<table>
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<tr>
<th>Article Citation</th>
<th>Type of Research or non-research evidence</th>
<th>-Sample &amp; Sample Size</th>
<th>Results</th>
<th>Limitations</th>
<th>Evidence Rating</th>
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<tbody>
<tr>
<td>Agency for Healthcare Research and Quality (2007). Closing the quality gap: a critical analysis of quality improvement strategies. Volume 6: prevention of healthcare-associated infections.</td>
<td>Systematic review of 64 studies (variable study designs, but included randomized controlled studies); included 10 for CAUTI prevention</td>
<td>Inclusion criteria included reduction in unnecessary catheter use and adherence to aseptic catheter insertion and catheter care -Abstraction of data by two independent reviewers</td>
<td>Best practices for CAUTI prevention: Printed or computer-based reminders to physicians, automatic stop orders</td>
<td>Majority of studies reported infection rates, but did not report rate of adherence to preventive interventions -Higher quality studies of QI strategies for HAI prevention are urgently needed</td>
<td>Level 1 Systematic review of RCTs Quality: A. High</td>
</tr>
<tr>
<td>Blodgett, T. (2009). Reminder systems to reduce the</td>
<td>Practice Guideline</td>
<td>N/A</td>
<td>Automated reminders can be attached to MD computer orders,</td>
<td>Physical, virtual and combined systems are effective</td>
<td>Level V. – Opinion of individual expert based</td>
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**Purpose:** evidence-based practice guideline

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<tr>
<th>Authors</th>
<th>Study Type</th>
<th>Sample Size</th>
<th>Findings</th>
<th>Interventions</th>
<th>Level of Evidence</th>
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<tr>
<td>Elpern, E., et al. (2009)</td>
<td>Reducing indwelling urinary catheters and UTIs</td>
<td>Single Correlational Study</td>
<td>Sample size: 337 MICU adult patients: most common</td>
<td>Implementing a tool to judge appropriate use of indwelling urinary catheters</td>
<td>Level IV - Single Correlational Study</td>
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Findings:
- Decreased number of UTIs/1000 days from a mean of 4.7/mo. (from review of literature - P.I. process)

Interventions to prevent CAUTI in hospitalized patients:
- Need to implement a team approach, including nursing, nursing informatics, QM and physicians to plan, implement and evaluate reminder systems to decrease use of unnecessary indwelling urinary catheters/CAUTIs.

**Purpose:** to implement and evaluate efficacy of an tool to reduce CAUTI in a MICU unit, by decreasing use of urinary catheters

| 6 mos. period | diagnosis= pneumonia, sepsis, GI bleed, neutropenic fever, multi-organ failure, 58% women, age range 18-99 years | previous 11 mos. period) to zero, over a 6 mos. period | MAY result in the decrease in occurrences of CAUTI and duration of catheter use -Decreased total number of catheter day use, from 331 days/month to 238 days/mo. -32% of catheter device days were considered inappropriate |

-Convenience sample - All identified MICU patients with indwelling urinary catheters -Data collected by infection control dept. practitioners after daily evaluation by the multi-disciplinary critical care team at morning rounds


-Most effective way to: 1. reduce the incidence of Practices **not recommended:** Level I

| B-good | 2. NRC | III-Non-experi-mental study |
### Purpose:
Intended for use by MDs and medical specialties who perform direct patient care-strategies to diagnose, prevent and treat CAUTIs in adults

### Practice Guideline based on systematic review of literature (from the Infectious Diseases Society of America)

- Definitions of infections of the urinary tract with a current indwelling catheter or has had an indwelling catheter within 48 hours of the infection’s occurrence:
  1. CA-ASB (asymptomatic UTI)
  2. CA-UTI (symptomatic UTI)
  3. CA-bacteriuria (non-specific, refers to both combined) (bacteria are not normal inhabitants of the urinary tract)

- CAUTI is restricting use to patients who have clear indication (Limit unnecessary catheterizations)
  1. remove catheter as soon as it is no longer needed
  2. strategies are more effective and have more impact on preventing asymptomatic UTI

### Limitations:
- previous studies utilize different terms related to CA-ASB, CA-UTI and CA-

### Quality:
- A. High

**Purpose:** to highlight practical recommendations in a concise format designed to assist acute care hospitals in implementing and prioritizing CAUTI prevention efforts. Practice

**Review of Literature**


1. Provide and implement written guidelines for catheter use, insertion and maintenance
2. Provide indications for use of indwelling urethral catheters:
   a) peri-operative use for selected surgical procedures
   b) U.O. monitoring for critically ill pts.
   c) management of acute urinary symptoms and obstruction
   d) assistance in pressure ulcer healing (incontinent pts)
   e) pt. request to improve comfort
3. Ensure only trained, qualified and dedicated personnel perform intermittent catheterization
4. Encourage proper skin care

**Approaches that should not be considered as routine CAUTI prevention:**

1. Do not routinely use silver-coated or other anti-bacterial catheters
2. Do not screen for asymptomatic bacteriuria in catheterized patients
3. Do not treat asymptomatic bacteriuria in catheterized patients
4. Do not use systematic antimicrobials routinely as therapy

