PREVENT HAIs Healthcare-Associated Infections

Guide to Implementing a Program To Reduce Catheter-Associated Urinary Tract Infections in Long-Term Care

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Executive Summary

Infections that develop in health care settings are known as healthcare-associated infections (HAIs). HAIs are especially significant in long-term care (LTC) settings, and have been estimated to account for 1.6 to 3.8 million infections and 388,000 deaths annually.[1] Additionally, infections have very high costs to LTC facilities: $38 to $137 million annually for antimicrobial therapy and $673 million to $2 billion for hospitalizations.[2] Catheter-associated urinary tract infection (CAUTI) is a common, costly, and potentially life-threatening HAI for LTC residents. An estimated 7 to 10 percent[3] of all LTC residents have urinary catheters, including 12 percent[4] of all new admissions at the time of transfer from acute care facilities to LTC facilities.

Research suggests CAUTIs are highly preventable and that perhaps as many as 50 to 70 percent of these episodes can be prevented.[5,6] Moreover, failures in infection control was the most common type of deficiency cited in LTC surveys in 2014, demonstrating a need for greater focus on preventing CAUTIs and other HAIs.[7]

The AHRQ Safety Program for Long-Term Care: HAIs/CAUTI was developed and refined over a 3-year period through a national quality improvement collaborative designed to reduce CAUTIs and enhance LTC resident safety culture. Through the adaptation of evidence-based practices including the Comprehensive Unit-Based Safety Program (CUSP), tools and resources were developed to eliminate HAIs/CAUTI and enhance safety practices in the LTC setting. This guide provides information, tools, and resources, including educational bundles, to support LTC facilities that are interested in developing a quality improvement program to reduce CAUTIs and other HAIs, and to improve the resident safety culture.

This program was funded by the Agency for Healthcare Research and Quality (AHRQ), and was part of the U.S. Department of Health & Human Services (HHS) National Action Plan to Prevent Healthcare-Associated Infections.[8]

Overview

The purpose of this guide and the appended tools is to provide long-term care (LTC) facilities with an approach to implement elements of the AHRQ Safety Program for Long-Term Care: HAIs/CAUTI—reducing catheter-associated urinary tract infections (CAUTIs) and other healthcare-associated infections (HAIs).

To achieve CAUTI reduction and sustain these improvements, a strategy to address both culture and clinical practice in your LTC setting is necessary. Culture consists of the team's values, attitudes, and beliefs, which all have an impact on the team's ability to improve clinical practice. The Comprehensive Unit-Based Safety Program (CUSP) is a change model designed to improve resident safety in the LTC setting by providing educational videos, tools, and resources to understand the science of safety and integrate evidence-based practices into daily care. CUSP draws on the wisdom of frontline providers who have practical knowledge regarding resident safety risks and provides a mechanism to analyze and reduce the risks of those hazards.

This guide also presents strategies to eliminate the primary risk factor for CAUTI—unnecessary use of indwelling urinary catheters. Many of these catheters are placed without indications. The guide's section on clinical indications contains the appropriate and inappropriate indications for catheter placement as well as alternatives to indwelling urinary catheter use. The guide also includes strategies for encouraging removal of catheters and for fostering appropriate insertion and maintenance of catheters.

Other critical factors for reducing CAUTIs include appropriate use of urine cultures and non-treatment of asymptomatic bacteriuria. These evidenced-based practices are addressed in this guide to the extent that they directly relate to CAUTI prevention and surveillance efforts. This guide also presents steps a LTC facility can take to evaluate the effectiveness of a CAUTI reduction strategy, and finally, strategies for sustaining and spreading improvements.

How To Use This Guide

This guide highlights the main program elements and necessary steps to plan for and implement a quality improvement program—focused on reducing CAUTI and other HAIs and improving safety culture. We recommend that in order to achieve successful implementation, your plan should be inclusive of both clinical and cultural interventions. This guide provides educational bundles, tools, and resources to integrate these elements into your quality improvement plan.

Each section of this guide is further described:

- Program Elements highlights the culture change model and a summary of strategies to implement the program.
- Plan provides the steps to prepare to improve performance, including identifying opportunities for improvement, building a team, and defining data elements necessary to monitor performance.
- Implement summarizes critical success factors for implementing evidence-based practices and other strategies to improve resident safety.
- Sustain provides insight on how to establish and maintain interventions shown to reduce CAUTI and other HAIs in the LTC setting.

- Appendixes provide additional information and resources to plan for, implement, monitor, and sustain success.

Program Elements

Evidence-based clinical practices and strategies to enhance infection prevention skills and improve the use of— and care for—catheters in the LTC setting provide facilities with tools and resources to improve outcomes (e.g., reduce the number of CAUTIs and other HAIs).

