

ABSTRACT

BACKGROUND: Antimicrobial stewardship (AS) recommendations are available for acute care hospitals (ACH), but guidance is lacking for long-term care facilities (LTCFs). Developing LTCF AS guidance is more complex than adapting ACH AS strategies. A reframed perspective is required due to population and care delivery differences. Minnesota Department of Health (MDH) collaborated with LTCFs on AS capacity-building. We developed a toolkit to aid LTCFs in the implementation of evidence-based AS practices, with a focus on nursing activities. **METHODS:** MDH recruited five Minnesota LTCFs (represented by nurses, nursing assistants, nursing leadership, consulting pharmacists, medical directors, and administrators) to participate in a one-year pilot, which entailed bi-monthly conference calls and an average of two on-site meetings per facility. LTCFs piloted and provided feedback on toolkit resources, including: 1) LTCF AS guidance/audit tools; 2) nursing/provider antibiotic use attitudes/beliefs surveys; 3) nursing process evaluation; 4) antimicrobial use assessment; and 5) communication tools. **RESULTS:** While, administrative, clinical, and pharmacy leadership expectations consistent with evidence-based antimicrobial prescribing recommendations are vitally important, nursing leadership and direct care staff drive AS efforts in LTCFs. AS guidance and audit tools were refined from a checklist to determine existing AS components into a comprehensive list of strategies and recommendations. Nursing and provider antibiotic use attitudes/beliefs surveys identified areas for potential interventions (e.g., education, policy changes). Four of five LTCFs performed nursing process evaluations to identify strengths and weaknesses in facility processes for the assessment, communication, and documentation of resident changes in condition; two LTCFs subsequently implemented process changes, including use of communication tools. Three LTCFs performed antimicrobial use assessments which included detailed inspection of resident data for documentation of infection. One LTCF engaged the consulting pharmacist in the process to evaluate antibiotic appropriateness. **CONCLUSIONS:** Implementation of AS strategies in LTCFs requires a systems-level, primary prevention approach that values the contribution of all those involved in resident care. The toolkit uses a “bottom-up” approach, providing a critical complement to the traditional “top-down” approach, by recognizing nursing’s central role in facilitating the flow of resident data among clinical partners. Nursing assessment, communication, and documentation facilitate the foundation of AS, namely: right Diagnosis, Drug, Dose, Duration, and De-escalation.

Background

- Antimicrobial resistance and *Clostridium difficile* infections are an urgent threat to public health and are mainly driven by antimicrobial use.
- Published antimicrobial stewardship (AS) recommendations and guidelines are available for acute care hospitals (ACH), but guidance is lacking for long-term care facilities (LTCFs).
- Antimicrobial use in LTCFs is high; antimicrobials are often prescribed empirically, and for extended durations.
- AS facilitates the responsible use and protection of all antimicrobials and in turn, improves patient safety, reduces healthcare costs and potentially impacts rates of antimicrobial resistance.
- Development of LTCF AS guidance is more complex than adapting existing ACH strategies, requiring a reframed perspective due to population and care delivery differences.
- Prior work with two Minnesota LTCFs identified the need for a resource toolkit to support AS efforts in LTCFs.

Methods

- MDH recruited five Minnesota LTCFs (represented by nurses, nursing assistants, nursing leadership, consulting pharmacists, medical directors, and administrators) to participate in a one-year pilot.
 - Bi-monthly conference calls, and an average of two on-site meetings were held with participating facilities.
- LTCFs piloted and provided feedback on toolkit resources, including but not limited to:
 - LTCF AS guidance and audit tools
 - Nursing and provider antibiotic use attitudes and beliefs surveys
 - Nursing process evaluation
 - Antimicrobial use assessment
 - Communication tools (e.g., Situation-Background-Assessment-Request, or SBAR)

- While administrative, clinical, and pharmacy leadership expectations consistent with evidence-based antimicrobial prescribing recommendations are vitally important, nursing leadership and direct care staff drive AS efforts in LTCFs.
- AS guidance and audit tools were refined from a checklist to determine existing AS components into a comprehensive list of strategies and recommendations. (Figure 1- Images 1,2)
- The need for potential interventions (e.g., education, policy changes) was identified by nursing and provider attitudes and beliefs surveys. (Figures 2 and 3)

Results

- Four of five LTCFs performed nursing process evaluations to identify strengths and weaknesses in facility processes for the assessment, communication, and documentation of resident changes in condition. (Figure 1- Image 3)
 - Evaluations focused on the process that occurs when a resident has a suspected urinary tract infection.
 - Two LTCFs subsequently implemented process changes, including introducing the use of a SBAR form to facilitate communicating resident changes in condition from nurses to off-shift or on-call providers. (Figure 1- Image 4)

