

Antibiotic and urine culture stewardship in long-term care

Promoting Local Engagement in Antibiotic Stewardship Efforts (PLEASE):

RECOGNIZE YOUR ROLE AS A CONTINUOUS IMPROVEMENT CHAMPION

Top 10 tips for championing antibiotic and urine culture stewardship implementation, inspired by Centers for Disease Control and Prevention (CDC) [Core Elements of Antibiotic Stewardship for Nursing Homes](#)

- 1 [Review current policies and ensure alignment with evidence-based practices.](#)
- 2 [Get your Quality Assurance/Performance Improvement \(QAPI\) committee involved in the innovation process.](#)
- 3 [Connect with your consultant pharmacist.](#)
- 4 [Master your understanding of clinical vs. surveillance criteria.](#)
- 5 [Recognize the prevalence of asymptomatic bacteriuria when considering the clinical value of urine testing.](#)
- 6 [Communicate, communicate, communicate!](#)
- 7 [Consistently perform antibiotic time-outs.](#)
- 8 [Conduct thorough resident assessments, clearly document findings.](#)
- 9 [Work with your lab to develop a facility-specific antibiogram.](#)
- 10 [Prioritize your professional development.](#)



Long-term Care
Infection Prevention Coalition
of Hennepin County



Disclaimer:

We have made a good faith effort to accurately summarize themes from the original *Antibiotic and Urine Culture Stewardship in Long-Term Care Health Care Professional Education Series* presentations and provide related resources to assist readers in their improvement efforts. Please review original sources to ensure summarized information is appropriately contextualized. This content is not intended to replace clinical judgment.

Top 10 tips are detailed below using the Situation-Background-Assessment-Recommendation (SBAR) format.

1 Review current policies and ensure alignment with evidence-based practices.

Background: Leadership Commitment and Accountability Core Elements

Assessment: Antibiotic stewardship programs require dedicated time, financial, and technological resources, which can be detailed in the facility policy.

Recommendation: Consider reviewing and integrating resources below into your facility's antibiotic stewardship program.

- a. Minnesota Department of Health (MDH) template [Minnesota Sample Antibiotic Stewardship Policy for Long-Term Care Facilities](#) (LTCF) and [Companion Guide](#)
- b. CDC Core Elements [Appendix A: Policy and Practice Actions to Improve Antibiotic Use](#)
- c. CDC [Core Elements for Antibiotic Stewardship in Nursing Homes: Creating a Culture to Improve Antibiotic Use in Nursing Homes](#)
- d. [Wisconsin Long-Term Care Urinary Tract Infection \(UTI\) Toolkit](#)
- e. Claeys KC, Trautner BW, Leekha S, Coffey KC, Crnich CJ, et al. [Optimal Urine Culture Diagnostic Stewardship Practice—Results from an Expert Modified-Delphi Procedure](#), *CID*, 75,(3): 382–389.



Figure 1. Image source: Canva.com

2 Get your Quality Assurance/Performance Improvement (QAPI) committee involved in the innovation process.

Background: Leadership Commitment, Accountability and Measuring Actions Core Elements

Assessment: QAPI is well suited to monitor processes and outcomes related to urine culturing (UCx) and antibiotic use, guide practice changes and track progress toward goal achievement.

Recommendation: Consider using a plan-do-check-act cycle like the one in Figure 2 below to guide the innovation and improvement process.



Figure 2. Plan-Do-Check-Act Cycle

Source: *Continuous Improvement Coaching Plan: A strategic approach to expert CI coaching* by Amy K Czechowicz (modified) Hennepin County Center of Innovation and Excellence (2021)

3 Connect with your consultant pharmacist.



Figure 3. Image source: Canva.com

Background: Antibiotic Expertise Core Element

Assessment: Consultant pharmacists can help you incorporate the elements outlined in Figure 4 (below) into your facility's antibiotic stewardship program protocols.

Recommendation: Consider reviewing and integrating resources below into facility policies and protocols.

