Identifying barriers to implementing antimicrobial stewardship in Maryland nursing facilities

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Abstract

Objectives: National organizations have developed guidelines and tools for antimicrobial stewardship, but there is a need to effectively translate these into actionable, measurable, and impactful programs tailored to the needs of the 230 long-term care facilities in Maryland. The purpose of this study is to identify, prioritize, and characterize the barriers to implementing antimicrobial stewardship programs in long-term care facilities across the state, with a focus on the assessment and management of urinary tract infections.
Methods: An electronic survey was distributed to healthcare providers and administrators involved with antimicrobial stewardship activities who provide post-acute long-term care services in Maryland. 91 respondents participated in the survey, with a 56 percent completion rate. All survey responses were evaluated.
Results: Based on 71 respondents, the percentage of staff members who have received training in infection prevention and control ranged from zero to 100 percent, despite the common beliefs that there are sufficient funds and time necessary for training (56 percent and 75 percent, respectively). Of these respondents' facilities, 32 percent do not utilize infectious disease consultations or have an infectious disease specialist; however, more than half are compliant with most current federal guidelines and regulations. According to 55 respondents, 58 percent of their facilities utilize antibiograms, 83 percent collect antibiotic use data, and 62 percent collect data about adverse events. 80 percent of 51 respondents' facilities have policies and protocols for the management of urinary tract infections, but only 53 percent have standardized policies and protocols at the point of prescribing. 71 percent process urine cultures 24 hours a day, seven days a week; and 96 percent receive antibiotic sensitivities, but only 59 percent have access to a specialist to help interpret the results.
Conclusions: These findings suggest that while most facilities have established antimicrobial stewardship programs, not all facilities have optimal practices. In particular, there is limited access to individuals who have received training or specialize in infectious disease.

Objectives

Prior to this study, only one survey previously evaluated infection-control and antimicrobial stewardship (AMS) practices in nursing facilities in Maryland.[1] After implementation of Phases I and II of the Centers for Medicare & Medicaid Services (CMS) Mega-Rule, a gap analysis was needed to evaluate the implementation of these requirements.[2] The objectives of this study are to:

1. Assess the compliance of nursing facilities in Maryland with current guidelines and regulations
2. Characterize the barriers to implementing antimicrobial stewardship (AMS), with a particular focus on the management of urinary tract infections (UTIs)
3. Prioritize the barriers experienced by the facilities by highest potential impact to implementation
4. Develop recommendations and initiatives to improve current AMS practices, especially with regard to UTIs

Methods

- The survey was distributed electronically to potential respondents through LifeSpan Network, medical and pharmacy organizations, long-term care pharmacies, and nursing and pharmacy schools
- The survey was completely anonymous and voluntary, and potential respondents received at least two emails regarding the survey
- From March through August of 2018, 91 recipients participated in the survey; 51 of these respondents completed the survey in its entirety
- All responses were evaluated to identify any potential barriers to implementing AMS
- Descriptive statistics, including mean, median, and range, were performed on the data

Results

Figure 1. Positions of all respondents

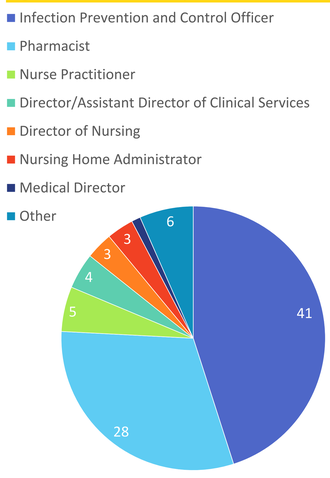


Figure 2. Relevant training of respondents

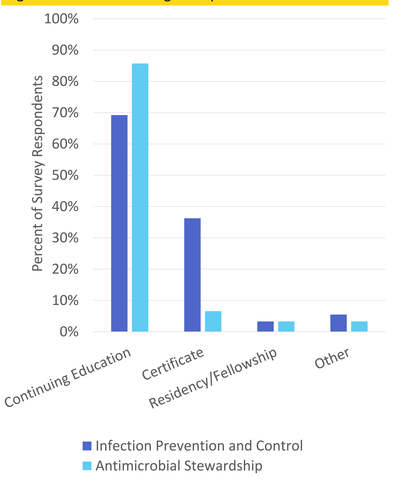
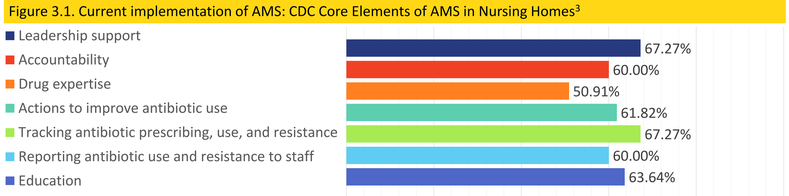