The culture change model for this program is CUSP. This model has been used successfully by physicians, nurses, frontline team members, and support team members who were committed to working together to improve resident safety, clinical outcomes, and safety culture in the LTC environment. The CUSP principles include: understanding the science of safety, assembling the team, engaging senior leadership, identifying defects, and implementing teamwork and communication. CUSP provides strategies to help team members create a culture of safety that supports the implementation and success of quality improvement programs.

Long-Term Care Safety Toolkit Modules

The CUSP model was adapted for this program to help LTC facilities improve resident safety, clinical outcomes, and safety culture. The Comprehensive Long-Term Care Safety Toolkit Modules are designed specifically to help leaders and staff apply CUSP principles in the LTC environment. The Long-Term Care Safety Toolkit Modules emphasize the importance of a diverse team, focuses on the input of frontline staff, discusses the importance of a common goal, identifies issues that the team can successfully solve, and integrates these elements as part of the team's routine work. The modules are available on the AHRQ Web site and include training tools to make care safer by improving the foundation of how physicians, nurses, and other frontline staff work together. They build the capacity to address safety issues by combining clinical best practices and the science of safety. The Long-Term Care Safety Toolkit Modules are modular and modifiable to meet individual LTC facility needs.

The Long-Term Care Safety Toolkit Modules are—

1. *Using the Comprehensive Long-Term Care Safety Toolkit Modules: Applying Safety Principles* summarizes the purpose of the toolkit and how to use it with other quality and safety tools.
2. *Senior Leadership Engagement* explains what senior leadership engagement is, and the role and responsibilities of senior leaders in addressing safety goals.
3. *Staff Empowerment* defines staff empowerment, discusses how it contributes to safety culture, and provides strategies to address and overcome challenges to empowering staff.
4. *Teamwork and Communication* provides evidence on why teamwork and communication enhance resident safety, lists barriers, and offers solutions to overcome barriers to effective teamwork and communication.
5. *Resident and Family Engagement* defines resident- and family-centered care, explains why engaging these partners is important, and describes how residents and families can be actively engaged in facilities' safety teams.
6. *Sustainability* explains sustainability and spread, recognizes the importance of maintaining positive change, teaches how to create and implement a sustainability plan, and provides examples of successful sustainability in the LTC setting.

T.E.A.M.S. Intervention

The T.E.A.M.S. mnemonic, available as an **infographic**, provides specific cultural interventions that promote a culture of safety. This tool provides a visual guide for the key elements in the Long-Term Care

Safety Toolkit Modules and is designed to assist you in developing skills and strategies to improve all aspects of resident safety, not just infection prevention.

- **T**eam formation to plan and implement program
- **E**xcellent communication skills learned
- **A**ssess what's working and plan to expand
- **M**eet monthly to learn together
- **S**ustain efforts and celebrate success

Guidance on elements of the T.E.A.M.S. mnemonic can be found in the remainder of the guide and is included in the Long-Term Care Safety Toolkit Modules.

C.A.U.T.I. Intervention

The C.A.U.T.I. mnemonic, available as an **infographic**, provides evidence-based clinical interventions to reduce CAUTI. This infographic provides a visual reminder for caregivers in LTC settings to focus on how to reduce unnecessary catheter use and improve care of residents who have a catheter in place.

- **C**atheters in newly admitted and readmitted residents should be assessed to determine if they are still needed, and should be removed promptly if need is not indicated
- **A**septic insertion of indwelling catheters and hand hygiene before and after resident or catheter contact should be practiced
- **U**se regular assessments to insert new catheters only if indicated for appropriate conditions, and reassess periodically
- **T**raining of staff, resident, and family on catheter care and appropriateness
- **I**ncontinence care planning to address individual resident conditions

Guidance on elements of the C.A.U.T.I. mnemonic can be found in the remainder of the guide and is included in the Long-Term Care Safety Toolkit Modules.

Plan

Long-term care facilities may have a variety of reasons to implement quality improvement programs. Transparency of care has increased to consumers of health care as well as to other health care organizations over time. The Centers for Medicare & Medicaid Services is now enforcing how LTC facilities establish and maintain quality assurance and performance improvement processes in an effort to sustain quality care and improve resident safety for nursing home residents.[9]

However, before an LTC facility team can begin implementing clinical interventions, it is important to determine if the facility is ready to take actions that lead to measureable improvements in preventing CAUTIs and other HAIs, and improving safety culture. To achieve results and improve the quality of care, a LTC facility needs to understand what resources are available, what processes and policies are currently in place, how care is currently provided, and how these elements impact CAUTI and other HAI rates, and safety culture. More importantly, research has identified six critical success factors for successfully improving health care in organizations that are important to consider as an LTC facility initiates the planning process:[10,11]

1. Strong leadership—at all levels
2. Supportive culture and infrastructure to support improvement
3. Physician involvement and accountability
4. Frontline staff involvement and accountability
5. Use of data to measure performance and drive improvement
6. Effective communication strategies

The Long-Term Care Safety Toolkit Modules include training materials to implement a successful program, and the following guidance provides recommendations to ensure that the success factors for improving and sustaining an HAIs/CAUTI reduction program are established. Utilize the **Facility Action Plan** to document your ideas and what steps to take to achieve your goals.

