Indwelling Device Care: Urinary Catheters and Feeding Tubes

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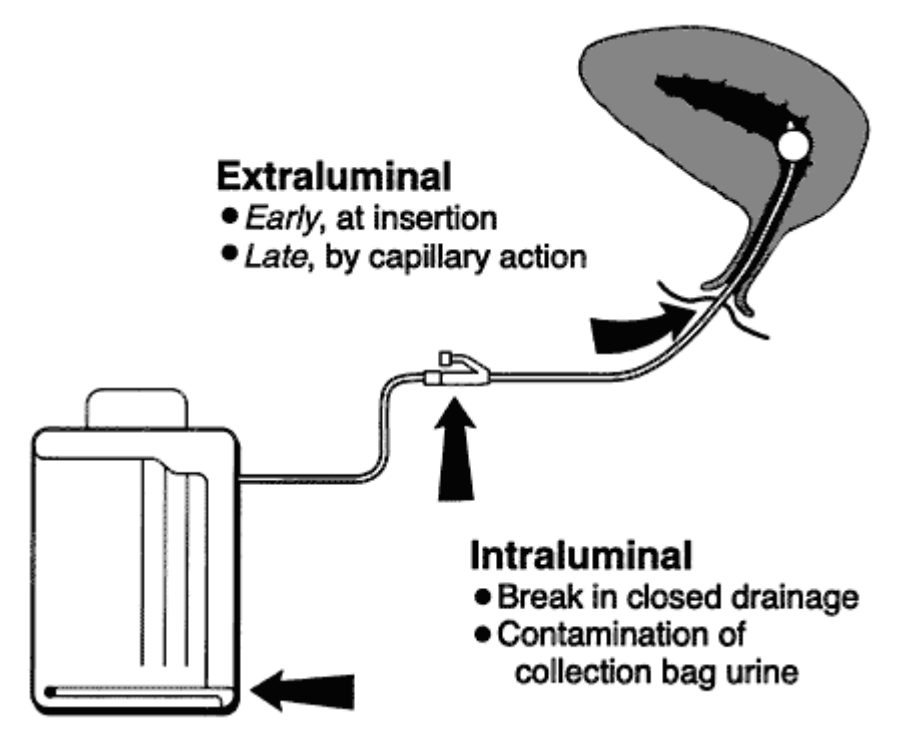
Outline

- Complications of long-term urinary catheters
- Definitions of various terms used to define infections related to urinary catheter use
- Discuss recent guidelines to prevent catheter associated urinary tract infections
- Complications related to enteral feeding tube use
- Practice recommendations

Urinary Catheter System



Complications of long-term catheterization

- NH residents
- Fever: low grade, common, can resolve without antibiotics
- Fever: high grade, can be associated with bacteremia and death
- Autopsy: 75 NH residents
  - Acute renal inflammation:
    - 38% in residents with catheters:
    - 5% in non-catherized residents
- Other complications: catheter obstruction, renal and bladder stone formation, lower GU infections.

Definitions

CA infection:	Infection occurring in a person whose urinary tract is currently catheterized or has been catheterized within the previous 48 h.
UTI	Significant bacteriuria in a patient with symptoms or signs attributable to the urinary tract and no alternate source.
ASB:	Asymptomatic bacteriuria: Significant bacteriuria in a patient without symptoms or signs attributable to the urinary tract.
Bacteriuria:	Nonspecific term that refers to UTI and ASB combined.
CA-UTI, CA-ASB, and CA-bacteriuria	Each considered to represent infection of the urinary tract, because bacteria are not normal inhabitants of the urinary tract.
Significant bacteriuria	Quantitative level of bacteriuria consistent with true bladder bacteriuria, rather than contamination, based on growth from a urine specimen collected in a manner to minimize contamination and transported to the laboratory in a timely fashion to limit bacterial growth. Lower colony counts are more likely to represent significant bacteriuria in a symptomatic person, compared with an asymptomatic person..

Methods to Diagnose CA-UTI

CA-UTI in patients with indwelling urethral, indwelling suprapubic, or intermittent catheterization:

- presence of symptoms or signs compatible with UTI with no other identified source of infection along with $\geq 10^3$ colony-forming units (cfu)/mL of ≥ 1 bacterial species in a single catheter urine specimen or in a midstream voided urine specimen from a patient whose urethral, suprapubic, or condom catheter has been removed within the previous 48 h.

