MHA’s road maps provide hospitals and health systems with evidence-based recommendations and standards for the development of topic-specific prevention and quality improvement programs, and are intended to align process improvements with outcome data. Road maps reflect published literature and guidance from relevant professional organizations and regulatory agencies, as well as identified proven practices. MHA quality and patient safety committees provide expert guidance and oversight to the various road maps.

Each road map is tiered into fundamental and advanced strategies:
- **Fundamental strategies** should be prioritized for implementation, and generally have a strong evidence base in published literature in addition to being supported by multiple professional bodies and regulatory agencies.
- **Advanced strategies** should be considered in addition to fundamental strategies when there is evidence the fundamental strategies are being implemented and adhered to consistently and there is evidence that rates are not decreasing and/or the pathogenesis (morbidity/mortality among patients) has changed.

**Operational definitions** are included to assist facility teams with road map auditing and identifying whether current work meets the intention behind each road map element.

**Resources** linked within the road map include journal articles, expert recommendations, electronic order sets and other pertinent tools which organizations need to assist in implementation of best practices.

<table>
<thead>
<tr>
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<tr>
<td><strong>FUNDAMENTAL</strong></td>
<td>(check each box if “yes”)</td>
<td>Consider the following examples of patient education when developing teaching materials:</td>
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<td>□ The facility has a process in place to educate the patient about their urinary catheter [1].</td>
<td>• Centers for Disease Control <a href="https://www.cdc.gov/ncidod/dhqp/factsheets/urinary.html">FAQs about CAUTI</a></td>
</tr>
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<td></td>
<td>- Education includes topics such as: symptoms of a urinary tract infection, catheter care, and what the patient can do to help prevent an infection.</td>
<td>• Catheterout.org <a href="https://catheterout.org">What Patients and Family Members Need to Know About the Risks Associated with Urinary Catheters</a></td>
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<td>□ The facility has a process in place to educate patients being discharged with an indwelling catheter in place.</td>
<td>Consider the following examples when developing discharge education for patients:</td>
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<td>- The patient has been educated on how to care for the catheter and symptoms of infection using teach back method to ensure patient’s understanding.</td>
<td>• Intermountain Healthcare <a href="https://www.intermountainhealthcare.org/about-us/quality-and-safety/patient-safety/when-to-call">Foley Catheter: Home instructions</a></td>
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<td>• <a href="https://www.osumc.org/healthcontent/urinary-tract/catheter-care/foley">The Ohio State University Home Care for Your Foley Catheter (Female)</a></td>
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<td></td>
<td>• <a href="https://www.osumc.org/healthcontent/urinary-tract/catheter-care/foley-male">The Ohio State University Home Care for Your Foley Catheter (Male)</a></td>
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<td>• <a href="https://www.osumc.org/healthcontent/urinary-tract/catheter-care/leg">The Ohio State University Home Care for Your Leg Bag</a></td>
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<td><strong>Appropriate catheter use</strong></td>
<td><strong>FUNDAMENTAL</strong> <em>(check each box if “yes”)</em></td>
<td>Consider the following resources when developing or updating facility policies regarding urinary catheter use:</td>
</tr>
</tbody>
</table>
| □ The facility has a policy/process for urinary catheter use.  
  - Follow CDC/HICPAC indications for urinary catheter insertion and use.  
  - Use urinary catheters only when necessary and consider the use of alternatives to urinary catheter placement (e.g., condom catheters, straight catheterization) [1,2,4]  
  - Use a portable ultrasound device to assess the patient’s urine volume to reduce unnecessary catheter insertions prior to making a decision regarding catheter placement [1,3,4].  
  - Facility sets clear expectations that indwelling catheter placement is not appropriate for the following reasons [1,3,4]: incontinence, specimen collection [4], diagnostic testing when the patient is able to void [4].  
 □ The facility includes insertion criteria in the urinary catheter order process [2].  
• AHRQ Toolkit for Reducing CAUTI in Hospital Units: Implementation Guide, Appendix B. Urinary Catheterization – Sample Policy  
• AHRQ Toolkit for Reducing Catheter-Associated Urinary Tract Infections in Hospital Units: Implementation Guide, Appendix C. Sample Bladder Scan Policy  
• University of Wisconsin Policy for Insertion, Care and Removal of an Indwelling Urinary Catheter |
| **Catheter insertion practices** | **FUNDAMENTAL** *(check each box if “yes”)* | Consider the following examples when developing a standardized urinary catheter insertion checklist: |
| □ The facility utilizes a two-person “buddy” system for urinary catheter insertions where the second person completes the insertion checklist, observes for proper technique, and assists when needed [1].  
 □ The facility utilizes a standardized insertion checklist [1].  
  - Completed by a second person  
  - Checklist includes:  
    ○ Patient education prior to procedures  
    ○ Review for catheter appropriateness, catheter alternatives and catheter order prior to insertion | • Pennsylvania Patient Safety Authority Foley Insertion Checklist  
• Catheterout.org Decision/Checklist to Insert a Urinary Catheter  
• IPRO Foley Insertion Checklist |
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<td>Road map questions</td>
<td>Use of as small of a catheter as possible to minimize bladder neck and urethral trauma [2,4].</td>
<td><strong>ADVANCED</strong> (check each box if “yes”)</td>
</tr>
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<td>Documentation of whether buddy system was used.</td>
<td></td>
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<td>Catheter maintenance practices</td>
<td>☐ The facility utilizes a standardized insertion kit that supports insertion process [1].</td>
<td><strong>FUNDAMENTAL</strong> (check each box if “yes”)</td>
</tr>
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<td></td>
<td>- Daily review of catheter necessity [1,2,4]; consider incorporating into already established rounds.</td>
<td>- Practicing hand hygiene immediately before and after any manipulation of the catheter site or apparatus. [1,2,4]</td>
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<td>- Using Standard Precautions, including the use of gloves and gown as appropriate, during manipulation of the catheter or collecting system [1,2,4]</td>
<td>- Maintaining a sterile continuously closed drainage system [1-4]</td>
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<td>- Maintaining unobstructed urine flow keeping the catheter and tubing free of kinking [1-4]</td>
<td>- Positioning the collecting bag below the level of the bladder and above the floor at all times [1-4].</td>
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| Catheter maintenance practices, continued | - Emptying the collecting bag regularly using a clean, collecting container for each patient; avoid splashing, and preventing contact of the drainage spigot with the non-sterile collecting container [1,2,4]  
- Securing indwelling catheters to prevent movement and urethral traction [1,2,4]  
- Disconnecting the catheter from the drainage tube only if the catheter must be irrigated.  
- Using aseptic technique if the collecting system needs replacement. [1,2,4]  
☐ The facility has a standardized process in place for the provision of periurethral care.  
- Standard processes follow routine hygiene (e.g., cleansing of the meatal surface during daily bathing or showering) [1,2,4].  
☐ The facility has a process to ensure appropriate urine sampling practices.  
- Collect through the sampling port with a sterile syringe using disinfectant to clean the port prior to obtaining the sample [2-4]  
- For larger samples, use aseptic technique to remove sample from drainage bag [1,2] | Facilities should review the following clinical guidelines when establishing standardized practice and indications for obtaining urine cultures:  
- Diagnosis, Prevention, and Treatment of Catheter-Associated Urinary Tract Infection in Adults: 2009 International Clinical Practice Guidelines from the Infectious Diseases Society of America  
- Guidelines for evaluation of new fever in critically ill adult patients: 2008 update from the American College of Critical Care Medicine and the Infectious Diseases Society of America |
| Urine culturing practices | **FUNDAMENTAL**  
(check each box if “yes”)  
☐ The facility has standardized practices and indications for obtaining urine cultures based on clinical guidelines.  
- Guidelines include American College of Critical Care Medicine [5]; Centers for Disease Control and Prevention [4]; Infectious Diseases Society of America [3].  
☐ The facility has a process in place to evaluate practices and indications for appropriate ordering of urine cultures.  
- Supports the following practices/rationale [3]:  
  - Based on patient signs/symptoms compatible with CAUTI  
  - Part of an evaluation of sepsis without a clear source  
  - Prior to urologic surgeries where mucosal bleeding anticipated or transurethral resection of prostate  
  - Early pregnancy (avoid urinary catheters if possible) | |
Consider the following resources when developing processes to evaluate practices and indications regarding the appropriateness of urine culture orders:

- [CAUTI Pocket Card for CAUTI Evaluation, Hartley](#)
- Hennepin County Medical Center "The CAUTI Can-Can" [webinar](#)
- Hennepin County Medical Center [Urine Culture Algorithm](#)
- Mayo CAUTI reduction presentation, 2016 CHAIN Fall Conference[Mayo Clinic CAUTI reduction using bundled approach online](#)
- Catheterout.org [Sample Pocket Cards for Physicians and Nurses](#)
- Nebraska Medical Center [Urinary Tract Infection and Asymptomatic Bacteriuria Guidance](#)
- Maryland Campaign for Appropriate Antibiotic Use (CAAUSE) [Asymptomatic Bacteriuria Algorithm](#)
- Infectious Diseases Society of America [guidelines for the diagnosis and treatment of asymptomatic bacteriuria in adults](#)
- Maryland Campaign for Appropriate Antibiotic Use (CAAUSE) [Asymptomatic Bacteriuria Practice Treatment Guidelines](#)
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| Indwelling catheter removal | **FUNDAMENTAL**  
(check each box if “yes”)
- The facility conducts a daily review of catheter necessity [1,2,4].  
  - Consider incorporating into already established rounds  
  - Utilizing electronic or other reminders such as an automatic stop order that requires review of catheter indications and renewal of indwelling catheter order [1-4].  
- Practice hand hygiene immediately prior to the removal of the catheter. [2]  
- Evaluate the need for reinsertion post catheter removal e.g., bladder scanner to assess urinary retention.  
- The facility has implemented a nurse-driven protocol to empower nurses to evaluate and discontinue unnecessary urinary catheters [1-3]. | Conducting a daily review of catheter necessity is an important strategy to help prevent CAUTI, as prolonged catheterization is the strongest risk factor for infection. Consider the following resources to support this practice:  
- Example Policy: [Automatic Discontinuance Order for Foley Catheter Use](#)  
- [IPRO Foley Catheter Daily Tracking Sheet](#)  
Nurse-driven urinary catheter removal protocols help minimize prolonged catheterization. Several resources and sample protocols are included below:  
- [Newark Beth Israel Medical Center Nurse Driven Protocol for Adult Foley Catheter Removal](#)  
- [Catheterout.org Early Removal of Unnecessary Urinary Catheters](#)  
- [Catheterout.org Computerized Urinary Catheter Removal Example](#) |
| Performance improvement monitoring | **FUNDAMENTAL**  
(check each box if “yes”)
- The facility’s medical record is designed to capture sufficient detail to allow for review of adherence to appropriate practices for catheter use, insertion, maintenance, and removal.  
  - Includes: alternatives attempted, indications for catheter insertion [2,4], date and time of insertion/removal [2,4], daily review of continued need for catheter use [2], ongoing catheter maintenance [2], names of all health care personnel (HCP) and prescribers providing catheter care  
- The facility conducts audits of insertion criteria selected with available clinical information [1-4]. | The National Healthcare Safety Network (NHSN) provides standardized definitions for CAUTI through their [Urinary Tract Infection Events Protocol](#).  
Consider use of the [NHSN Standardized Utilization Ratio (SUR)](#) to further support internal improvement activities with an external comparison relative to catheter removal in addition to tracking number of device days.  
Regular review of urinary catheter practices and use of the root cause analysis (RCA) process can be useful in examining the root cause of each CAUTI that occurs and |
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| Road map questions (if not present at your hospital or answering no, please see next column for suggested resources) | The facility conducts CAUTI surveillance using standardized definitions and reviews metrics on a regular basis. [1,2,4].  
- Utilize National Healthcare Safety Network (NHSN) definitions  
- Metrics include: CAUTI rates, days since last CAUTI, urinary catheter utilization rates | identify key learning opportunities to prevent future events.  
• AHRQ Learn from Defects tool  
• CUSP CAUTI SBAR (Situation, Background, Assessment, Recommendation) Template  
• Hennepin County Medical Center Unit Based CAUTI Review  
• MHA/CUSP/Partnership for Patients CAUTI Inpatient Rounding Tool  
• MHA/CUSP/Partnership for Patients Emergency Department Rounding Tool |
| Infrastructure | The facility has a multidisciplinary team to engage staff and guide CAUTI prevention efforts that includes leadership, physicians, and nursing. | Engaging a multidisciplinary team in CAUTI prevention efforts is a critical component of infection prevention.  
• Catheterout.org Physician Engagement Strategies  
• Catheterout.org Nurse Engagement Strategies |
| Staff education | The facility has education in place for providers, residents, and all health care personnel who insert/remove urinary catheters [1-4] incorporated into training on hire and at least annually. | Provider skill in insertion and removal of urinary catheters is an important component of safety and prevention of CAUTI. It is important to regularly educate and assess competency.  
• Bard Medical Insertion and Removal Skills Training Checklist  
• Pennsylvania Patient Safety Authority Foley Catheterization: Female Performance Checklist  
• Pennsylvania Patient Safety Authority Foley Catheterization: Male Performance Checklist  
• Vanderbilt Urinary Catheter Insertion Skills Competency |
### Road map sections