Identify Improvement Opportunities

Before beginning the implementation of an intervention, leadership and staff should reflect on what they want the LTC facility to improve and how to accomplish the work. One way to determine improvement opportunities is to complete the **Staff Safety Assessment** found in Module 2 of the Long-Term Care Safety Toolkit Modules, with frontline staff.

To reduce CAUTIs and other HAIs and improve patient safety, it is critical to follow clinical guidelines. Once a facility identifies the gaps in care, then it can identify evidence-based practices to implement into care. The first task is to focus on one improvement area. A few questions to reflect on as a team include—

- Would it improve outcomes?
- How might it improve residents' experience?
- How might it improve frontline staffs' experience?
- How might it improve physicians'/nurses' experience?
- How will it help you care for residents?
- What would make the intervention(s) difficult to implement?
- What would make it easy to comply with the intervention(s)?

- How will staff education be implemented?
- What existing meetings can the improvement opportunity be addressed in?
- How will the changes and improvements be measured?

Engage the Team

Improving resident safety by reducing CAUTIs and other HAIs, and improving the culture of safety, are team efforts. Leaders, clinicians, frontline staff, and residents and families should be included in the process in order to sustain the improvement made. Utilize the Team Roster in Appendix A to develop your team.

Module 3: Staff Empowerment and **Module 4: Teamwork and Communication** in the Long-Term Care Safety Toolkit Modules provide tools and resources that describe how to empower staff and engage them as part of the team to improve the safety culture in an LTC facility.

Leadership Buy-In

A key component to implementing interventions that improve resident safety is leadership. Prior to implementing clinical and cultural interventions to improve resident safety, leaders need to be committed to the goals of reducing HAIs and improving safety culture. Leaders can demonstrate this commitment by ensuring facility staff have the time and resources to achieve the goals. **Module 2: Senior Leadership Engagement** in the Long-Term Care Safety Modules provides tools and resources that further explain the role and responsibilities of senior leaders in addressing an LTC facility's safety goals.

Core Team Members

It is recommended that a facility select a core team of individuals to implement improvement opportunities to meet a facility's goal. In small facilities, individuals on the core team may be assigned more than one role. At a minimum, the core team should include—

- *Administrative Champion.* The administrative champion should promote the intervention goals and assist the team with prioritizing safety concerns, policies, and procedures. This champion should also ensure that facility staff are provided with resources (e.g., time to train staff, meet to review data) to actively engage in making changes to meet the goals.
- *Team Leader.* The facility team leader may be any member of the staff who has an interest in preventing infections in the LTC facility. Often times this leader is a director of nursing or nurse manager, infection preventionist, or staff educator in the LTC facility. He/she should promote HAI/CAUTI reduction and resident safety culture goals, assemble the core team, and keep that team engaged throughout the intervention by—
    - Ensuring that all the team members complete activities (e.g., surveys, data collection).
    - Monitoring and sharing progress toward meeting goals with staff (e.g., data, survey results).
    - Reviewing educational videos and supporting materials that pertain to the goals of the LTC facility.
    - Developing a plan to deploy education and reinforce practices with all staff in the facility.
- *Data Coordinator.* The data coordinator should understand how to collect and interpret the quantitative and qualitative data utilized to monitor the LTC facility's progress toward meeting goals.

Long-term care facilities are most successful when other influential individuals are integrated into the implementation team. Influencers, or informal leaders, are respected members of the staff that should be highly encouraged to join the team, as their ability to engage other staff will be important to reaching an LTC facility's goal(s). These champions include a physician, nurse, and nursing assistant. Once the core team identifies these champions, invite each person individually to participate in this program that contributes to improving the safety of the residents and staff. Highlight that each team member has been selected based on their expertise in a particular area and their distinctive skills, and provide an explanation as to how he/she influences peers. Assure team members that work assignments will be covered when participating in trainings and meetings.

Facility Staff

All staff in an LTC facility should understand why changes are being made and what their role is in supporting the changes to improve quality in the LTC facility. Each individual's knowledge, skills, experience, and perspective helps inform the current state (i.e., what is happening now) and future state (i.e., what improvements are in place over time). When an LTC facility is seeking to remove unnecessary catheters or improve hand hygiene practices, for example, the team—the individuals implementing the changes—is critical to achieving results that can be sustained over time.