CA-ASB should not be screened for except in research studies evaluating interventions designed to reduce the incidence of CA-ASB or CA-UTI (A-III) and in selected clinical situations, such as in pregnant women (A-III).

Signs and symptoms compatible with CA-UTI:

1. New onset or worsening of fever, rigors, altered mental status, malaise, or lethargy with no other identified cause;
2. Flank pain
3. Costovertebral angle tenderness
4. Acute hematuria
5. Pelvic discomfort; and in those whose catheters have been removed, dysuria, urgent or frequent urination, or suprapubic pain or tenderness (A-III).

Methods to Diagnose CA-UTI

- Pyuria not diagnostic
  - Presence, absence or degree of pyuria should not differentiate CA-ASB from CA-UTI
  - Pyuria with CA-ASB should not lead to antibiotics
  - Absence of pyuria in a symptomatic patient could suggest other diagnosis
- Presence or absence of cloudy urine alone should not differentiate CA-UTI and CA-ASB

Reduction of Inappropriate Urinary Catheter Insertion

- Indwelling catheters should only be placed when necessary
  - Should not used for management of incontinence (except in rare patient requests)
- Develop a list of inappropriate catheter use and educate staff
- Require physician order to insert a catheter
- Consider use of portable bladder scanner to determine whether an indwelling urinary catheter is required

Discontinuation of Catheter

- Indwelling catheters should be removed as soon as possible
- Consider nurse-based or electronic physician reminder systems to reduce catheter use
- Consider stop-orders

Strategies to consider prior to Catheter Insertion

- Education and training of staff relevant to these policies and procedures
- Feedback of CA-bacteruria rates to staff and physicians
- Data unclear on whether such residents should be cohorted or not.

Alternatives to Indwelling Uretheral Catheters

- Condom catheters could be considered in patients with low post-void residuals
- Intermittent straight catherization
- Supra-pubic catheterization could be considered, although data insufficient

Prevention Strategies after Catheter Insertion: 1

- A closed catheter drainage system with ports in the distal catheter for needle aspiration of urine should be used to reduce CA-bacteriuria and CA-UTI
- Policies should be developed to ensure that disconnection of catheter is minimized
- Drainage bag and connecting tube are always kept below the level of the bladder
- For short-term indwelling urethral catheters, antimicrobial (either silver alloy or antibiotic) coated catheters may be considered
  - For long-term catheters, data insufficient

Prevention Strategies after Catheter Insertion: 2

- Systemic Antimicrobials
  - Should not be used due to selection of resistance
- Methenamine salts
  - Should not be used routinely for long-term urethral catheters (data not clear)
  - May be used for short-term catheterization after a surgical procedure
- Cranberry products
  - Data insufficient for their use in preventing CA-UTI or CA-bacteriuria
- Enhanced meatal care
  - Data insufficient on daily meatal cleansing to reduce risk
- Catheter irrigation
  - With saline should not used
  - With antimicrobials may be considered for short term catheters after/during a surgical procedure
- Antimicrobials in drainage bag
  - Routine antimicrobials do not reduce CA-bacteriuria and should not be used
- Routine catheter change:
  - Insufficient data
- Prophylactic Antibiotics
  - Should not administered either at the time of catheter insertion or removal or replacement

Urine culture and catheter replacement before treatment

- Urine specimen for culture should be obtained prior to starting treatment
- Consider replacement if catheter is more than 2 weeks old
- 7 days treatment for prompt responders
- 10-14 days for those with delayed response

Complications of Feeding Tube use

- Pulmonary aspiration
- Intolerance to feeding
- Blocked feeding tubes
- Faulty placement
- Other pulmonary complications
  - Hemorrhage, esophageal perforation, pneumonitis
- Skin and soft tissue infections
- MRSA colonization around the tube site

Recommendations for Practice

- When to check position
  - When the tube is inserted and prior to feeding
  - At the start of each shift
- How to check
  - X-ray, auscultation
- Checking for residual volume
  - Overt regurgitation, vomiting, aspiration: cease feeding
  - Aspirate > 500, hold feeding and reassess
  - 200-500: reassess, consider continuing feeding, but at a lower rate

Recommendations for Practice

- Position
  - 30-45^{0} bed elevation
  - Nursing measure should minimize time spent in supine position
- Prevention bacterial contamination
  - Wash hands prior to handling feeding equipment
  - Use disposable gloves when handling feeding equipment
  - Use sterile water if diluting feeds (not tap water)
  - Local care: watch for any secretions, excoriations, pain, erythema