Results of Survey on Implementation of Infectious Diseases Society of America and Society for Healthcare Epidemiology of America Guidelines for Developing an Institutional Program to Enhance Antimicrobial Stewardship

It has been recognized for several decades that as much as 50% of antimicrobial use is inappropriate, which leads to considerable costs and increased selection for resistant pathogens. Antimicrobial stewardship guidelines were published in 2007 by the Infectious Diseases Society of America (IDSA) and the Society for Healthcare Epidemiology of America (SHEA), with the primary goal of optimizing clinical outcomes while minimizing unintended consequences of antimicrobial use, including toxicity, the selection of pathogenic organisms (such as Clostridium difficile), and the emergence of resistance. We performed a survey to determine the prevalence of and components of antimicrobial stewardship programs in US hospitals.

Premier, in conjunction with SHEA and IDSA, sent an electronic survey (SurveyMonkey.com) to approximately 3,500 US hospital practitioners on the SHEA membership list and internal Premier mailing lists. The Web site was open for online completion from January 20 through March 20, 2008.

A Medline search of English language articles published from January 2007 through June 2008 that individually cross-searched “practice guideline” with “guideline adherence,” “antiinfective agents,” and “stewardship” found no similar publications.

To the approximately 3,500 surveys, responses were received anonymously from 357 practitioners in varied hospital practice settings (response rate, approximately 10%). Data on respondents’ workplace were not collected. Of the 357 respondents, 100 (28%) were physicians, 90 (25.2%) were pharmacy directors, 81 (22.7%) were infection control professionals, 68 (19%) were clinical pharmacists, 16 (4.5%) were administrators, and 2 (0.6%) were clinical microbiologists.

Of the 357 responses, 94 (26.3%) came from hospitals with at least 500 beds, 130 (36.4%) from hospitals with 250–499 beds, 86 (24.1%) from hospitals with 101–249 beds, and 47 (13.2%) from hospitals with 100 or fewer beds. Of the 357 responses, 198 (55.5%) came from teaching hospitals.

Seventy-four percent of respondents stated their hospitals currently have, are developing, or are considering an antimicrobial stewardship program (ASP), but 52% stated that, at the time of the survey, their hospital did not have an ASP. Of existing ASPs, 61% have existed for more than 2 years, 11% from 1 to 2 years, and 28% for less than 1 year.

Respondents from hospitals with established or developing ASPs reported that ASP team members predominantly include clinical pharmacists (93%) and physicians (82%) and, to a lesser extent, infection control professionals (53%), clinical microbiologists (41%), hospital epidemiologists (35%), and informatics specialists (19%). In hospitals with established or developing ASPs, the most frequently used core stewardship strategy is prospective monitoring of prescribing and appropriateness after the first dose of a targeted antibiotic (66%), compared with preauthorization or “restriction” (38%). Time-sensitive automatic stop orders with mandatory reevaluation are being utilized in 40% of these hospitals. The use of local antibiograms (95%) and tracking of resistance patterns (76%) are commonly reported practices. Outcome measures monitored include direct drug expenditures (58%), pharmacy savings (43%), length of stay and mortality (26%). Notably, only 15% of respondents in such hospitals reported having a commercial automated electronic surveillance system tool, and 27% utilize computerized physician order entry.

Interestingly, respondents from hospitals with ASPs, compared with respondents from hospitals without ASPs, reported very similar usage of supplemental strategies, such as closed formularies (80% vs 73%), education of prescribers (77% vs 69%), guidelines and clinical pathways (69% vs 60%), automatic substitutions (72% vs 72%), automatic dose adjustments by pharmacy (49% vs 49%), and intravenous to oral conversion protocols for pharmacy (46% vs 41%). Antimicrobial cycling was infrequently used (6% vs 7%), which is consistent with the guideline’s statement of insufficient data to support use. Hospitals with an ASP differed from those without an ASP in having a process for proactive pharmacy-driven streamlining and/or deescalation (42% vs 26%) and in having a process for dose optimization (56% vs 45%). Respondents from hospitals without a current ASP identified several barriers to establishing a program (Table).

A year after publication of the antimicrobial stewardship guidelines, fewer than half of survey respondents report having an ASP in their hospitals. However, even those hospitals without an ASP are utilizing several supplemental strategies recommended in the IDSA-SHEA guidelines. Obstacles to implementing an ASP are similar to those identified in a previous survey published in 2004 by the Emerging Infection Network. Although the Emerging Infection Network survey sample size was smaller and the questions were asked in different ways, the results are very similar to those of our survey. Nearly half of Emerging Infection Network survey respondents felt that an ASP would result in damaged relationships, compared with 27% of respondents in our survey claiming “opposition from prescribers” as a barrier to establishing an ASP. Potential limitations of this survey are the low response
TABLE. Barriers to Establishing an Antimicrobial Stewardship Program, According to Results of Survey of Hospital Practitioners

<table>
<thead>
<tr>
<th>Item identified as barrier</th>
<th>No. (%) of respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personnel shortages</td>
<td>97 (55)</td>
</tr>
<tr>
<td>Financial considerations</td>
<td>64 (36)</td>
</tr>
<tr>
<td>Higher-priority clinical initiatives</td>
<td>60 (34)</td>
</tr>
<tr>
<td>Opposition from prescribers</td>
<td>48 (27)</td>
</tr>
<tr>
<td>Resistance from administration</td>
<td>25 (14)</td>
</tr>
<tr>
<td>Other</td>
<td>34 (19)</td>
</tr>
</tbody>
</table>

rate, the fact that not all respondents answered every question, and our inability to distinguish multiple responses per institution.

It is concerning that only one quarter of respondents from hospitals with ASPs reported that they monitor clinical outcomes, such as mortality and length of stay. One reason for this might be the low utilization of automated electronic surveillance system tools and computerized physician order entry. It is often onerous to monitor such outcomes without the assistance of such an informatics resource. Clinical outcome measures related to patient safety provide an excellent opportunity for infection control and ASP collaboration on quality improvement initiatives around the prevention of healthcare-associated infections and the control of multidrug-resistant organisms. In addition, ASPs can play a valuable role in meeting increasing numbers of quality measures focused on antimicrobial use, such as the Joint Commission measures and the Centers for Medicare and Medicaid Services measures regarding community-acquired pneumonia and surgical infection prevention, as well as regarding looming “never events.”

In summary, most hospitals represented by respondents are performing many ASP functions, but fewer than half actually identify having an ASP in place. Although obstacles remain, it would seem a propitious time for thought-leadership organizations and societies, such as IDSA, SHEA, and the Society of Infectious Diseases Pharmacists, to help develop strategies and provide resources for overcoming hindrances. Efforts to overcome barriers and facilitate practical implementation of these guidelines are needed and may include participation in local workshops, development of model business plans, improvement of communication between organizations and societies, and further linking of antimicrobial stewardship to patient safety and quality initiatives.

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