Residents and Families

Improving resident safety and reducing HAIs requires a team effort and should include the resident and family as part of the safety improvement team. **Module 5: Resident and Family Engagement** in the Long-Term Care Safety Toolkit Modules explains why it is important to engage residents and families and their role as partners in facilities' safety teams, and provides a resident and family engagement checklist. Additional tools and resources to engage residents and families in the program to reduce CAUTIs and other HAIs can be found in the Resources section of the Toolkit To Reduce CAUTI and Other HAIs in Long-Term Care Facilities.

Utilize Data

As part of the strategy to implement improvements, data to monitor progress toward achieving set goals should be determined. Measuring results provides the LTC facility team and leadership with a way to determine if the intervention is working. Objective information allows the team to begin asking the right questions to understand the problem, instead of basing practices on outdated policies or preferences of the way it has always been done.

As resident outcomes change, an LTC facility wants to know that the interventions or changes applied make improvements. Performance measures the LTC facility chooses to track should reflect the care targeted for improvement. The LTC facility can use existing data to track improvement or decide to track other data relevant to the intervention. Once the performance measures are determined, a data collection system needs to be developed. The following sections outline performance measures to consider.

Qualitative Measures

Regardless of the improvement the LTC facility is trying to make, the root of improvement lies in the safety culture within the facility. Qualitative measures can provide valuable subjective data that can be used to assess safety culture. Leadership and staff perceptions of resident harms such as CAUTIs or falls,

and staff harm such as a punitive response to errors, can influence culture. One way to measure if an LTC facility's safety culture is improving is to use a safety survey.

AHRQ has a survey available for nursing homes that helps facilities assess staff perceptions of resident safety culture and track changes over time. The AHRQ Nursing Home Survey on Patient Safety Culture should be completed by all staff (whether employed or contracted) working at least eight hours per week on an annual or biannual basis to assess progress over time. For more information and resources to promote the survey, review Appendix B.

Once the results are in, review the data with staff to engage them in a discussion about the domains the facility scored well in, and the domains where there are opportunities for improvement. Consider sharing the results in staff meetings, "town hall" meetings with residents and families, and other councils to begin developing action plans. To change the way facilities do their work and provide care, refer to the Long-Term Care Safety Toolkit Modules to discuss safety concepts including senior leadership engagement, staff empowerment, teamwork and communication, resident and family engagement, and sustainability. AHRQ also provides a list of initiatives related to the survey areas titled Improving Patient Safety in Nursing Homes: A Resource List for Users of the AHRQ Nursing Home Survey on Patient Safety Culture.

Quantitative Measures

Quantitative measures provide objective data to assess progress toward meeting goals. Process measures, such as device utilization ratio or urine culture collection rate, can help to determine how well interventions are being implemented. A select set of measures are outlined to consider when measuring performance to reduce CAUTIs, and a sample of these measures along with tips about what and how to collect this data can be found in Appendix C, as well as a spreadsheet to calculate rates in Appendix D. Consider enrolling in the Centers for Disease Control and Prevention's (CDC) National Healthcare Safety Network (NHSN) tracking system. Enrollment training and guidance documents for NHSN can be found in the Long-Term Care Facility Component drop-down of the NHSN Web site. From there, scroll down to Other Enrollment Resources to gain access to the enrollment and set-up checklist, suggested weekly task list, and other useful enrollment resources.

Indwelling Urinary Catheter Utilization Ratio

Invasive devices, such as an indwelling urinary catheter, increase the likelihood of an infection. By measuring how often an indwelling urinary catheter is utilized in the LTC facility, staff can see if the process of reducing the use of catheters that are not clinically indicated is impacting infection rates.

Urine Culture Collection Rate

Asymptomatic bacteriuria (ASB), or a positive urine culture in the absence of symptoms specific to the urinary tract, is extremely common in residents in long-term care. Unfortunately, ASB is often confused with urinary tract infection, particularly in catheterized adults, who almost always have bacteria in their urine.[12,13] Due to this confusion, urine cultures from residents with asymptomatic bacteriuria might be included in the surveillance for symptomatic and catheter-associated UTIs, potentially increasing the reported urinary tract infection rate for a LTC facility. By measuring how often urine cultures are collected for all residents with or without an indwelling urinary catheters, staff can monitor for appropriate assessment and treatment of symptomatic and catheter-associated UTIs. Appropriate antibiotic treatment of urinary tract infections is a key element of antibiotic stewardship; measuring the rate of urine cultures collected and appropriate prescribing patterns can assist in this effort.[14-16] Refer to

more information on urine culturing and antibiotic stewardship in the Urine Culturing and Antibiotic Stewardship section.

CAUTI Rate

Because improvement takes place over time, it is important to see whether or not changes implemented make a difference in reducing rates over time. CAUTI rates are one of the most important indicators of how changes in practices and processes are impacting the infection rates.

