

# Preventing Urinary Tract Infections in Skilled Nursing Facilities

Last updated 2019

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Basics of Infection Prevention  
Healthcare-Associated Infections Program  
Center for Health Care Quality  
California Department of Public Health



# Objectives

- Describe of healthcare-associated urinary tract infections (UTI) in skilled nursing facilities (SNF)
- Review evidence-based clinical practices shown to prevent catheter-associated urinary tract infections (CAUTI)
- Discuss strategies to reduce CAUTI
- Discuss adherence monitoring and feedback

# UTI in Skilled Nursing Facilities (SNF)

- UTI is the most common HAI in SNF
  - Accounts for 20% of infections
- Bacteriuria very common (but not an infection)

SHEA/APIC Guideline: Infection Prevention and Control in Long-Term Care, 2008

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# What is Bacteriuria?

- Bacteria can be present in the bladder, not causing infection
  - Example: E. coli contamination from the rectal area
  - No symptoms of infection
- Bacteriuria alone does not affect survival and **does not require antibiotics!**
- Risk of bacteriuria with catheterization
  - 3%-10% each day
  - By day 30, 100% residents with a urinary catheter will have bacteria in urine

SHEA/APIC Guideline: Infection Prevention and Control in Long-Term Care, 2008

## UTI Risk Factors

- Age related changes to genitourinary tract
- Neurogenic bladder
- Diabetes
- Instrumentation required to manage bladder voiding
- Indwelling urethral catheter
- Straight catheterization



NHSN Long-term Care Facility Component  
Urinary Tract Infection Updated January, 2018

Source: CDC

## Urinary Catheters in SNF

- 7-10% of SNF residents have an indwelling urinary catheter
- Catheterization predisposes resident to catheter-associated UTI (CAUTI)
- Catheterized urinary tract most common source of bacteremia, a blood infection that may lead to sepsis

# CAUTI Etiology

- Pathogen source
  - Patient's GI or perineal bacteria
  - Bacteria on hands of healthcare personnel (HCP)
- Microbes enter bladder via one of two routes
  - On the external surface of the catheter
  - On the inside of the catheter

Maki D & Tambyah P. Engineering out risk of Infection with urinary catheters. *Emerg Infect Dis*, 2001

## Common UTI Pathogens

- *Escherichia coli* 24%
- *Pseudomonas aeruginosa* 10%
- *Klebsiella pneumoniae/oxytoca* 10%
- *Enterococcus faecalis* 7%

NHSN Antimicrobial Resistance Report: Distribution of all Pathogens Reported by HAI Type, Appendix to Table 4, 2011-2014

<https://www.cdc.gov/nhsn/xls/reportdatatables/2014-appendix-pathogens.xlsx>



# CAUTI Complications

- Cystitis
- Pyelonephritis
- Bacteremia
- Septic shock
- May result in
  - Functional decline
  - Decreased mobility
  - Hospital admission
  - Death

NHSN Long-term Care Facility Component  
Urinary Tract Infection Updated January, 2018

# Preventing CAUTI

- **69%** CAUTI can be prevented with currently recommended infection prevention practices
  - 380,000 infections prevented annually – 40,000 in California
  - 9,000 lives saved - ~1,000 in California

CDC CAUTI Prevention guidelines, 2009:

[www.cdc.gov/hicpac/pdf/CAUTI/CAUTIGuideline2009final.pdf](http://www.cdc.gov/hicpac/pdf/CAUTI/CAUTIGuideline2009final.pdf)

# CAUTI Prevention Care Practices

## CDC

- Insert catheters only for appropriate indications
- Leave in place only as long as needed
- Ensure only properly trained persons insert and maintain
- Perform hand hygiene
- Use aseptic technique and sterile equipment for insertion
- Maintain closed drainage system and unobstructed urine flow
- Use portable ultrasound devices to assess urinary retention, reduce unnecessary catheterizations (Category II)
- Implement improvement program to achieve appropriate use of catheters

# CAUTI Prevention Care Practices - continued

## APIC/SHEA

- Use smallest diameter catheter as possible
- Irrigate only if catheter is obstructed
- Keep collecting bag below the bladder
- Ensure adequate nutrition and hydration
- Consider alternatives to indwelling urinary catheters
  - External catheters
  - Intermittent catheterization

SHEA/APIC Guideline:  
Infection Prevention and Control in Long-Term Care, 2008

# Appropriate Indications for Urinary Catheters

- Acute urinary retention or obstruction
- Prolonged immobilization due to unstable spine or pelvic fracture
- Assist healing of perineal and sacral wounds in incontinent patients
- Hospice (end of life), comfort care, palliative care
- Chronic indwelling urinary catheter on admission
  - Necessity must still be evaluated on admission

