



Catheter-Associated Urinary Tract Infection (CAUTI) Prevention



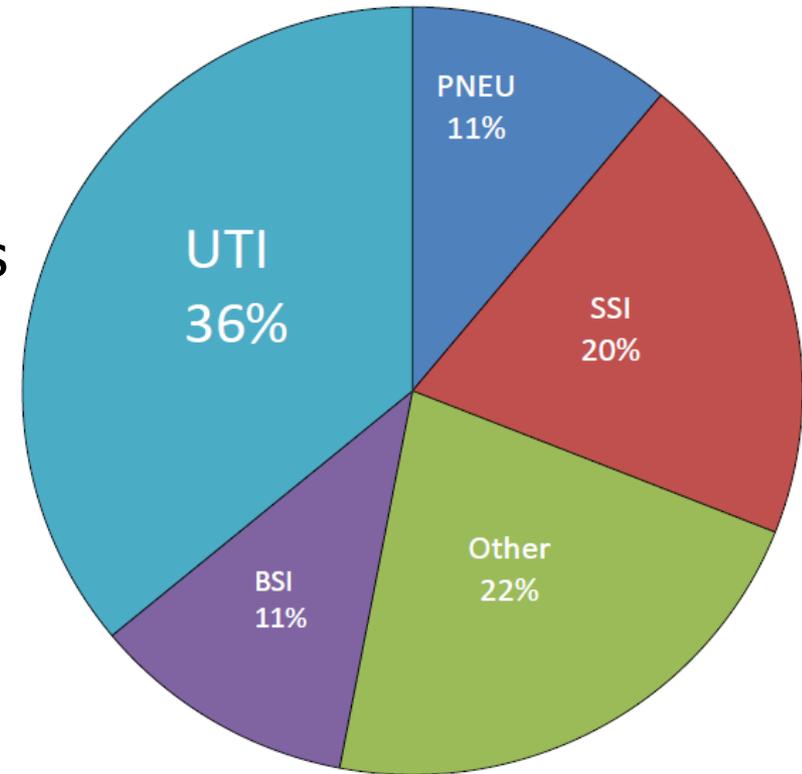
Basics of Infection Prevention
2-Day Mini-Course
2014

Objectives

- Define the scope of healthcare-associated urinary tract infections (UTI)
- Review evidence-based clinical practices shown to prevent catheter-associated urinary tract infections (CAUTI)
- Discuss strategies to reduce CAUTI within the hospital or other healthcare setting
- Review CAUTI surveillance definitions

Epidemiology of UTI

- Most common type of HAI
- Accounts for >30% of all infections reported to NHSN
- Leading cause of secondary bloodstream infection (BSI)
- 10% mortality rate (13,000 attributable deaths annually)
- Increases length of stay 2-4 days
- Results in antimicrobial overuse and antimicrobial resistance



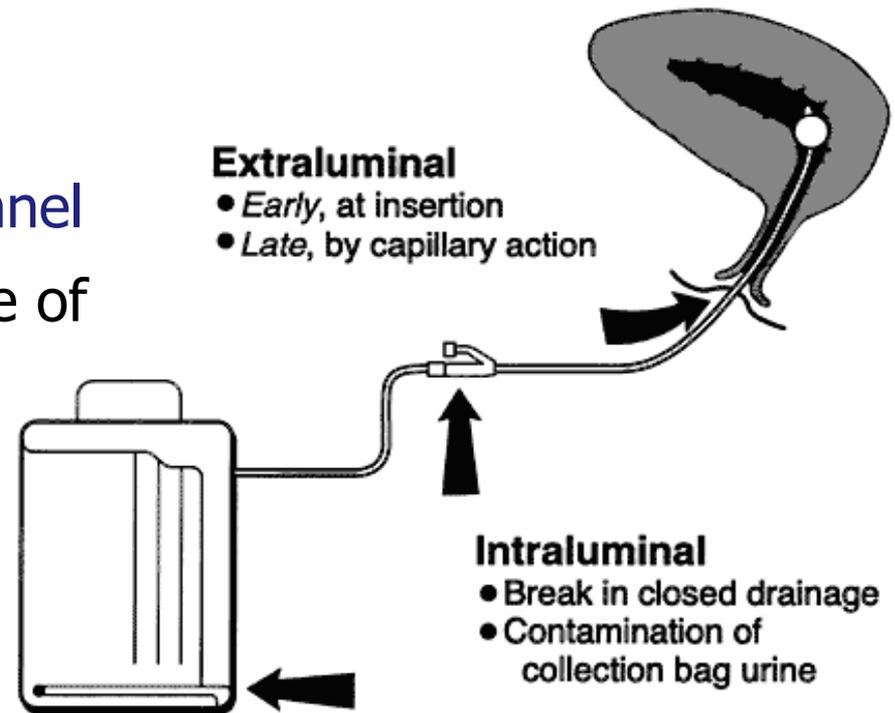
Source: APIC Guide to the Elimination of CAUTI (2008)