Implement

Once the LTC facility identifies opportunities for improvement, changes can be implemented by focusing on evidence-based practices and other effective strategies to improve resident safety. One approach to manage change and train staff to institute improvement is through the use of the Plan-Do-Study-Act (PDSA) cycle.[17] See Appendix D to develop and document each PDSA cycle. In order to effectively make changes, it is recommended that an LTC facility keep the changes small and involve the frontline staff and leadership who are interested in improving care. Overall, this AHRQ Safety Program for Long-Term Care: HAIs/CAUTI promotes implementation of specific cultural and clinical interventions and CAUTI surveillance practices.

Educational bundles, listed in Appendix E, are designed to help the LTC facility educator train facility staff, and when appropriate, residents and families, on infection prevention and safety culture topics. The educational materials that accompany this guide are designed to be customizable and adaptable to your facility's needs. Slide sets and 10- to 20-minute videos describe evidence-based HAIs/CAUTI prevention practices and resident safety culture improvement practices, and highlight strategies to overcome barriers to implementation in the LTC setting. Supplemental activities may also be available, and are intended to reinforce learning.

Cultural Interventions

This section promotes implementation of cultural interventions referred to in the T.E.A.M.S. mnemonic and the Long-Term Care Safety Toolkit Modules that are designed to improve all aspects of resident safety.

Communication and Engagement

To enhance communication skills, AHRQ's TeamSTEPPS Long-Term Care version provides strategies and tools to engage leadership, staff, and residents and families in communicating and sharing strategies to reduce barriers to safe, quality care.

Evaluating team engagement and communication with one another, residents, and families is an ongoing process. Meet regularly during existing safety or quality committee meetings to discuss team successes and barriers and to review data trends. Assess what is currently working by reviewing cases of resident safety issues (e.g., CAUTI) each month to find causes and solutions.

Physician Engagement

Lack of physician engagement can be a barrier for some LTC facilities, especially for facilities where physicians are not regularly on site. However, support for improving performance from clinical decision makers is key to helping your facility reduce harm. Consider asking for a few minutes to speak at medical staff meetings to improve buy-in to support evidence-based practices and clinical guidelines. Lastly, one-on-one conversations with the medical director and other physicians can often be the most effective strategy to explain their important role in an LTC facility's program.

Resident and Family Engagement

To enhance communication skills, the TeamSTEPPS Long-Term Care version provides strategies and tools to engage leadership, staff, and residents and families in communicating and sharing strategies to reduce barriers to safe, quality care. The brochure, **"Resident and Family Engagement: What is my role as a leader?"** gives a detailed definition of resident and family engagement and describes the role of leaders in carrying out the following strategies:

- Encouraging resident and family input in day-to-day care
- Asking other leaders, staff, and clinicians to support resident and family engagement
- Developing resident councils

Tools and resources to engage residents and family members as partners in clinical decision-making include **Module 5** of the Long-Term Care Safety Toolkit Modules and the **Resident and Family Engagement brochure for residents**. Additional materials are available on The National Consumer Voice for Quality Long-Term Care (Consumer Voice) Web site to train local ombudsmen to educate and engage residents and families in CAUTI and other infection prevention efforts.

Assess What's Working

Communication tools and strategies, as well as safety assessment tools, may be piloted to see what contributes to improving safety culture to sustain or modify your approach to culture change. The **Learn From Defects tool** in module 2 of the Long-Term Care Safety Toolkit Modules provides a team-based approach to identifying factors that contributed to resident harm and opportunities for improvement, whereas the Nursing Home Survey on Patient Safety Culture assesses staff perceptions of resident safety culture. This survey can be re-administered to all staff to complete at an LTC facility's discretion, but it is recommended to administer it at least six months apart to assess culture change over time.[13]

Communicate Results

Engaging not only leadership, but nursing staff, frontline staff, and residents and families in monitoring progress promotes team accountability. It also garners buy-in for improvements being implemented and gives the staff a voice to identify workable solutions to improve resident safety. Assess and share program data to encourage, inspire, and motivate the facility staff, residents, and family members. Reinforce the positive changes being made or identify where more or different interventions are needed to optimize safe care for residents who require a catheter.

Strategies to share data include newsletters, posters, staff meetings, huddles, safety committee meetings, board meetings, resident/family council meetings, and one-on-one conversations.

Celebrate Successes

When goals are reached, celebrations and LTC facility leadership's recognition of the efforts made by all staff can help sustain the gains made to improve resident safety culture and outcomes to reduce CAUTIs and other HAIs.

Clinical Interventions

Improvements in clinical care of residents begin with understanding the appropriate clinical indications for indwelling urinary catheter use. A summary of this guidance as it relates to the LTC setting and recommended strategies, beginning with fundamental infection prevention knowledge and skills, are included in this section. Refer to the C.A.U.T.I. mnemonic and Clinical FAQs in Appendix F for more information.