Figure 3.1. Current implementation of AMS: CDC Core Elements of AMS in Nursing Homes[3]



Results (continued)

Table 1. Facility demographics

Ownership Type of Facility	Number of Respondents	Percentage (%)
For profit	52	59.77
Government	4	4.60
Non-profit	31	35.63
Number of Beds in Facility	**Number of Respondents**	**Percentage (%)**
0-99	30	34.48
100-199	46	52.87
≥200	11	12.6
Number of Staff in Facility	**Number of Respondents**	**Percentage (%)**
0-50	19	26.76
51-99	13	18.31
100-199	21	29.58
200-499	13	18.31
≥500	5	7.04

Nurse Staffing Hours/Resident/Day	Number of Respondents	Percentage (%)
0-3	28	39.44
4-7	19	26.76
≥8	24	33.80

	Number of staff trained in IPC	Percent of Staff trained in IPC (%)
Mean	32.20	29.23
Median	3	3
Mode	1	100
Range	400	100
SD	70.23	41.05

Out of the 87 responses to "Number of Beds in Facility," there were 51 unique answers. This indicates that at least 51 NFs in MD are represented by this survey.

Figure 3.2. Current implementation of AMS: CFR elements of an infection prevention and control program[4]

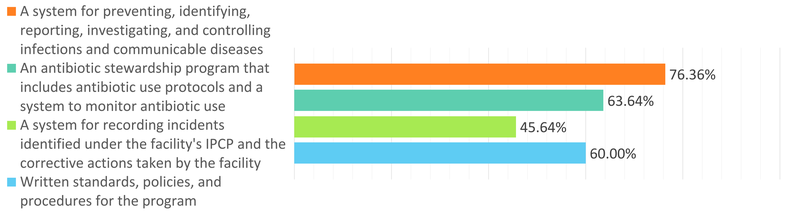


Figure 3.3. Current implementation of AMS: common strategies to improve antimicrobial use

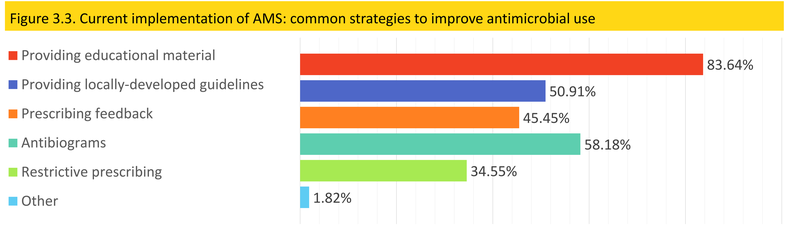


Figure 4. Types of antibiotic use data collected[5]

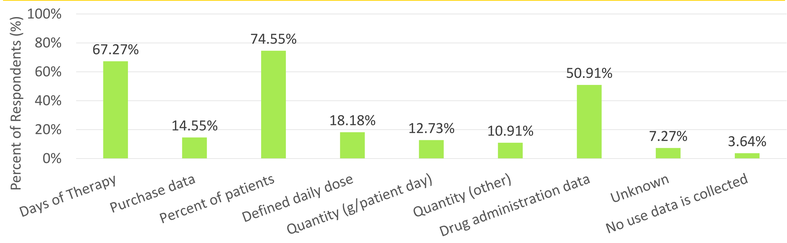
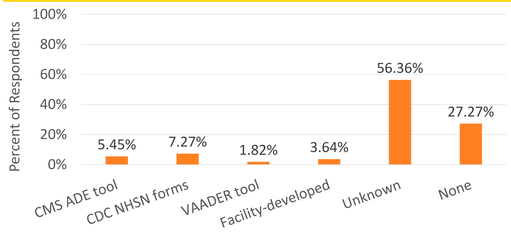


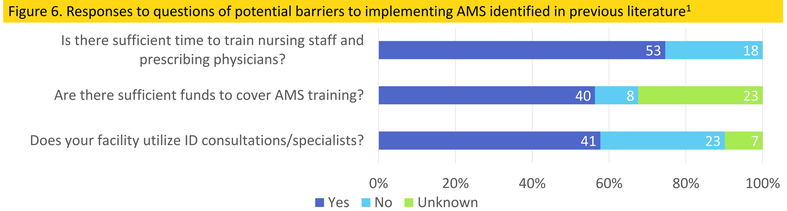
Figure 5. Types of adverse event data collection tools used[6-8]



55 respondents provided the information for figures 3, 4, and 5.

CMS: Centers for Medicare and Medicaid; ADE: Adverse Drug Event; CDC: Centers for Disease Control and Prevention; NHSN: National Healthcare Safety Network; VAADERS: Veteran's Affairs Adverse Drug Event Reporting.

