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Original article

Facilitators and barriers to implementing antimicrobial stewardship strategies: Results from a qualitative study

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Background: Many hospitals have implemented antimicrobial stewardship programs (ASPs) and have included in their programs strategies such as prior authorization and audit and feedback. However there are few data concerning the facilitators and barriers that ASPs face when implementing their strategies. We conducted a qualitative study to discern factors that lead to successful uptake of ASP strategies.
Methods: Semistructured telephone interviews were conducted from June-July 2013 with 15 ASP member pharmacists and 6 physicians representing 21 unique academic medical centers.
Results: Successful implementation of ASP strategies was found to be related to communication style, types of relationships formed between the ASP and non-ASP personnel, and conflict management. Success was also influenced by the availability of resources in the form of adequate personnel, health information technology personnel and infrastructure, and the ability to generate and analyze ASP-specific data. Types of effective strategies commonly cited included audit and feedback; prior authorization, especially with an educative component; and use of real-time alert technology and guidelines.
Conclusions: Several factors may influence ASP success in the implementation of their strategies. ASP members may use these findings to improve upon the success of their programs.

It is recommended that hospitals implement an antimicrobial stewardship program (ASP) to optimize use of antimicrobial agents, decrease antimicrobial resistance, and decrease rates of *Clostridium difficile* infection.[1] The Society for Healthcare Epidemiology of America, the Infectious Diseases Society of America, and the Pediatric Infectious Diseases Society support the institution of ASPs across all health care settings.[2] Although strategies used by programs—including prior authorization and audit and feedback—are well described,[3] there are few data concerning why some programs are able, or not able, to successfully implement their strategies. An understanding of what factors enable certain ASP strategies to be successfully conducted would enable other hospitals to potentially adopt those aspects that led to successful strategy implementation. The goal of our project was to identify the factors related to the implementation of ASP strategies using a qualitative approach.

METHODS

Study design and sample

A sequential mixed-methods project,[4] using both quantitative and qualitative methods was conducted; the results of the qualitative aspect of the project are presented here. During the first part of the project, initiated during March 2013, a quantitative survey regarding the structural aspects of ASPs and the types of strategies that they utilize was administered to health care professionals employed at academic medical centers that are part of the University HealthSystem Consortium (UHC). Specifically, a subset of UHC hospitals that participated in the Clinical Research Manager

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Pharmacy Program was surveyed; this subset of hospitals has previously participated on projects with our group concerning trends in use of antimicrobial agents and antimicrobial resistance. Infectious diseases physicians and pharmacists who are members of ASPs in UHC Clinical Research Manager member hospitals were invited to participate in the survey (n = 79); a total of 44 (56%) persons completed the quantitative survey.

Based on the responses to the quantitative survey, purposeful sampling[5] was used to select hospitals that reported a variety of stewardship practices, that had established and new programs, and that had various health professionals as survey responders (pharmacist or physician). Based on these criteria, members of ASPs who had responded to the quantitative survey were invited to participate in the qualitative phase of the project.

Data collection involved semistructured telephone interviews with persons from individual institutions that were conducted between June and July 2013 and were audiorecorded. During the interviews, participants were asked to comment on facilitators and barriers to implementing various strategies of their programs, and also on the types of ASP strategies that were particularly effective. One investigator conducted all of the interviews (AP); questions were asked from an interview guide, although additional probing questions may have been asked based on the participant responses. The study was approved by the Virginia Commonwealth University Institutional Review Board.

Analysis

Transcripts of the audiorecorded data were generated and compared with the original tape to review for quality and accuracy. The data were subjected to several stages of inductive coding for thematic development. Transcripts were initially read as text to isolate meaning units. Transcripts were then coded by multiple independent coders (AP, LVW, and LM) who were coding the same transcripts. After the first 5 transcripts had been coded, the coders met to review their findings, including the text that was considered codeworthy. The process was repeated until all of the transcripts had been coded and a list of agreed-upon codes had been generated as well as the choice of phrasing for each code label, and the definition of what is and what is not covered by the code label. Themes were derived from the coding procedure; the coders met with content experts (ME and MS) to review the findings and to finalize the main themes.

RESULTS

A total of 21 interviews were conducted with 15 pharmacists and 6 physicians representing unique hospitals. Table 1 summarizes characteristics of ASPs that were represented. Two main themes emerged from the data regarding factors toward successful implementation of ASP strategies: culture and resources. Culture was further divided into 3 subthemes, including communication, relationships, and conflict management. Three resource subthemes emerged, including information technology, data analysis and reporting, and personnel (Fig 1). The following sections provide a detailed description of the themes and subthemes, followed by a section on key ASP strategies perceived by interviewees to be particularly effective.

Culture

Communication

Many programs used a preauthorization process for antimicrobials whereby a prescriber paged a member of the ASP to acquire approval for use of a specific agent. The importance of a nonconfrontational style was emphasized. As 1 physician explained, "I have heard the pharmacists and the fellows on the phone talking to the people requesting antibiotics and it's not a confrontational kind of system for the most part so I think people are, in general, willing to take recommendations and advice. The recommendations to change a drug or to not use a drug, for the most part, are pretty well accepted because I think the pharmacists and the fellows do a good job of explaining why it is that they're making that recommendation." Many interviewees also stressed the importance of not being seen as the antibiotics police, but as facilitators. Interviewees stressed that relationship building with providers was very important to avoid the image of an antibiotics police force whose sole aim is to save on costs. Relationships were built from interactions on rounds, while providing education, and from interfacing during various meetings. One pharmacist relayed the importance of exposure and building work relationships in increasing provider receptiveness to ASP recommendations. Her strategies included approaching bone marrow transplant physicians in person to discuss patient cases and rounding with the infectious diseases consultation team to increase exposure to medical residents so that they can see first-hand the role of the stewardship team pharmacist. Also, when relaying stewardship program recommendations, the importance of communicating with the clinical team pharmacist was emphasized in avoiding the police image, as alluded to by a stewardship team pharmacist:

> Communicating with the pharmacist on a particular team works really well because they're able to bring [the issue] to their team, and it just kind of comes up; they don't see it as antibiotics police or anything like that when it comes from within their own team pharmacist.

Participants also emphasized the value of leveraging intraorganizational networks to disseminate information about ASP strategies. Examples include distribution of ASP strategies via newsletters and working within existing committee structures such as the pharmacy and therapeutics committee to obtain feedback and buy-in. The importance of a face-to-face style of communication in imparting the stewardship team recommendations when possible was also stressed:

> Face-to-face is always very effective. When we do face-to-face [intensive care unit] rounds we get a lot more buy-in because we have a conversation as opposed to just trying to make recommendations that are quick—to the point—through a text page or even a quick phone conversation. Our face-to-face conversations are much more accepted.

Table 1
Select characteristics of antimicrobial stewardship programs*

Characteristic	Total quantitative survey participants (N = 44)	Qualitative study sample (n = 21)
Time program has been active, y		
<1	3 (6.0)	0 (0)
1-2	8 (18)	2 (10)
3-4	7 (16)	2 (10)
5-6	5 (11)	2 (10)
7-8	0 (0)	0 (0)
9-10	5 (11)	5 (24)
>11	16 (36)	10 (48)
Prior authorization strategy	30 (68)	19 (90)
Audit and feedback strategy	39 (89)	18 (86)
Both prior authorization and audit and feedback strategies	26 (59)	16 (76)

NOTE. Values are presented as n (%).
*Percentages may not add to 100% due to rounding.