Infection Prevention

Failures in infection control was the most common type of deficiency cited in LTC surveys in 2014, demonstrating a need for greater focus on infection prevention skills and practices.[7] When caring for a resident with an indwelling urinary catheter, it is paramount that the facility staff demonstrate proper

hand hygiene and personal protective equipment use, and maintain a clean and disinfected environment.

Leadership may use the **"Take the Pledge…" handout** to communicate basic infection prevention skills and ask staff to commit, or pledge, to consistently practice these skills. For staff training materials, review the infection prevention educational bundles found in Appendix E and **A Unit Guide to Infection Prevention for Long-Term Care Staff**.

Urine Culturing and Antibiotic Stewardship

Asymptomatic bacteriuria (ASB), or a positive urine culture in the absence of symptoms specific to the urinary tract, is extremely common in residents in long-term care. Unfortunately, ASB is often confused with urinary tract infection, particularly in catheterized adults, who almost always have bacteria in their urine. Treatment of ASB with antibiotics is one of the leading causes for antibiotic overuse in long-term care.[12,13] Moreover, antibiotics can lead to resident harm, such as nausea**,** diarrhea, allergic reactions, and antibiotic-related infections.[14] Antibiotics can also wipe out healthy bacteria that can lead to secondary infections like yeast and *Clostridium difficile* infections.[15,18] Furthermore, it can lead to bacterial resistance—especially in LTC facilities—as noted in the statement about the National Action Plan for Combating Antibiotic-Resistant Bacteria released in March 2015 by the U.S. White House Office of the Press Secretary.[13,19]

Appropriate antibiotic treatment of urinary tract infections is a key element of antibiotic stewardship. Decreasing inappropriate use of urine testing (urine cultures) is one strategy that can be used to decrease the inappropriate use of antibiotics in residents with asymptomatic bacteriuria (ASB).

Refer to more information on collecting urine culture collection rate data as a proxy measure for antibiotic stewardship in the Utilize Data section. For staff training materials, review the urine culturing and antibiotic stewardship educational bundles found in Appendix E, the ***Antibiotic Stewardship* educational video**, and the **"4 Things You Should Know About Urine Cultures" infographic**.

Catheter Removal

The CDC's Healthcare Infection Control and Practices Advisory Committee (HICPAC) 2009 CAUTI Prevention Guidelines outline when it is appropriate to use an indwelling urinary catheter, alternatives to using an indwelling urinary catheter, and proper techniques for urinary catheter insertion and maintenance.[13] Many catheters are placed without appropriate indications. It is important to remove an indwelling urinary catheter if it is not clinically indicated or if there is an alternative option.

Unless an indwelling urinary catheter is clinically indicated, then it should be removed immediately if currently in place. Refinements of the HICPAC guidelines based on the Ann Arbor Criteria are listed.[20]

Appropriate indications for indwelling urinary catheters in LTC settings include—

- Acute urinary retention or bladder outlet obstruction. Note that an indwelling urinary catheter may also be appropriate to manage chronic urinary retention *with* bladder outlet obstruction.
- To assist in healing of stage III or stage IV open sacral or perineal wounds in incontinent residents
- To improve comfort for end-of-life care, if needed.

Examples of *inappropriate* uses of an indwelling urinary catheter in LTC settings include—

- A resident with urinary incontinence

- A substitute for care of the resident
- Morbid obesity or immobility
- Attempting to reduce the risk for falls
- Confusion or dementia
- Resident and/or family request

Use Regular Assessments

Review the clinical indications for an indwelling urinary catheter, remove it as is soon as it is no longer clinically indicated, and do not insert an indwelling urinary catheter if it is not clinically indicated. Regular walking rounds on the unit to review indications for an indwelling urinary catheter can provide staff with the opportunity to review cases together and determine appropriate next steps.

Aseptic Insertion

Insert new urinary catheters only when there is a good indication for it. If it is necessary to insert a catheter, then it is critical that only trained staff insert indwelling urinary catheters and, if possible, have a two-person team to observe and support aseptic technique. See Appendix G, Indwelling Urinary Catheter Insertion Checklist, and the educational bundle, Catheter Insertion and Maintenance, in Appendix E for more information.

Alternatives to Catheter Use

If there is not a clinical indication for an indwelling urinary catheter and a medical provider, frontline staff, or resident or family member requests that an indwelling urinary catheter be inserted, it is important to consider alternatives to using a urinary catheter when developing individual resident care plans and behavior interventions.