Figure 1: Images from the Minnesota Antimicrobial Stewardship Program Toolkit for Long-term Care Facilities

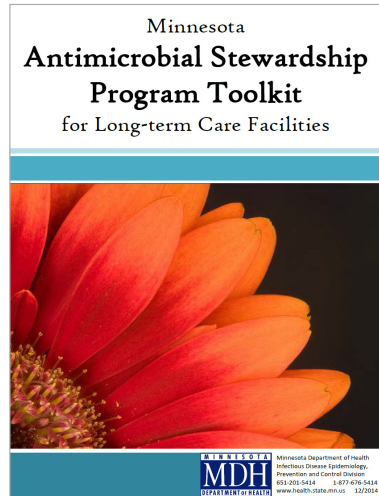


Image 1: Guidance

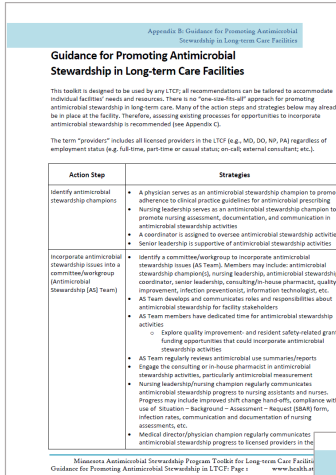


Image 2: Audit tool

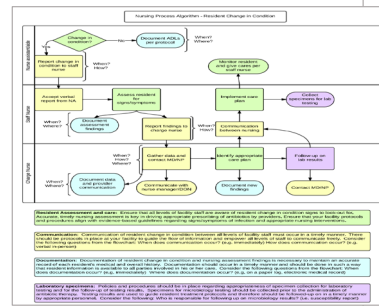
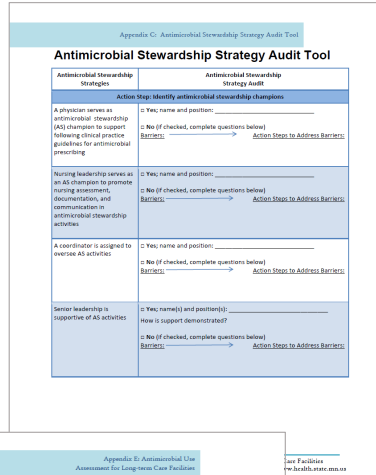


Image 3: Nursing process evaluation

When calling the primary or on-call provider, consider the following changes to routine. Communicate that you are present and not present to facilitate accurate and effective clinical decisions. Consider:

SBAR: Resident Name: _____ DOB: _____
Unit/Room: _____

Situation: Reason for the call (e.g., change in condition) include date of onset, frequency, and duration: _____

Vital signs: note baseline values, if different: Temp: _____ BP: _____ P: _____ RR: _____

Background: Primary diagnosis or reason resident is in facility: _____
Pertinent history (e.g., precipitating, aggravating, alleviating factors): _____

Has reason for call occurred before? Describe: _____

Recent lab or diagnostic test results: _____

Medication allergies and reactions: _____
Advance directives (PACT): _____

Assessment: What do you think is going on (e.g., dehydration, medication problem)? _____

Or – If not sure what is going on: _____

Request:
 I need your help.
 Medication change? Specify: _____
 New order? Specify: _____
 Just providing information.

Instructions or questions from physician/NP: _____

Image 4: SBAR

Antimicrobial Use Assessment for Long-term Care Facilities

Overview: Assessing antimicrobial use is essential for determining antimicrobial use trends. Antimicrobial use assessments should be conducted regularly to measure progress of antimicrobial stewardship activities. After completion of the assessment, the facility should be able to describe who is getting antibiotics and why. Additionally, the results are used to identify gaps in communication, documentation, and compliance with facility policies and evidence-based recommendations for antimicrobial prescribing.

The term “providers” includes all licensed providers in the facility (e.g., MD, DO, NP, PA) regardless of employment status (e.g., full-time, part-time or casual status, on-call, external consultant, etc.).

