded as critically important tools for combating the further spread of antimicrobial resistance.1

While many national organizations including the Centers for Disease Control and Prevention (CDC), the FAX Center for Medicine and Medical Services (CMS) and the Infectious Disease Society of America (IDSA) have recognized the importance of ASPs and initiated campaigns to promote their development, there are currently no regulatory requirements or incentives at a national level regarding antimicrobial stewardship.2 The objective of this study was to identify successful existing antimicrobial stewardship practices and characterize barriers to antimicrobial stewardship implementation in acute care hospitals throughout Massachusetts. Additionally, we sought to evaluate the impact on these hospitals of a state sponsored educational conference on antimicrobial stewardship.

Methods

On September 14, 2011, a one-day statewide educational conference entitled, ‘Building Stewardship: A Team-Approach Enhancing Antibiotic Stewardship in Acute Care Hospitals’ was held in Stoneham, Massachusetts. Participants included physicians, nurses, physician assistants, infection preventionists, microbiologists, and pharmacists from acute care hospitals across the state. The conference consisted of formal lectures focusing on the importance of ASPs, strategies for implementation of ASPs, improvement strategies for existing programs as well as panel discussions highlighting successful ASP practices. Smaller breakout sessions focused on operational issues, including understanding of pharmacodynamics, business models, and electronic surveillance.

In addition to this session and two audio conferences, one before and one after the meeting, there were reading materials provided before the conference. An anonymous survey was sent to all participants shortly after the completion of the educational program in November 2011, and again 6 months after the conference. Comparisons were performed using Chi square analysis. All statistical calculations were performed using R 2.13.1. A chi square analysis was used to compare survey responses.

Results

• 39/50 (78%) institutions responded to the initial survey
• 39/50 (78%) institutions responded to the second survey 6 months after the conference
• 44/50 (88%) institutions were represented in at least one survey
• Combining the results of both surveys, 31 out of 44 (70%) institutions indicated that they had a formal ASP in place at the time of the educational conference
• Institutions without a formal ASP at the time of the conference were more likely to be:
  • Non-teaching hospitals (p=0.001)
  • Lack a full-time infectious disease consult service (p=0.043) (Table 1)

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• 3/5 (60%) institutions indicated that their conference had been helpful in starting their program
• “Black and white” and “dose optimization” were the most common new stewardship techniques implemented
• Carbapenems were the most frequently restricted antimicrobials
• 6 of 25 programs reported decreases in antimicrobial expenditures
• 2 reported an improvement in antimicrobial susceptibility test result reporting
• 2/6 new programs reported decreases in antimicrobial expenditures
• 3/5 reported improvements in physician acceptance of their recommendations
• 1/6 reported an improvement in antimicrobial susceptibility test result reporting
• 3 out of 7 of these programs anticipate starting an ASP within one year

Conclusions

Currently, there are no national regulatory mandates to optimize antimicrobial stewardship. Therefore, efforts at the state level may be critical to the development of successful ASPs. We have shown that an educational program in Massachusetts had a significant effect on implementation of ASPs and the improvement of existing programs. There is little oversight of antimicrobial prescribing at institutions without formal ASPs and this may contribute to promotion of resistance. Other states or regions should consider a similar program to enhance the success of antimicrobial stewardship programs.