Alternative options may include—

- Considering timed and prompted voiding, and using a voiding diary.
- Involving the resident and family in incontinence care planning, and discussing preferred products if needed.
- Using a bladder ultrasound to guide management.
- Using suprapubic, in/out, or penile condom catheters, if possible. In the case of chronic urinary retention without outlet obstruction such as neurogenic bladders, a resident may be best managed by nonindwelling methods, such as intermittent straight catheterization or penile condom catheters.[20]

For staff training materials, see the educational bundles on alternatives to indwelling urinary catheter use in Appendix E.

Training for Catheter Care

Only trained staff should care for the catheter—maintaining a closed drainage system and an unobstructed urine flow. Include residents and families in the education of proper catheter care as they can also help with proper maintenance. The Indwelling Urinary Catheter Maintenance Checklist, available as Appendix H, includes common questions and answers to the care and maintenance of catheters, leg bags, and bath basins.

For staff training materials, see the educational bundle on indwelling urinary catheter use and care available in Appendix E, **"Leg Bag Frequently Asked Questions,"** and the **"Do's and Don'ts of Catheter Care" infographic**.

CAUTI Surveillance

CAUTI surveillance is a process by which an infection preventionist or someone in a similar role reviews residents' charts for a suspected symptomatic CAUTI to determine whether it is a CAUTI. While there are different definitions of a CAUTI for the purposes of diagnosis or coding for medical claims, surveillance should consider the CDC's NHSN definition. Per the NHSN definition, a CAUTI is identified if the following indications are met: (1) an indwelling urinary catheter connected to a drainage bag is in place; (2) the resident has one or more CAUTI signs or symptoms; and (3) the resident has a urine culture that fits the CAUTI criteria.[21] Consult the CDC NHSN Web page and the NHSN Definition CAUTI Criteria pocket card available as Appendix I for further details.

Utilize the Long-Term Care CAUTI Surveillance Worksheet available in Appendix J that combines the resident's health assessment and laboratory findings to give direction on whether an infection episode meets NHSN criteria. Identify a safety issue for your team to tackle and create an action plan to address root causes of that issue. The CAUTI Case Review Form found in Appendix K provides an approach to specifically identify reasons why a CAUTI occurred and find opportunities for improvement, which can be discussed as a team.

Sustain

Improvement strategies can only be sustained if the strategies are embedded into the culture and norms of a facility, so the best time to begin thinking about sustaining program gains is at the beginning of your program implementation. Consider what processes can be integrated into the normal workflow. The Long-Term Care Safety Toolkit Modules sustainability module provides information on essential elements to sustain a quality improvement program and spread it to other areas of your LTC facility or affiliated organization.

Assess Capacity for Sustaining the Gains

Once the program is underway, it is recommended that your team understand what program elements and other factors may influence sustainability by completing the **Sustainability Assessment Tool**. Results from completing this tool can be used to develop a sustainability action plan to maintain, as well as build, your team's capacity for sustainability.

Engage Residents and Families

Consider including evidence-based practices to prevent CAUTIs and other HAIs into the policies and procedures related to the care of residents' needs. Moreover, include evidence-based information, such as the **"When Do You Need An Antibiotic?" brochure**, the ***Antibiotic Stewardship* educational video**, and the resources found on the Consumer Voice Web site in care plan meetings with residents and families to promote shared decision making in a resident's day-to-day care. Resident and Family Council meetings are another great opportunity to provide information to residents and families.

Maintain Staff Competency

1. *In-Service Education.* Use the educational bundles in Appendix E as part of monthly in-service training. Consider engaging the staff by assigning a section to each person and having them teach their peers. The educator can be present to clarify points or answer questions.
2. *Self-Guided Learning.*
    a. If you have a learning management system (LMS), the educational bundles can be added to your LMS, and either assigned to staff (if mandatory), or made available to staff (if elective).
    b. If you do **not** have an LMS, the slide sets and notes can be printed and placed in a binder with the supplemental materials. Staff can review the contents of the binder and then complete any accompanying activities that can be graded—either by the educator or individual staff person.
3. *New Employee Orientation.* The educational bundles can be used to supplement your infection prevention orientation curriculum. Consider customizing the education with your facility policies, procedures, and documentation forms.
4. *Skills Updates or Competency Testing.* Use the educational bundles as part of competency testing of staff. Competency testing can be done in a controlled environment, such as a skills lab, or can be accomplished in the work environment using peer observation.

References

1. Richards C. Infections in residents of long-term care facilities: an agenda for research. Report of an expert panel. J Am Geriatr Soc. 2002 Mar;50(3):570-6. PMID: 11943058.

2. Wagner LM, Roup BJ, Castle NG. Impact of infection preventionists on Centers for Medicare and Medicaid quality measures in Maryland nursing homes. Am J Infect Control. 2014; Jan 42(1):2-6. PMID: 24388467.