**Level I Quality:** A. High

2. Provide indications for use of indwelling urethral catheters:
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<thead>
<tr>
<th>Recommendation</th>
<th>Dedicated Personnel</th>
<th>Insert Catheter</th>
<th>Prophylaxis</th>
</tr>
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<tbody>
<tr>
<td>4. Ensure that supplies necessary for aseptic technique are available</td>
<td>Use as small a catheter as possible, to minimize urethral trauma</td>
<td>Avoid catheter irrigation (with antimicrobials as a routine infection prevention measure).</td>
<td></td>
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<tr>
<td>5. Implement a system for documenting information in the patient record: indications for catheter insertion, date and time of insertion, inserter and removal time</td>
<td>Ensure that there are sufficient trained personnel and technology resources to support surveillance of catheter use and outcomes</td>
<td>Routine perineal hygiene is appropriate vs. antiseptic solutions</td>
<td></td>
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<td>6. Ensure that there are sufficient trained personnel and technology resources to support surveillance of catheter use and outcomes</td>
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<td>8. Routine perineal hygiene is appropriate vs. antiseptic solutions</td>
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| **Purpose:** Authors Review CMS rule guidelines regarding CAUTI and provide guidance for hospital-based clinicians/administrators re: possible consequences of the changes | **Guidelines:** -unintended fraud may occur, because of coding errors -some high risk patient populations (i.e., elderly) may have reduced access to care related to hospital payment restrictions after the CMS rule change harm, as hospitals put an emphasis on CAUTI prevention, including minimizing cath placement and facilitating removal of unnecessary caths. | A. High | **Reference:** Saint, S., et al. (2009). Translating healthcare-associated urinary tract infection prevention research into practice via the bladder bundle. *Joint Commission Journal on Quality and Patient Safety*. 35 (9), 449-455. |
| **Saint, S., et al. (2009). Translating healthcare-associated urinary tract infection prevention research into practice via the bladder bundle. *Joint Commission Journal on Quality and Patient Safety*. 35 (9), 449-455.** | **Review of Literature** | **N/A** | **Level II Quality:** 1. Bladder bundle focuses on preventing CAUTI by optimizing the use of urinary catheters—specific emphasis on continual assessment and removal as soon as possible, particularly for patients without appropriate indication for use. 2. CMS (Centers for Medicare and Medicaid Services) no longer reimburses hospitals for patients who develop CAUTIs. 3. Use of catheters = a physical restraint (binds the patient to the bed). “The one-point restraint” - restricts patient mobility and may promote other hospital- | **A. High** 2. NRC | **1. A long-term research project is in process to evaluate the current initiatives to ensure use of current prevention and safety practices for CAUTIs 2. Describes a collaborative statewide initiative in place, for implementation of EBP in CAUTI prevention strategies** |
A=Adherence to general infection control principles (e.g., hand hygiene surveillance/feedback, aseptic insertion, proper maintenance, education)
B=Bladder ultrasound may avoid indwelling catheterization
C=Condom catheters or other alternatives to an indwelling catheter (I&O) should be considered
D=Do not use an indwelling catheter unless you must!
E= Early removal of the catheter using a reminder or nurse-initiated removal protocol appears warranted

| Shuman, E., Chenoweth, C. (2010). Recognition and prevention of healthcare-associated urinary tract infections in the intensive care unit. *Critical Care* | Review of literature | N/A | Targeted strategies include limiting the use and duration of urinary catheters, aseptic technique for insertion and adherence to proper catheter care, including hand hygiene, maintain sterile closed drainage | Appropriate indications for use of urinary catheters include: -accurate monitoring of u.o. in critically ill patients -acute anatomical or functional urinary tract infections | Level IV Opinion of national recognized experts based on research evidence, systematic 4. Policy owner |
### Practice Guideline for General Strategies for Prevention of CAUTI

**Purpose:** Practice guideline for general strategies for prevention of CAUTI

- Maintain unobstructed urine flow
- Secure catheter with collecting bag below level of bladder
- Recommend use of US bladder scanning to determine urinary retention (especially post-op)
- Recommend use of physician reminder for patient urinary catheter use identification
- Recommend protocol for post-op catheter removal

### Review of Literature

**Stevens, E. (2005), Bladder ultrasound: avoiding unnecessary catheterizations. MEDSURG Nursing, 14(4), 249-253.**

**Purpose:** Present option for avoiding unnecessary urinary catheterization, by using bladder ultrasound protocols

<table>
<thead>
<tr>
<th>Source</th>
<th>Method</th>
<th>Findings</th>
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<tbody>
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<td>N/A</td>
<td>N/A</td>
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</table>
| 1. Portable bladder ultrasound found to be accurate and reliable in more than 6 studies (1990-2001)  
2. The implementation of bladder ultrasound protocols helps caregivers determine when catheterization is necessary by identifying post-void residual (PVR) |  
May be difficult to train and determine competency for all staff due to limited number of ultrasound units in a facility. May be appropriate to target staff in depts. where the highest number of CAUTIs are demonstrated.  
- Each portable ultrasound unit cost = appx. $10,000 at the time of publication | Level V  
Quality: B. Good | 2. NRC |