- a. CDC Core Elements [Appendix B: Measures of antibiotic prescribing, use and outcomes](#)
- b. Ashraf MS, Bergman S. [The Case for Consultant Pharmacists as Key Players in Nursing Home Antibiotic Stewardship Programs](#). J Am Med Dir Assoc. 2021;22(1):6-8.

5 WAYS CONSULTANT PHARMACISTS CAN BE ANTIBIOTICS AWARE

1. Ensure documentation of the indication for every antibiotic order.
2. Use the shortest effective antibiotic duration.
3. Improve fluoroquinolone prescribing practices.
4. Avoid treatment of asymptomatic bacteriuria
5. Limit the use of prolonged antibiotic prophylaxis for UTI.

Figure 4. Five Ways Consultant Pharmacists Can Be Antibiotics Aware
([Educational Materials for Health Care Providers | Antibiotic Prescribing and Use | CDC](#))

4

Master your understanding of clinical vs. surveillance criteria.

Background: Action and Tracking Core Elements

Assessment: Per MDH [Loeb and McGeer Criteria: A Practical Guide for Use in Long-term Care](#), "Clinical criteria are meant to inform decisions on individual patients when care is needed...Loeb criteria are designed for clinical use." See Figure 5 (right).

"Surveillance criteria are used to count true case events (i.e., diagnosed infections) and to estimate the actual incidence/prevalence of disease conditions... McGeer and [National Health Care Safety Network] NHSN criteria are designed for surveillance."

Loeb criteria are applied as the clinical picture is unfolding; lab results are not yet available. Revised McGeer/ NHSN definitions are applied retrospectively, and not used for clinical decision making. Clinical and surveillance criteria are not interchangeable. You might think of them like apples and oranges.



Recommendation: Track your facility's adherence to Loeb criteria. Consider reviewing and integrating resources below into facility policies and protocols.

- a. Loeb M, Bentley DW, Bradley S, et al. [Development of Minimum Criteria for the Initiation of Antibiotics in Residents of LTCFs: Results of a Consensus Conference](#). *Inf Ctrl and Hosp Epi*. 2001;22(2):120-124.
- b. Stone ND, Ashraf MS, Calder J, et al. [Surveillance Definitions of Infections in LTCFs: Revisiting the McGeer Criteria](#). *Inf Ctrl and Hosp Epi*. 2012;33(10):965-977.
- c. Modify the example spreadsheet in Table 1 below.

Minimum Criteria for Initiation of Antibiotics in Long-Term Care Residents

Suspected Urinary Tract Infection

NO indwelling catheter:

- Acute dysuria
- or
- Fever (>37.9°C [100°F] or a 1.5°C [2.4°F] increase above baseline temperature)
- and at least one of the following:
- New or worsening:
 - Urgency
 - Frequency
 - Suprapubic pain
 - Gross hematuria
 - Costovertebral angle tenderness
 - Urinary incontinence

WITH indwelling catheter (Foley or suprapubic):

- At least one of the following:
 - Fever (>37.9°C [100°F] or a 1.5°C [2.4°F] increase above baseline temperature)
 - New costovertebral tenderness
 - Rigors
 - New onset of delirium

Note: Foul smelling or cloudy urine is not a valid indication for initiating antibiotics. Asymptomatic bacteriuria should not be treated with antibiotics.

Figure 5. Loeb Minimum Criteria
Source: [ltcabxcad.pdf \(state.mn.us\)](#)

Table 1. Example spreadsheet for tracking whether antibiotics started to treat LTCF residents' urinary tract infections (UTI) align with Loeb Minimum Criteria.