CDC CAUTI Prevention guidelines, 2009:

[www.cdc.gov/hicpac/pdf/CAUTI/CAUTIGuideline2009final.pdf](http://www.cdc.gov/hicpac/pdf/CAUTI/CAUTIGuideline2009final.pdf)

# CAUTI Prevention Bundle Examples

## Insertion Bundle

- Verify need prior to insertion
- Insert urinary catheter using aseptic technique.
- Maintain urinary catheter based on recommended guidelines

## Maintenance Bundle

- Daily assessment of catheter need documented
- Tamper evident seal is intact
- Catheter secured to patient
- Hand hygiene performed before patient contact
- Daily meatal hygiene with soap and water
- Drainage bag emptied using a clean container
- Unobstructed flow maintained

APIC Preventing CAUTI, Patient-centered Approach, 2012:

[https://apic.org/Resource/TinyMceFileManager/epublications/CAUTI\\_feature\\_PS\\_fall\\_12.pdf](https://apic.org/Resource/TinyMceFileManager/epublications/CAUTI_feature_PS_fall_12.pdf)

## Not Recommended

**No evidence** that these practices prevent UTI

- X Complex urinary drainage systems
- X Routinely changing catheters or drainage bags
- X Routine antimicrobial prophylaxis
- X Cleaning the periurethral area with antiseptics
- X Antimicrobial irrigation of the bladder
- X Antiseptic / antimicrobial solutions instilled into drainage bags
- X Routine screening or culturing

CDC CAUTI Prevention guidelines, 2009:

[www.cdc.gov/hicpac/pdf/CAUTI/CAUTIGuideline2009final.pdf](http://www.cdc.gov/hicpac/pdf/CAUTI/CAUTIGuideline2009final.pdf)

## Facility Role in CAUTI Prevention

- Ensure policies and practice reflect current evidence based recommendations
    - HICPAC/CDC 2009 guidelines
  - Ensure staff competency upon hire and at least annually
    - New hire orientation
    - Annual skills fair
    - Return demonstration to ensure competency
  - Establish an adherence monitoring program for core care practices
    - Use standard tools to measure adherence
  - Perform UTI surveillance
  - Provide feedback to frontline staff and leaders
    - Present adherence results with UTI/CAUTI incidence
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# Adherence (Process) Measures