Preparation for the assessment:

- Select a timeframe (e.g. 3 months)
- Gain access to antibiotic data sources
 - Essential:
 - CI
 - Supportive surveillance:

Additional steps to consider: Align antimicrobial prescribing data and clinical documentation with published recommendations and facility policies. For each prescribed antimicrobial, determine whether the criteria have met as described by:

- Antimicrobial prescribing guidelines for long-term care residents
 - Determine whether the resident’s documented signs and symptoms align with the recommended regimen criteria for initiating antibiotics (Loeb M, et al. Minimum Criteria for Initiation of Antibiotics in Long-Term Care Residents. *Infection Control and Hospital Epidemiology*. 2001; 26:1204. Available at: www.journals.uchicago.edu/doi/10.1093/infdis/j292
 - Look checklist available here: www.mnhs.org/antibiotic-use
- Surveillance definitions for long-term care facilities
 - Determine whether the infection met the Centers for Disease Control and Prevention’s (CDC) standard definitions for infection surveillance in long-term care (Loeb M, et al. Surveillance definitions for infections in long-term care facilities, revising the McGeer criteria. *Infection Control and Hospital Epidemiology*. 2012;35:907-17. Available at: www.journals.uchicago.edu/doi/10.1093/infdis/jir333
- Facility policies
 - Determine whether the prescribed antimicrobial aligned with expectations outlined in facility policies/procedures. Consider prophylactic and long-term use of antimicrobials.

Example table template:

Resident name	Antimicrobial name (dose/duration)	Indication	Clinical assessment	Microbiology results/outcome	Infection surveillance criteria	Alignment of clinical documentation with recommendations (CDC Infection Surveillance Criteria (2006, 2012))	Facility Policy

Minnesota Antimicrobial Use Assessment

Image 5: Antimicrobial use assessment

- Three LTCFs performed antimicrobial use assessments which included detailed inspection of resident data sources for documented infection indications. (Figure 1- Image 5)
 - Assessments revealed that many conditions for which antibiotics were prescribed did not meet antibiotic initiation criteria (e.g., Loeb, et al. 2001) or infection surveillance criteria (e.g., revised McGeer definitions 2012).
 - One LTCF engaged the consulting pharmacist in the process to facilitate evaluation of antibiotic appropriateness (e.g., drug, dose, duration).

3 Please circle the number that most accurately reflects your opinion on a scale of 1 to 5 with 1 being never contributes and 5 being always contributes to the following issue.

I believe that using antibiotics leads to:	Never	Rarely	Sometimes	Often	Always
Diarrhea in the person taking antibiotics	1	2	3	4	5
Future resistance to antibiotics	1	2	3	4	5
Reduced rates of influenza	1	2	3	4	5
High quality care	1	2	3	4	5
Interaction with other medications	1	2	3	4	5
Rash	1	2	3	4	5
Family perception of high quality care	1	2	3	4	5

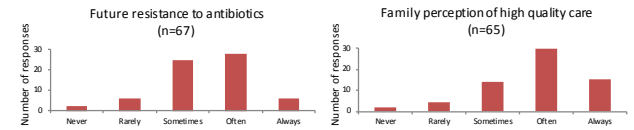
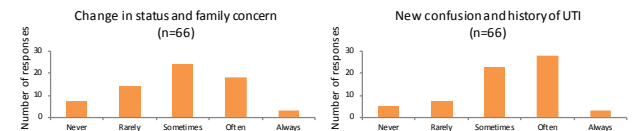


Figure 3: Nursing Survey Question #5 and Responses

5 Please circle the number that most accurately reflects your opinion on a scale of 1 to 5 with 1 being never appropriate and 5 being always appropriate for the resident to receive antibiotics.

I consider antibiotics appropriate for a resident WITHOUT an indwelling catheter and ONLY the following symptoms/findings:	Never	Rarely	Sometimes	Often	Always
Resident with foul smelling urine	1	2	3	4	5
Resident with bacteria in urine	1	2	3	4	5
Resident with bacteria and white blood cells (WBCs) in urine	1	2	3	4	5
Change in functional status and family concern about a possible infection	1	2	3	4	5
New confusion and history of urinary tract infection (UTI)	1	2	3	4	5
Positive influenza rapid test	1	2	3	4	5
Stough and green or yellow nasal discharge	1	2	3	4	5



- A comprehensive toolkit *Minnesota Antimicrobial Stewardship Program Toolkit for Long-term Care Facilities* was developed, distributed to LTCF partners, and posted on the MDH website at <http://www.health.state.mn.us/divs/idepc/dtopics/antibioticresistance/asp/ltc/index.html>



Conclusions

- Implementation of AS strategies in LTCF requires a systems-level, primary prevention approach that values the contribution of all those involved in resident care, including nurses, nursing assistants, and aides.
- The *Minnesota Antimicrobial Stewardship Program Toolkit for Long-term Care Facilities* uses a “bottom-up” approach by recognizing nursing’s central role in facilitating the flow of resident data among clinical partners.
- Accurate, timely, and consistent nursing assessment, communication, and documentation of resident changes in condition are essential components of AS in LTCFs.
 - These components form the foundation of effective antimicrobial stewardship, namely: right Diagnosis, Drug, Dose, Duration, and De-escalation.