Antibiotic (Abx) to treat UTI started for resident in defined surveillance population? (1= yes, 0= no)	Abx appropriate for this resident (i.e., met Loeb criteria)? (1= yes, 0= no)	Indwelling urinary catheter? (Y or N)	Dysuria? (Y or N)	Temp (F°) (add multiple readings, as needed) (Y or N)	Does temp represent a fever? (>100°F or >2°F above baseline) (Y or N)	New or worsening urgency? (Y or N)	New or worsening frequency? (Y or N)	New or worsening suprapubic pain? (Y or N)	New or worsening gross hematuria? (Y or N)	New or worsening costovertebral angle tenderness? (Y or N)	New or worsening urinary incontinence? (Y or N)	Rigors? (Y or N)	New onset delirium (i.e., adequate workup for delirium has been performed and no other cause for delirium is identified)? (Y or N)	Foul-smelling urine? (Y or N)	Cloudy urine? (Y or N)	Other signs/symptoms
1	0	No	No	No										Yes	Yes	
1	1	No	Yes	No										No	No	
2	1		Monthly sum													
	50%		Best practice adherence rate													

How do you calculate a best practice adherence rate?
 Number of antibiotics started for UTI that aligned with Loeb Minimum Criteria during surveillance period/ [divided by]
 Total number of antibiotics started for UTI during surveillance period
 x100 [multiply by 100 to express as a percentage]

5 Recognize the prevalence of asymptomatic bacteriuria when considering the clinical value of urine testing.

Background: Action, Tracking and Reporting Core Elements

Assessment: Over-testing leads to overdiagnosis of urinary tract infection (UTI).

Recommendation: Consider using the Agency for Health Care Research and Quality (AHRQ) tool in Figure 6 (right) to guide decision making. Review and integrate resources below into facility protocols.

- a. AHRQ [Assessment and Management of the Resident with a Suspected UTI](#)
 - i. MDH [Infection and Antibiotic Use Tracking Tool](#) modified to include a tab for [tracking adherence to urine culture stewardship recommendations](#)
- b. AHRQ [Asymptomatic Bacteriuria \(ASB\) One Pager](#)
- c. Advani SD, Polage CR, Fakhri MG. [Deconstructing the urinalysis: A novel approach to diagnostic and antimicrobial stewardship](#). *Antimicrobial Stewardship and Health Care Epidemiology*. 2021;1(1):e6.

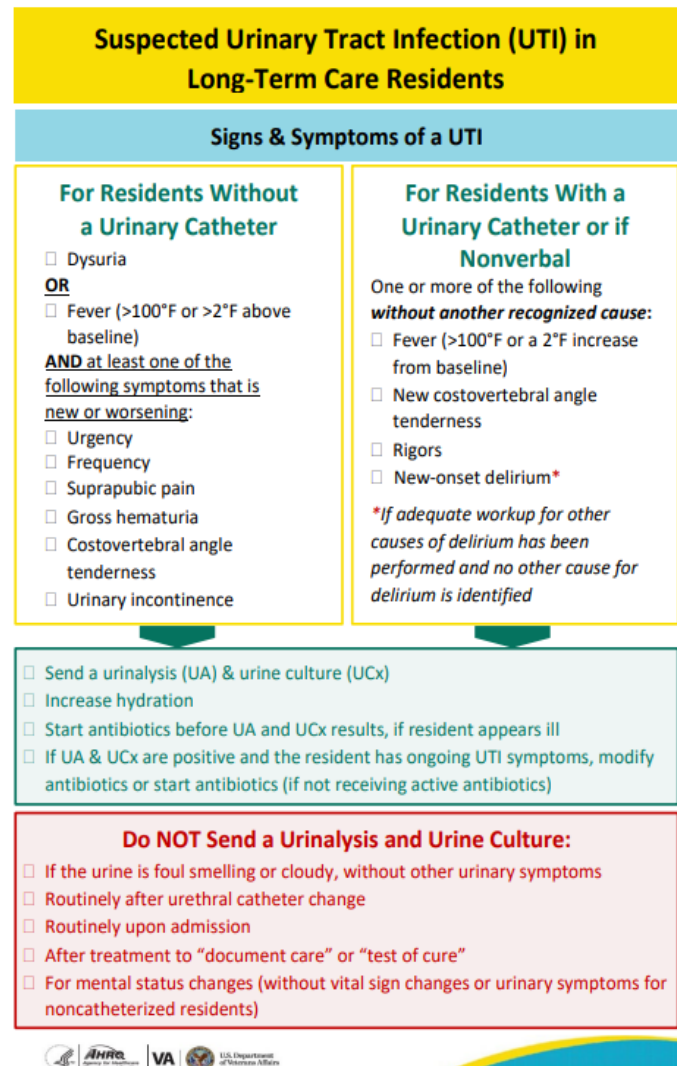


Figure 6. AHRQ [Suspected UTI in Long-Term Care Residents](#)