## Measure catheter use:

- Days with Foley catheter ÷ Patient days (x 100) = \_\_\_%

## Measure health care provider adherence:

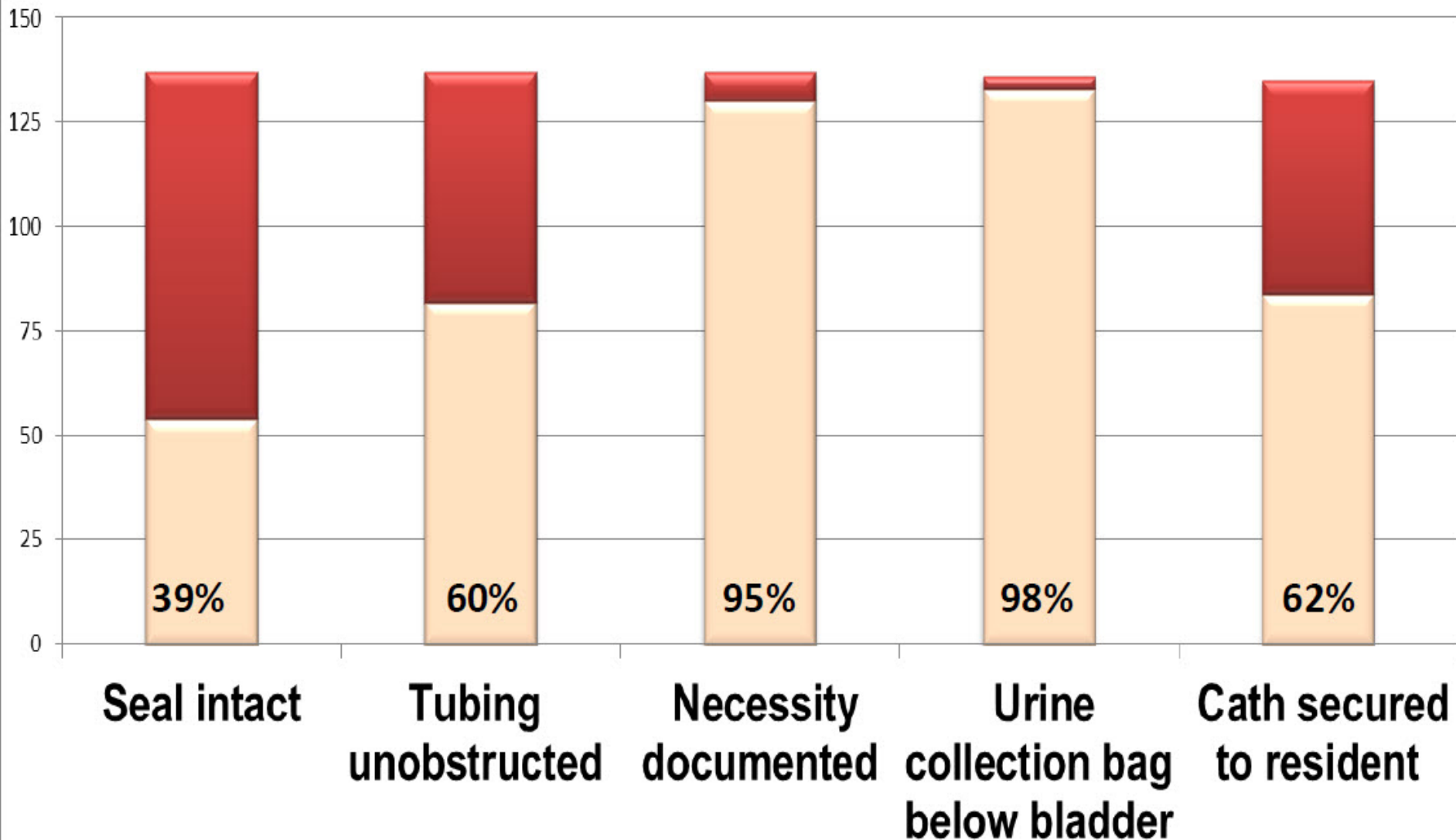
- Hand hygiene
- Documentation of catheter insertion and removal
- Daily assessment of indwelling urinary catheter
- Documentation of indications for use

# Indwelling Urinary Catheter Adherence

Urinary Catheter Care Practices	Indwelling Urinary Catheter Patient/Resident 3		Indwelling Urinary Catheter Patient/Resident 3		Adherence by Task	
	# Yes	# Observed	# Yes	# Observed	# Yes	# Observed
The indwelling urinary catheter is being used for an appropriate indication	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Yes	<input type="checkbox"/> No		
Necessity for continuing the indwelling urinary catheter is documented in the medical record	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Yes	<input type="checkbox"/> No		
The seal between the catheter and collecting tubing is intact.	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Yes	<input type="checkbox"/> No		
The catheter tubing is unobstructed and not twisted, kinked, or looped.	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Yes	<input type="checkbox"/> No		
The urine collection bag is below the level of the bladder.	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Yes	<input type="checkbox"/> No		
The catheter is secured to the patient/resident.	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Yes	<input type="checkbox"/> No		
#Yes ____ Total # Observations ____ Total #Yes / Total # observations *100 = % _____ Adherence						

[Adherence Monitoring Tools](http://www.cdph.ca.gov/hai) (www.cdph.ca.gov/hai)

# CDPH CAUTI Observations, 131 Facilities, 2016



# Infection (Outcome) Measure

## Measure infections:

- Perform UTI surveillance using standardized definitions and protocols
- Bacteria in urine alone is not an infection
  - Must evaluate for other UTI symptoms or have supporting laboratory data