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<td>Cultures such as increased utilization due to testing/antimicrobials/consults, identification and removal of catheters that are no longer needed, and adherence to hand hygiene.</td>
<td>- APIC/HRET <a href="http://www.cdc.gov/hicpac/cauti/001_cauti.html">Stop catheter-associated urinary tract infections (CAUTI) in critically ill patients</a></td>
</tr>
<tr>
<td>The facility provides hands-on training with competency evaluation for providers, residents, and all health care personnel allowed to insert/remove urinary catheters [1-4] incorporated into training on hire and at least annually.</td>
<td>- Catheterout.org <a href="http://www.urinarycatheterposter.org">Urinary Catheter Poster</a></td>
</tr>
<tr>
<td>- Includes appropriate indications for catheter use and proper aseptic insertion/removal practices.</td>
<td>- Hennepin County Medical Center <a href="http://www.hcmc.org/about/services/clinical-safety-and-quality/catheters-and-urinary-tract-infections/myths-and-truths-about-utis">Myths and Truths about UTIs</a></td>
</tr>
<tr>
<td>The facility has a process to ensure that providers, residents, and all health care personnel providing catheter care/maintenance are qualified and trained in urinary catheter care/maintenance.</td>
<td></td>
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<td>The facility provides hands-on training with competency evaluation for providers, residents, and all health care personnel allowed to provide catheter care/maintenance incorporated into training on hire and at least annually.</td>
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### REFERENCES