3. Smith PW, Bennett G, Bradley SF, et al. SHEA/APIC Guideline: Infection prevention and control in the long-term care facility. Infect Control Hosp Epidemiol. 2008;29:785–814. PMID: 18786461.

4. Mody L, Bradley SF, Galecki A, et al. Conceptual model for reducing infections and antimicrobial resistance in skilled nursing facilities: focus on residents with indwelling devices. Clin Infect Dis. 2011;52:654-61. PMID: 21292670.

5. Meddings J, Rogers MA, Macy M, et al. Systematic review and meta-analysis: reminder systems to reduce catheter-associated urinary tract infections and urinary catheter use in hospitalized patients. Clin Infec Dis. 2010 Sep 1;51(5):550-60. PMID: 20673003.

6. Umscheid CA, Mitchell MD, Doshi JA, et al. Estimating the proportion of healthcare-associated infections that are reasonably preventable and the related mortality and costs. Infect Control Hosp Epidemiol. 2011;32(2):101-14. PMID: 21460463.

7. Harrington C, Carillo H, Garfield R. Nursing Facilities, Staffing, Residents and Facility Deficiencies, 2009 through 2014. The Kaiser Commission on Medicaid and the Uninsured; Publication No. 8761; August 2015. The Henry J. Kaiser Family Foundation. http://kff.org/medicaid/report/nursing-facilities-staffing-residents-and-facility-deficiencies-2009-through-2014/. Accessed May 2, 2016.

8. HHS National Action Plan to Prevent Healthcare-Associated Infections: Road Map to Elimination. Web-based guide. April 2013. U.S. Department of Health & Human Services. http://health.gov/hcq/prevent_hai.asp.

9. Nursing Home Quality Assurance & Performance Improvement. QAPI Description and Background. Centers for Medicare and Medicaid Services; April 2014. https://www.cms.gov/Medicare/Provider-Enrollment-and-Certification/QAPI/qapidefinition.html. Accessed April 11, 2016.

10. Barron WM, Krsek C, Weber D, et al. Critical success factors for performance improvement programs. Jt Comm J Qual Patient Saf. 2005 Apr;31(4):220-6. PMID: 159131129.

11. McAlearney AS. Final Report. High-Performance Work Practices in CLABSI Prevention Interventions: Executive Summary. (Prepared under Contract No. #HHSA2902010000221, Task Order No. 5.) Rockville, MD: Agency for Healthcare Research and Quality; May 2015. AHRQ Publication No. 15-0044-EF.

12. Nicolle LE, SHEA Long-Term-Care Committee. Urinary tract infections in Long-term-care facilities. Infect Control Hosp Epidemiol. 2001 Mar;22(3):167-75. PMID: 11310697.

13. Gould CV, Umscheid CA, Agarwal RK, et al. Guideline for prevention of catheter-associated urinary tract infections 2009. Infect Control Hosp Epidemiol. 2010 Apr;31(4):319-26. PMID: 20156062.

14. Nicolle LE, Bentley DW, Garibaldi R, et al. Antimicrobial Use in Long-Term-Care Facilities. SHEA Long-Term-Care Committee. Infect Control Hosp Epidwmiol 2000;21(8): 537-545. PMID: 10968724.

15. The Core Elements of Antibiotic Stewardship for Nursing Homes. Atlanta, GA: US Department of Health and Human Services, Centers for Disease Control and Prevention; 2014. http://www.cdc.gov/getsmart/healthcare/pdfs/core-elements.pdf. Accessed January 27, 2016.

16. Leis JA, Rebick GW, Daneman N, et al. Reducing antimicrobial therapy for asymptomatic bacteriuria among noncatheterized inpatients: a proof of concept study. Clin Infect Dis. 2014; 58:980-3. PMID: 24577290.

17. Science of Improvement: Testing Changes. Institute for Healthcare Improvement. http://www.ihi.org/resources/Pages/HowtoImprove/ScienceofImprovementTestingChanges.aspx. Accessed March 20, 2016.

18. Lessa FC, Mu Y, Bamberg WM, et al. Burden of *Clostridium difficile* infection in the United States. N Engl J Med 2015 Feb 26;372(9):825-834. PMID: 25714160.

19. Meddings J, Saint S, Fowler K, et al. The Ann Arbor criteria for appropriate urinary catheter use in hospitalized medical patients: results obtained by using the RAND/UCLA appropriateness method. Ann Intern Med. 2015 May 5;162(9 Suppl):S1-S34. PMID: 25938928.

20. Urinary Tract Infection (UTI) Event for Long-term Care Facilities. NHSN Long-term Care Facility Component Urinary Tract Infection. Centers for Disease Control and Prevention; January 2016. http://www.cdc.gov/nhsn/pdfs/ltc/ltcf-uti-protocol-current.pdf. Accessed January 27, 2016.

Appendixes

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