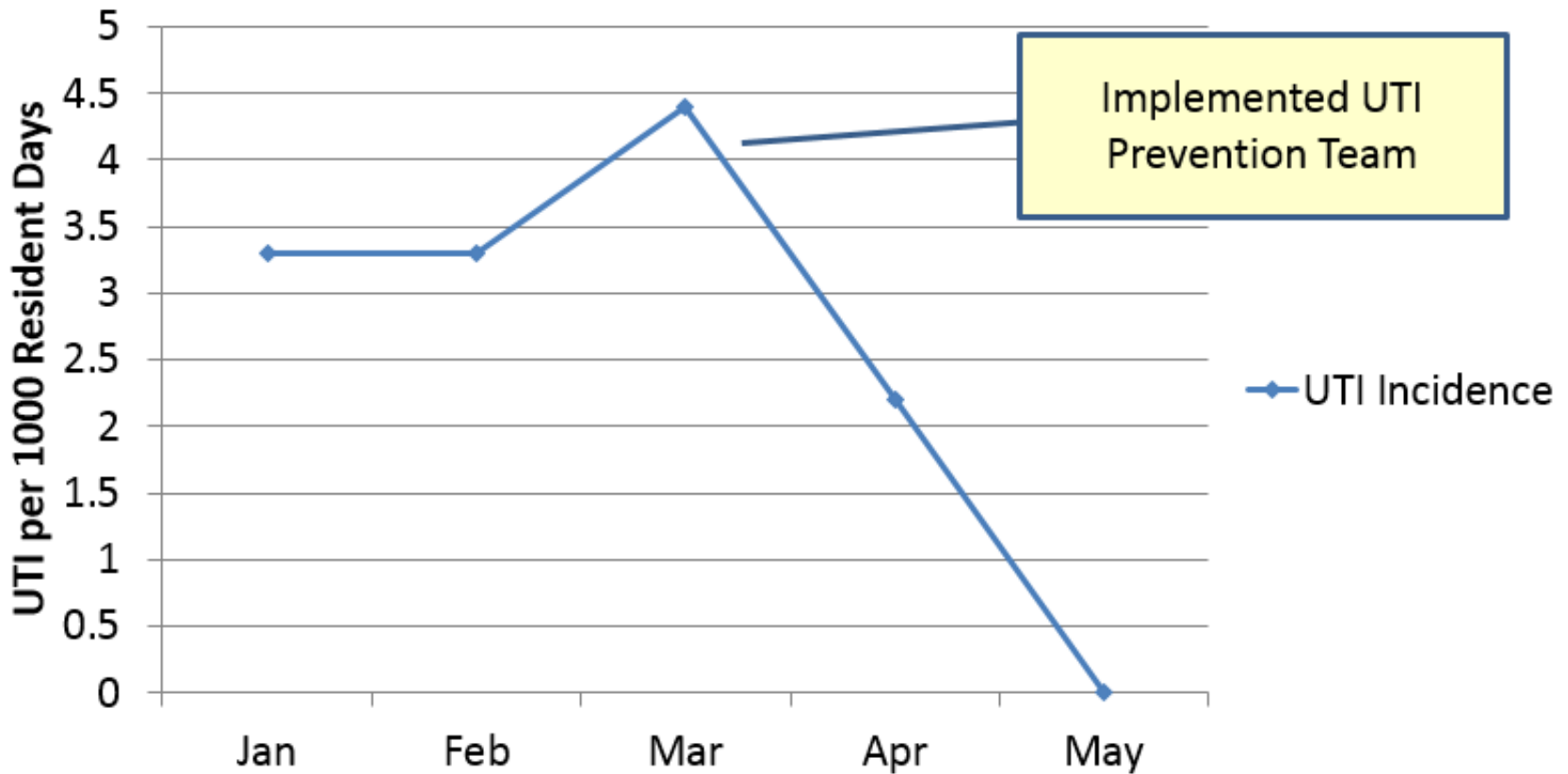
NHSN Patient Safety Module: Chapter 7 Device-Associated Module, CAUTI

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# UTI Incidence Over Time (Sample Graph)

## SNF UTI Incidence 2018



# Are CAUTI Prevention Core Care Practices Used Routinely in Your Facility?

- Insert catheters only for appropriate indications
- Leave in place only as long as needed
- Ensure only properly trained persons insert and maintain
- Perform hand hygiene
- Use aseptic technique and sterile equipment for insertion
- Maintain closed drainage system and unobstructed urine flow
- Implement improvement program to achieve appropriate use of catheters

**You won't know if you don't monitor!**

## Summary

- CAUTI can lead to bloodstream infections
- Adherence monitoring to evidence based care practices will reduce CAUTI incidence
- Feedback CAUTI incidence and adherence monitoring results to staff will improve outcomes

# Additional CAUTI Prevention References and Resources

- APIC Preventing CAUTI: A patient-centered approach ,2012, [http://apic.org/Resource /TinyMceFileManager/epublications/CAUTI feature PS fall 12.pdf](http://apic.org/Resource/TinyMceFileManager/epublications/CAUTI_feature_PS_fall_12.pdf)
- IDSA Guidelines , *Clin Infect Dis* 50:625-63, 2010
- National Quality Forum (NQF) Safe Practices for Better Healthcare,2010
- Smith, P.W., Bennett, G., Bradley, S., Drinka, P., Lautenbach, E., Marx, J., Mody, L., Nicolle, L., Stevenson, K. SHEA/APIC Guideline: Infection prevention and control in the long-term care facility. *ICHE*, 29(9), 785-814, July 2008



## Questions?

For more information,  
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