Identifying barriers to implementing antimicrobial stewardship in Maryland nursing facilities

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Background

- Over a one-year period, up to 70 percent of residents in nursing facilities (NFs) receive one or more courses of systemic antibiotics.[1]
- Up to 75 percent of antibiotics in NFs are considered unnecessary or potentially inappropriate.[1]
- Of the antibiotics prescribed in NFs, urinary tract infections are the most common indication.[2]
- With the increasing emergence of multi-drug resistant organisms, particularly in the post-acute long-term care setting, the appropriate use of antibiotics has become progressively more important.
- Prior to this study, only one survey had evaluated infection-control and antimicrobial stewardship (AMS) practices in NFs in Maryland (MD).[3]
- 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.[4]

Objectives

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, 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, and
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 (n=91)

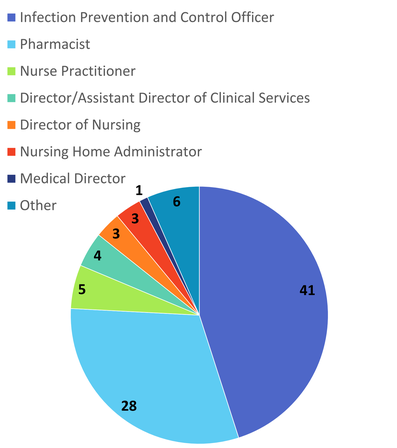


Figure 2. Relevant training of respondents

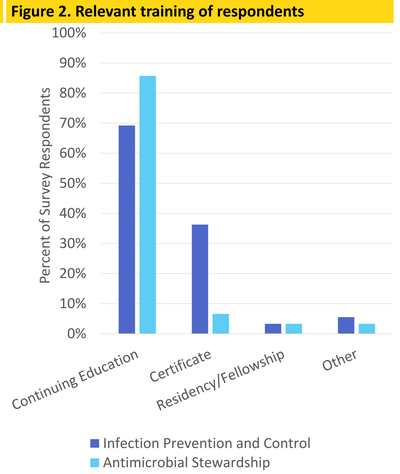


Figure 3.1. Current implementation of AMS: CDC Core Elements of AMS in Nursing Homes[1]

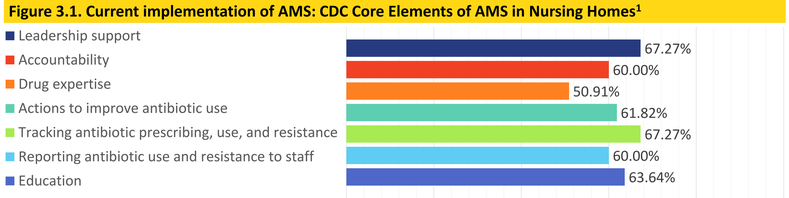
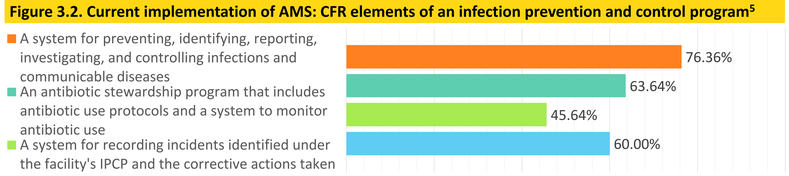


Figure 3.2. Current implementation of AMS: CFR elements of an infection prevention and control program[5]