6 Communicate, communicate, communicate.

Background: Action and Education Core Elements

Assessment: Per CDC [Nursing Home Health Care Professionals: Effective Communication Toolkit](#), “Effective communication with residents and their families helps to address treatment expectations and places the resident at the center of care. Nursing home health care professionals can help reduce inappropriate antibiotic use by utilizing the **four-part communication strategy** shown below. Communication skills training has been shown to significantly reduce inappropriate antibiotic prescribing in outpatient settings.”

1. Review relevant symptoms, physical exam findings.
2. Deliver a clear diagnosis that explains the resident’s change in condition.
3. Provide a FIRST negative, THEN positive treatment recommendation.
4. Discuss a contingency plan.

Recommendation: Consider reviewing and integrating resources below into facility protocols and trainings.

Residents and family members:

1. Washington State Department of Health
 - a. [Medical Providers’ FAQs About UTI: Evidence for Safe Management of Suspected UTIs](#)
 - b. [Antibiotic Stewardship of UTI in the LTC Setting Lecture Series](#)
 - c. [Communicating with Residents and Families About Antibiotics](#)
 - i. Designed to assist with communication skills around antibiotic use, which will help avoid inappropriate prescribing. This education offers free continuing education for nurses and medical assistants.
2. AHRQ [Discussing Infectious Concerns About Residents With Family Members and Caregivers](#)
3. Superior Health Quality Alliance [Discussing Antibiotics for Bacterial and Viral Infections with Patients, Residents and Caregivers](#)
4. Emory University School of Medicine [Education](#)

Intra-facility colleagues:

1. MDH [SBAR: Situation, Background, Assessment, Recommendation/ Request](#)
2. AHRQ [Suspected UTI SBAR form](#)

Inter-facility colleagues (emergency departments, hospitals):

1. Valmadrid LC, Schwei RJ, Maginot E, Pulia MS. [The impact of health care provider relationships and communication dynamics on UTI management and antibiotic utilization for LTCF residents treated in the emergency department: A qualitative study](#). Am J Inf Ctrl. 2021 Feb;49(2):198-205.
2. Weber BR, Noble BN, Bearden DT, Crnich CJ, Ellingson KD, McGregor JC, Furuno JP. [Antibiotic prescribing upon discharge from the hospital to LTCF: Implications for antimicrobial stewardship requirements in post-acute settings](#). Inf Control Hosp Epi. 2019 Jan;40(1):18-23.

7 Consistently perform antibiotic time-outs.

Background: Action, Tracking and Reporting Core Elements

Assessment: Per [CDC](#), "An antibiotic "time out" is a formal process designed to prompt a reassessment of the ongoing need for and choice of an antibiotic once more data is available, including after empiric antibiotic initiation.

Nursing homes should have a process in place for a review of antibiotics by the clinical team **two to three days after antibiotics are initiated** to answer these key questions:

- Does this resident have a bacterial infection that will respond to antibiotics?
- If so, is the resident on the most appropriate antibiotic(s), dose, and route of administration?
- Can the spectrum of the antibiotic be narrowed, or the duration of therapy shortened (i.e., de-escalation)?
- Would the resident benefit from additional infectious disease/antibiotic expertise to ensure optimal treatment of the suspected or confirmed infection?

Recommendation: Consider reviewing and integrating resources/recommendations below into your ASP.