Urinary Catheter Use

- Urinary catheter prevalence:
 - Medical surgical unit 10-30%
 - ICU 60-90%
 - Nursing home 5-10%
- 40-50% catheters on hospital wards (non-ICU) do not have valid indication for use
- Physicians frequently unaware of use
 - In recent study >50% did not know which patients were catheterized
 - 75% did not know duration of use or discontinuation

Etiology of CAUTI

- Source
 - Patient's colonic or perineal flora
 - Bacteria on hands of personnel
- Microbes enter bladder via one of 2 routes
 - Extraluminal - around the external surface
 - Intraluminal - inside the catheter
- Daily risk of bacteriuria with catheterization 3% to 10%
 - By day 30, 100%



Pathogens Associated with CAUTI

- *E. coli* 26%
- Enterococci 16%
- *P. aeruginosa* 12%
- *Candida* species 9%
- *K. pneumoniae* 6%
- *Enterobacter* species 6%



Gould C., Catheter-Associated Urinary Tract infection (CAUTI) Toolkit, CDC

Historical Perspective

What we did

IP typically

- Reviewed CDC guidelines on prevention of UTI
- Educated staff, mainly nursing, on the guidelines
- Performed surveillance of UTI
- Reported findings to Infection Control and Executive Committees
- Reported our “success” to The Joint Commission

Historical Perspective - 2

And What Happened

- Many thousands of patients developed hospital-acquired UTIs per year
- 80% were urinary catheter-associated
- Approximately half of the patients with a urinary catheter did not have a valid indication for placement
- Each day the urinary catheter remained, the risk of CAUTI increased 5%



Gould C., Catheter-Associated Urinary Tract Infection (CAUTI) Toolkit, CDC

Current Perspective on HAI Prevention

- Consumer awareness of the impact of HAI
- Costs of healthcare
- Population without medical insurance
- Demand for accountability by regulatory agencies, advocacy groups, and legislative mandates
- Infection PREVENTION has become **a clear mandate**

It takes a village
(or at least a health care team)
to prevent HAI

New Tenets of Infection Prevention

IP **expected** to

- Review the evidence-based (CDC) guidelines
- Evaluate **your** facility's adoption of recommended practices
 - What is actually going on versus what is recommended?
 - Collect data to understand current practice
- Implement recommended practices
 - Educate staff --- ALL healthcare stakeholders
 - Change patient care practices where necessary
- Educate patients regarding infection risks and their role in prevention

New Tenets of Infection Prevention - 2

- Perform standardized surveillance for infections
 - Understand the current state
 - Set prevention target (% reduction goal or elimination)
 - **Monitor progress** in reducing infections
- Monitor compliance until the prevention target has been reached
 - Feedback observational data to all stakeholders
- Monitor process measures periodically to ensure sustainability of prevention target outcome measures

CAUTI Prevention

- With currently recommended infection prevention practices, estimated up to **69%** CAUTI can be prevented

380,000 infections prevented annually
9,000 lives saved

- National CAUTI 5-year prevention goal:
25% decrease from 2009 baseline



www.cdc.gov/hicpac/cauti
www.hhs.gov/ophs/initiatives/hai/prevtargets

CDC Prevention Strategies

Core Strategies

High levels of scientific evidence

Demonstrated feasibility

- Should become standard practice

Supplemental Strategies

Some scientific evidence

Variable levels of feasibility

- Consider implementing in addition to Core when infections persist or rates are high

CAUTI **Core** Prevention Strategies

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



CAUTI **Supplemental** Prevention Strategies

- Alternatives to indwelling urinary catheters
- Portable ultrasound devices to assess urinary retention, reduce unnecessary catheterizations
- Antimicrobial/antiseptic impregnated catheters



Use Indwelling Urinary Catheters ***ONLY*** for Appropriate Indications

1. Acute urinary retention or obstruction
2. Peri-operative use in selected surgeries
3. Assist healing of perineal and sacral wounds in incontinent patients
4. Hospice, comfort care, palliative care
5. Required immobilization for trauma or surgery
6. Chronic indwelling urinary catheter on admission
7. Accurate measurement of urinary output in critically ill patients (intensive care)

www.cdc.gov/hicpac/cauti/cauti

CAUTI Prevention Bundle

Example:

Aseptic insertion and proper maintenance

Bladder ultrasound may avoid indwelling catheter

Condom or intermittent catheterization in appropriate patients

Do not use indwelling catheter unless necessary

Early removal of catheters using reminders or stop orders

APIC CAUTI Elimination Guide <http://www.apic.org>



Not Recommended

No evidence to support an effect on UTI prevention

- Complex urinary drainage systems
- Routinely changing catheters or drainage bags
- Routine antimicrobial prophylaxis
- Cleaning the periurethral area with antiseptics
- Antimicrobial irrigation of the bladder
- Antiseptic / antimicrobial solution instillation into drainage bags
- Routine screening for asymptomatic bacteriuria

UTI Prevention **Process** Measures

Measure HCW compliance (select one or more)

- Hand hygiene
- Documentation of catheter insertion & removal
- Daily assessment of foley catheter
- Documentation of indications for use



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UTI Prevention **Outcome** Measure

- Perform UTI surveillance using standardized definitions and protocols
- Note: Bacteria isolated from urine alone does **NOT** meet surveillance definitions for UTI

Example

- If culture grows 1000–10,000 ($10^3 - 10^4$) CFU/ml, must have symptoms **and** positive urinalysis

Acute Care Hospital UTI Surveillance Definitions

- UTI can be catheter-associated (CAUTI) or **NOT** associated
- To meet criteria for **Symptomatic UTI** patient must have BOTH clinical and microbiologic findings
 - **Refer to written definitions frequently when performing UTI surveillance!**
 - Clinical symptom criteria differ for patient with current indwelling catheter vs. catheter removed day prior vs. no exposure to catheter.
 - Criteria differ whether urine culture grows $<$ or $\geq 100,000$ bacteria



Acute Care Hospital UTI Surveillance Definitions

- For **Asymptomatic UTI with Bacteremia (ABUTI)** requires positive blood culture and urine culture (100,000 CFU) with the same pathogen



Long-Term Care Facilities (LTCF) UTI Surveillance Definitions

- Two types of UTI, based on presence of device
 - UTI
 - CAUTI
- Constitutional criteria in LTCFs (McGeer)
 - Fever
 - Leukocytosis
 - Acute change in mental status from baseline
 - Acute functional decline



CAUTI Surveillance

- To be CAUTI, patient must have indwelling catheter >2 days (day of insertion=day 1) **AND**
 - catheter still present - **or**-
 - catheter removed day of or day prior to when UTI criteria met
- Criterion elements must occur within a timeframe that does not exceed a gap of one calendar day

Examples:

- Fever on 1st day and positive urine culture on 3rd day meets the timeframe (one calendar day between elements)
- Fever on 1st day and positive urine culture on 4th day does not meet criteria (2 calendar days between elements)

CAUTI Location Attribution

- Location of patient on the date of event, which is now defined as the date that the last element used to meet the UTI criterion occurred (previously, date of the 1st element)
- If all elements of UTI are present within two calendar days of transfer from one location to another, the UTI is attributed to the transferring location
- Exception to the Transfer Rule: Added guidance that UTIs cannot be attributed to non-bedded locations (e.g., Operating Room, Emergency Department) so must instead be attributed to the next patient care location



CAUTI Prevention: Summary

- Prevention requires commitment to evaluate urinary catheter usage
 - Begin in the ED
- Reducing CAUTI incidence has been shown to result in overall reductions of MDRO infections
- Perform surveillance and feedback CAUTI rates to ICUs and wards
 - California has no mandate for CAUTI reporting
 - CMS requires CAUTI reporting
 - Acute Care Hospitals – ICUs since Jan 2012
Note: ICUs and wards required beginning Jan 2015
 - Long-term Acute Care Hospital (LTAC) – Oct 2012
 - Inpatient Rehabilitation Facilities -Oct Oct 2012

References and Resources

- Gould CV, Umscheid CA, Agarwal RK, Kuntz G, Pegues DA, and HICPAC. Guideline for Prevention of Catheter-associated Urinary Tract Infections 2009.
http://www.cdc.gov/hicpac/cauti/001_cauti.html
- IHI Program to Prevent CAUTI <http://www.ihp.org/>
- APIC CAUTI Elimination Guide <http://www.apic.org/>
- IDSA Guidelines (Clin Infect Dis 2010;50:625-63)
- SHEA/IDSA Compendium (ICHE 2008;29:S41-S50)
- National Quality Forum (NQF) Safe Practices for Better Healthcare – 2010 Update
- Healthcare – Update April 2010 . CDC/Medscape collaboration
<http://www.cdc.gov/hicpac/>

Questions?

For more information, please contact any
HAI Liaison Team member

Thank you