CFR: Code of Federal Regulations; IPCP: infection prevention and control program

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

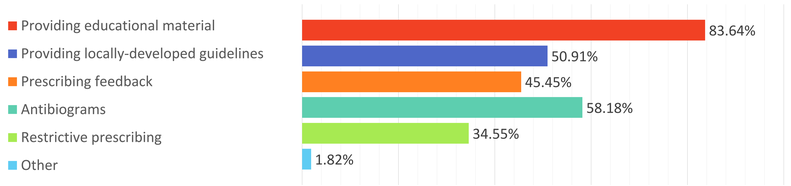


Figure 4. Types of antibiotic use data collected

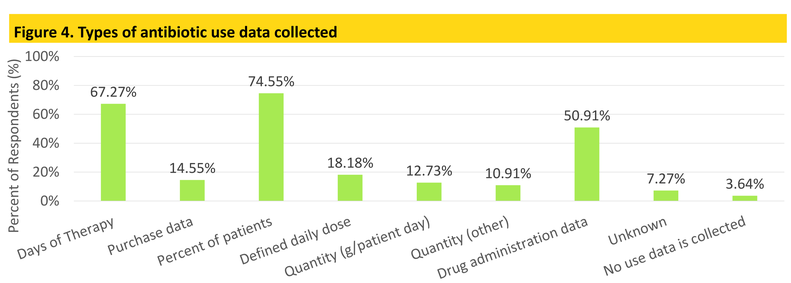
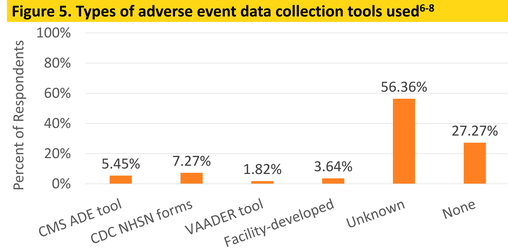


Figure 5. Types of adverse event data collection tools used[6-8]



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

CMS: Centers for Medicare & 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[3]

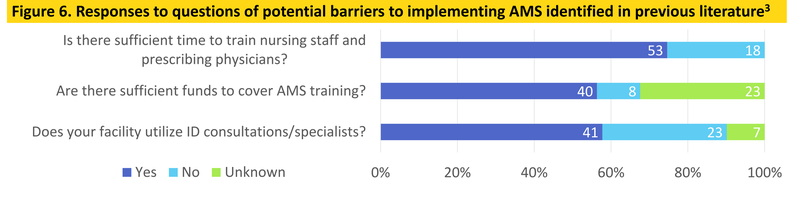
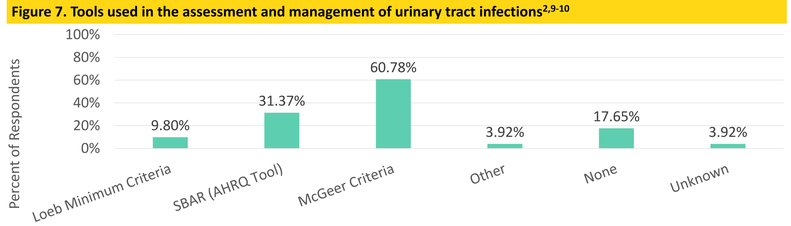
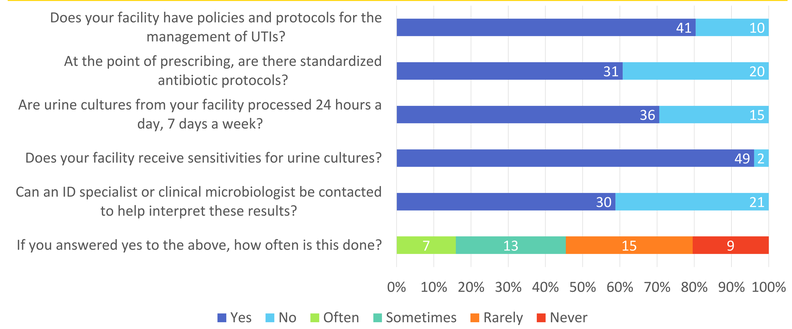


Figure 7. Tools used in the assessment and management of urinary tract infections[2,9-10]



Results (continued)

Figure 8. Responses of survey completers to Yes/No questions related to urinary tract infections



Discussion

- Sixty-nine (76 percent) of respondents were either infection prevention and control officers or pharmacists and are key "champions" for AMS.
- 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.
- Compliance of NFs in MD with current guidelines and regulations are consistent with conclusions drawn from other survey responses, supporting that access to expertise would greatly impact implementation of AMS.
- 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
  - Opportunities for more infectious disease training
  - 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 and prescribing feedback
  - Access to and utilization of locally-developed guidelines and antibiograms
  - Improved dissemination of AMS-related communication
  - Transparency in financial support of AMS
- **Limitations**
  - 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
  - Statewide studies evaluating adverse event data and antibiotic use data
  - Post-assessment after implementation if initiatives to improve current AMS practices

Conclusions

- Results of this survey have important implications in the development of future AMS initiatives.
- Addressing the needs of AMS in MD NFs listed above will improve NF compliance with current regulations and guidelines, promote inter-facility relationships and sharing of data, and reduce inappropriate use of antibiotics.
- Improved access to experts in infectious disease, antimicrobial stewardship, and infection-prevention as a first step can be accomplished utilizing a shared team of experts that can be accessed regularly by each of the AMS "champions" of the NFs in MD. This will likely improve AMS overall and specifically with regard to UTIs.

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Disclosures: The authors have nothing to disclose.