- Develop a process for tracking pending and finalized lab results (i.e., determine who is responsible for doing what by when). Consider collaborating with laboratory staff and electronic health record vendors to facilitate timely alerts and easy access to up-to-date lab reports.
- Incorporate use of a standardized template when conducting time-outs, e.g., MDH [72-Hour Antibiotic Time-Out Sample Template](#), which ensures the most important elements are consistently assessed. The repetition may help promote health care professionals' familiarity with the process.

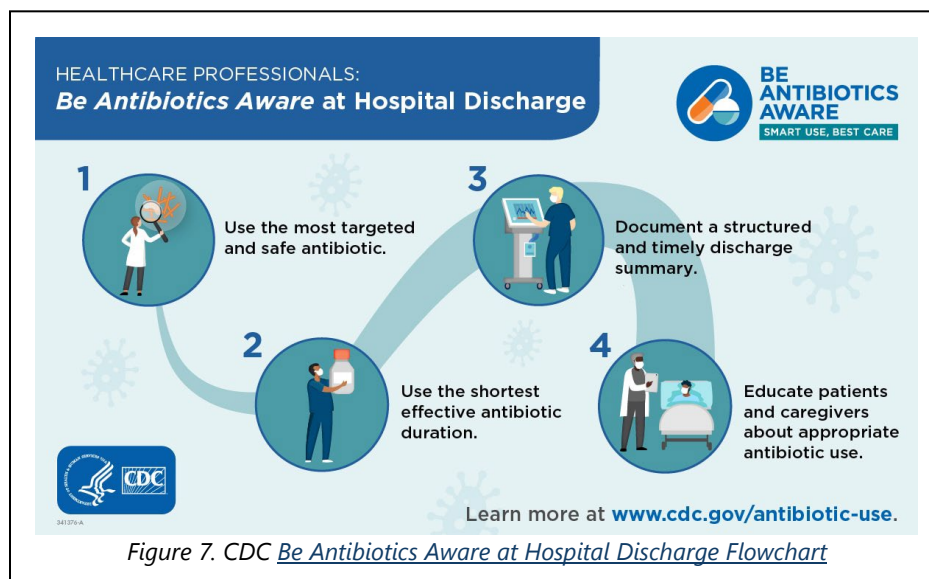


Figure 7. CDC *Be Antibiotics Aware at Hospital Discharge* Flowchart

8

Conduct thorough resident assessments, clearly document findings.

Background: Leadership Commitment, Accountability and Education Core Elements

Assessment: CDC, per the Core Elements for Antibiotic Stewardship in Nursing Homes: [Leading Antibiotic Stewardship in Nursing Homes](#), describes Directors of Nursing as key antibiotic stewardship leaders in nursing homes, citing the following three opportunities:

- a. [Establish standards](#) for nursing staff to assess, monitor and communicate changes in a resident's condition that could impact the need for antibiotics.
- b. [Use their influence](#) as nurse leaders to help ensure antibiotics are prescribed only when appropriate.
- c. [Educate front line nursing staff](#) about the importance of antibiotic stewardship and explain policies in place to improve antibiotic use.



Figure 8. Proud to be a Nurse Antibiotic Steward Source: Johns Hopkins [Toolkit to Enhance Nursing and Antibiotic Stewardship Partnership](#)

Nurses should include which signs and symptoms *are and are not* present when communicating with clinicians and documenting a resident's change in condition. If omitted, clinicians should request these assessment findings.

Recommendation: Consider reviewing and integrating resources below into facility templates/ protocols.

- a. Rowe TA, Jump RLP, Andersen BM, et al. [Reliability of nonlocalizing signs and symptoms as indicators of the presence of infection in nursing-home residents](#). *Inf Ctrl and Hosp Epi*. 2022;43(4):417-426.
- b. Monsees EA, Tamma PD, Cosgrove SE, Miller MA, Fabre V. [Integrating bedside nurses into antibiotic stewardship: A practical approach](#). *Inf Ctrl and Hosp Epi*. 2019;40(5):579-584.
- c. Amenta EM, Jump RLP, Trautner BW. [Bacteriuria in older adults triggers confusion in health care providers: A mindful pause to treat the worry](#). *Antimicrobial Stewardship and Health Care Epi*. 2023;3(1):e4. (See article infographic in Figure 9 below).