Figure 6. Responses to questions of potential barriers to implementing AMS identified in previous literature[1]



Results (continued)

Figure 7. Responses of survey completers to Yes/No questions related to urinary tract infections

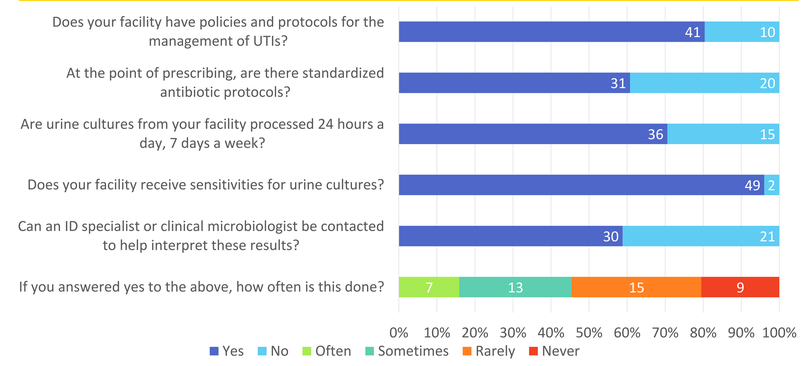
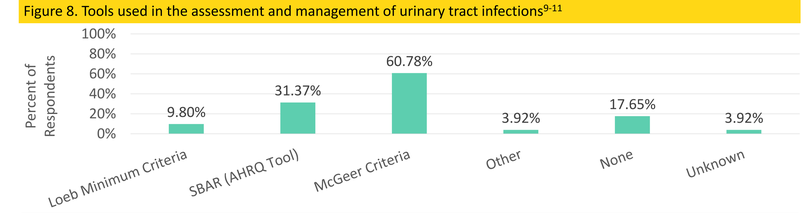


Figure 8. Tools used in the assessment and management of urinary tract infections[9-11]



Discussion

- Respondents to this survey are likely the targets of the initiatives to improve current AMS practices that result from this study, as these individuals voluntarily completed the survey in the interest of their respective facilities.
- A majority of the respondents (76 percent) were either infection prevention and control officers or pharmacists, so these positions should be utilized in AMS initiatives, serving as "champions" throughout implementation.
- Most respondents (73 percent) do not have training in AMS beyond continuing education. Therefore, access to more advanced training or trained individuals is likely impacting implementation of current AMS practices. This is further supported by the average estimation that 29 percent of individuals in each facility have any training in infection prevention and control.
- Based on the ranges in facility demographics, many different types of NFs in MD are represented by this survey. At minimum, responses from 51 unique NFs were included. Therefore, this survey is a representation of at least 22 percent (51/230) of the NFs in MD at the time of the survey.
- Compliance with CDC Core Elements of AMS
  - NFs in MD are most compliant in the element of leadership support and tracking antibiotic prescribing, use, and resistance. They are least compliant with the element of drug expertise.
  - These data are consistent with conclusions drawn from other survey responses, supporting that access to expertise would greatly impact implementation of AMS.
- Time is generally not perceived as a potential barrier to implementing AMS; however, sufficient funds may still be perceived as a potential barrier.
- Adverse event data collection tools are not used by several NFs; and there are no well-established measures for collecting antibiotic use data in this setting.
- Current needs of AMS in MD NFs, prioritized based on greatest probability of impact, include:
  - Access to and utilization of experts and specialists in infectious disease and antimicrobial stewardship
  - Access to and utilization of adverse event data collection tools
  - Establishment of statewide type of antibiotic use data for data collection
  - Protocols for restrictive prescribing
  - Protocols for prescribing feedback
  - Access to and utilization of locally-developed guidelines and antibiograms
  - Improved dissemination of AMS-related communication
  - Transparency in financial support of AMS
- Addressing the above needs will:
  - Improve NF compliance with current regulations and guidelines
  - Allow for future statewide studies that evaluate adverse event data and antibiotic use data
  - Promote inter-facility relationships and sharing of data
  - Reduce inappropriate use of antibiotics in the context of urinary tract infections in NFs
- Limitations of this study include:
  - Relatively small sample size may not be an accurate reflection of all NFs in MD
  - Selection bias through the voluntary nature of the survey
- Future research opportunities
  - Needs assessments for AMS in NFs in other states
  - Post-assessment after implementation if initiatives to improve current AMS practices

Conclusions

- Although this is a relatively small sample compared to the population, the results of this survey have important implications in the development of future AMS initiatives
- Addressing the needs of AMS in MD NFs listed above, in order, is likely to have the most positive impact on current AMS practices in NFs in MD
- Improved access to experts in infectious disease, antimicrobial stewardship, and infection-prevention as a first step will likely improve AMS in NFs overall and specifically with regard to the assessment and management of UTIs.
- Improved access to expertise would best be accomplished utilizing a shared team of experts that can be accessed regularly by each of the AMS "champions" of the NFs in MD.