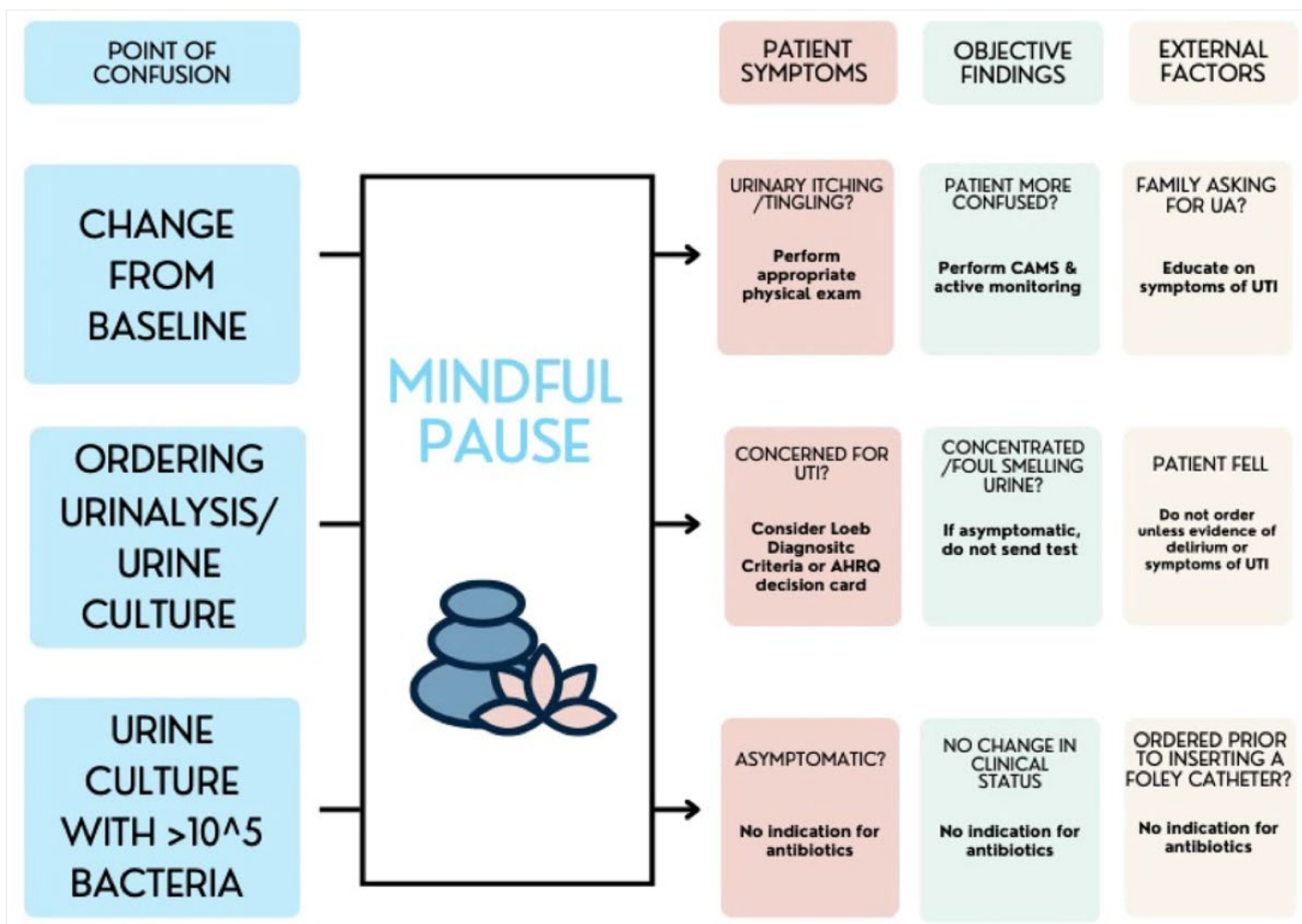


Figure 9. *A Mindful Pause to Treat the Worry* (Amenta et al., 2023)

9 Work with your lab to develop a facility-specific antibiogram.

Background: Accountability, Drug Expertise and Action Core Elements

Assessment: Per [MDH](#), antibiograms help guide the clinician and pharmacist in selecting the best empiric antimicrobial treatment in the event of pending microbiology culture and susceptibility results.

They are also useful tools for detecting and monitoring trends in antimicrobial resistance. When antimicrobial susceptibility testing data are summarized cumulatively for a health care system or facility periodically (such as yearly or quarterly), trends in resistance can be identified and investigated.

Recommendation: Consider reviewing and integrating resources below into your antibiotic stewardship program.

- a. MDH [Sample Letter to Obtain an Antibiogram from a Laboratory](#)
 - i. [About Antibiograms \(PDF\)](#)
- b. Jorgensen S, Zurayk M, Yeung S, Terry J, Dunn M, et al. [Emergency Department Urinary Antibiograms Differ by Specific Patient Group](#). J Clin Microbiol. 2017 Sep;55(9):2629-2636.



Figure 10. Infographic source: [CDC Project Firstline](#). *Fight Antimicrobial Resistance with Infection Control*

The way we use antibiotics today
or in one patient
 directly impacts how effective they will be tomorrow
or in another patient;
 antibiotics are a shared resource.

Preserving effective antibiotic treatments requires all of us to do our part.

Source: MDH – [Antibiotic Resistance and Stewardship for Health Professionals](#); accessed June 18, 2024

10

Prioritize your professional development.

Background: Action and Education Core Elements

Assessment: Everyone has something to teach and something to learn – and the only constant is change! Connect with other continuous improvement champions – from local infection prevention/antibiotic stewardship program leaders, LTCF community partners and public health colleagues – and navigate the constant change together!

We, along with our colleagues at MDH, want to meet you where you're at and offer capacity building support in the way that is most meaningful to you.

Recommendation: Review and integrate resources below into your professional development plan.

1. Recorded webinars
 - a. CDC online training module: [Antibiotic Stewardship in LTC Facilities](#)
 - b. Stewardship series webinar recordings on [our website!](#)
2. Hennepin County facilities: [Reach out to our program staff \(see Table 1 below\) and let us know how we can help!](#) All services are no-cost, non-regulatory and non-judgmental.
3. Contact the MDH Infection Control Assessment and Response (ICAR) program staff.
 ✉ health.icar@state.mn.us | ☎ 651-201-5414
4. Consider showcasing your improvements by applying for the [Minnesota Antibiotic Stewardship Long-Term Care Honor Roll](#).

Table 2. Hennepin County Public Health Long-Term Care Infection Prevention Program contact information

<p>HENNEPIN COUNTY PUBLIC HEALTH</p> <p>Long-term Care Infection Prevention Program</p> <p>✉ LTC.InfectionPrevention@hennepin.us 🌐 hennepin.us/ltc-infection-prevention</p>
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Infection prevention and antibiotic stewardship programs are continuous improvement (CI) cycles in action! Strive to keep the *Five "I's" of CI* alive as you proceed.



Figure 11. The 5 "I's of Continuous Improvement (CI)

Source: Amy K Czechowicz, Hennepin County Center for Innovation and Excellence (2022) (modified)

Together, we can incrementally iterate, in a manner informed by data, initiated and implemented by staff to ensure optimal impacts to the long-term care residents we collectively serve.

Contact us!

The Hennepin County Public Health Long-Term Care Infection Prevention (LTC IP) Program convenes the LTC IP Coalition of Hennepin County, and we invite you to get involved.

Please reach out with questions – big or small.

We aim to PLEASE (Promote Local Engagement in Antibiotic Stewardship Efforts)!

✉ LTC.InfectionPrevention@hennepin.us | 💻 hennepin.us/ltc-infection-prevention