Indwelling urinary catheter: Guideline to prevent catheter associated urinary tract infections (CAUTI) - Adult

Quick Links:

Site Applicability

All VCH Acute Care sites

Practice Level

Basic Skills for the following professions (within their respective scope of practice):

- RN, RPN, LPN

Policy Statement

Patient is to be assessed on admission and daily for:

- Alternative strategies to an indwelling urinary catheter insertion.
- Meet clinical criteria for indwelling urinary catheter insertion.
- Clinical appropriateness of ongoing indwelling catheter

Need to Know

The purpose of this document is to standardize care to prevent Catheter Associated Urinary Tract Infection (CAUTI) in the Acute Care settings.

Indwelling urinary catheterization increases the risk of urinary tract infection (UTI) and trauma to the urethra and bladder, and is associated with increased length of stay, morbidity and mortality. **Whenever possible, use intermittent catheterization to manage retention** (see D-00-12-30111: Intermittent Catheterization).

- Approximately 50% of indwelling catheterizations are inappropriate when using the criteria for catheterization from “Centers for Disease Control & Prevention” (CDC).
- UTI are the most common Healthcare Acquired Infections (HAI) – accounting for up to 40% of all HAI in Acute Care settings; over 80% of these are CAUTI.
- Indwelling urinary catheters readily develop biofilm on their inner and outer surfaces after insertion. Once the biofilm is established, it protects the uropathogens from antimicrobial treatment and the patient immune response, and provides an environment that encourages bacterial growth.
- Colonization occurs in over 80% of patients within 10 days of insertion and 100% are affected after 30 days. It can occur from either endogenous: patient’s own bugs or exogenous: contaminated hands of HCPs or equipment.

- The duration of catheterization is the most important risk factor for the development of infection. The daily risk of developing a CAUTI is 3% to 7% when an indwelling catheter remains insitu in an acute care setting.
- Almost 50% of patients with an indwelling catheter in situ for greater than 5 days develop bacteriuria or colonization of yeast of which some will go on to develop an infection, if the catheter is not removed.
- The older adult (i.e. greater than 65 years) is at an increased risk of urinary tract infection and/or organ damage due to:
    - Decreased bladder and kidney function
    - Declining estrogen levels, causing atrophy of urethral and vaginal tissue
    - Decreased metabolism of drugs that may affect the urge to void and bladder emptying
    - Decline in immunologic response
    - Decreased thirst drive leading to decrease urine output
    - Decreased ability to carry out activities of daily living related to toileting and associated personal hygiene
- The complications/risks of CAUTI include the following:
    - Cystitis, periurethral abscess and acute or chronic pyelonephritis
    - Prostatitis, epididymitis and orchitis in men
    - Gram negative bacteremia
    - Urosepsis, which can be fatal in 40 to 60%
- CAUTI leads to bacteremia in 2 to 4% of patients. It is the third most common cause of Healthcare Associated blood stream infections, after central venous catheters and ventilator-associated pneumonia.
- Long term catheterization predisposes patients to voiding dysfunction and bladder cancer.
- Signs and symptoms of CAUTI (see Appendix D: CAUTI algorithm for nursing).
- Not all positive urine cultures mean the patient has a CAUTI or UTI – over 50% of elderly patients have bacteria in their urine without an infection
- UTI treatment is only required for positive cultures with signs, symptoms and/or laboratory evidence of infection see Appendix D: CAUTI algorithm for nursing for more information

Other contributing factors for development of CAUTI:

- Malnourished, frail or has chronic illness
- Diabetes mellitus – increased glycosuria may contribute to severity of UTI
- Patient has another site of infection
- Patient is immuno-suppressed
- Renal impairment
- Fecal incontinence
- Compromised Nutritional and Hydration Status - Importance of fluid hydration
- Pregnancy / Labour – change in hormones, highest risk in 3rd trimester; urethral dryness due to atony; and decreased peristalsis of urethra
- Female gender – short urethra

Practice Guideline

There are three key nursing activities that influence the development of CAUTI: catheter insertion, maintenance and removal:

1. **Catheter insertion:** Two key nursing practices related to catheter insertion that influence CAUTI are clinical indication for catheter and insertion technique:

   A. **Clinical Indication:** Ensure there is a clear indication for the insertion of a catheter. Acceptable clinical indications (see CPD D-00-07-30108 for more information):
   - Peri-operative for selected surgical procedures
   - Urinary retention – unresolved with intermittent catheterization (see intermittent catheterization for specifics)
   - Strict monitoring of urine output and no other means are sufficient
   - Facilitate healing of sacral or perineal Stage III or IV pressure ulcers/wounds/incisions/donor sites or flaps
   - Immobilization with inability to void with alternative measures (e.g. urinals, condom catheter or intermittent catheterization
   - Improved comfort for end-of-life care

   Do not insert indwelling catheter for the following reasons:
   - As a substitute for nursing care of the patient with incontinence
   - As means to obtain urine for culture or other diagnostic tests when the patient can voluntarily void

   B. **Insertion technique:** Ensure sterile technique is used during insertion: (see CPD D-00-12-30109: Insertion and Removal of Indwelling catheter). Examples of compromised catheter insertion technique: poor hand hygiene, compromised sterile field, inappropriate solutions used for cleansing

2. **Catheter Maintenance:** Two key nursing practices related to catheter maintenance that influence the development of CAUTI are catheter care and catheter system care and management.
   A. Maintain meticulous perineal and catheter hygiene BID and prn. Use of antiseptic solution is not required. (see D-00-07-30108: Indwelling Catheter: Care and Management)
   B. Use catheter system care and management techniques: ensure drainage bag is not above the level of drainage tubing (i.e. at waist level) and below the level of the bladder (see D-00-07-30108: Indwelling Catheter: Care and Management)
   - If catheter patency or occlusion is questioned, scan the bladder (see site specific CPDs) to assess urine volume and notify physician if bladder volume is increased, to prevent upper tract infections or renal impairment. (Diane Newman 2009)
   - Change catheters and drainage bags based on clinical indicators such as infection, obstruction, or when the closed system is compromised. **NOTE:** Flushing a blocked catheter is not considered best practice, if blockage is suspected catheter should be removed and if catheter indicated should be re-inserted. Changing indwelling catheters and drainage bags at arbitrary fixed intervals is not recommended.

3. **Catheter Removal:** Two key nursing practices related to catheter removal that influence CAUTI development are ongoing assessment of catheter need and timely removal:
   - There should be a daily assessment of catheter need once it is established – see acceptable clinical indications included (see D-00-07-30108 for more information):
   - Reduce duration of indwelling catheter by removing once no longer indicated to reduce the potential for developing CAUTI (D-00-12-30109: Urinary catheter insertion and removal).
   - Removal: If a catheter has been insitu for a long period of time (greater than 2 weeks), the patient may go through a trial of voiding. It is not recommended to clamp a catheter to determine if the patient has an urge to void. It is best practice to remove the catheter for a trial of voiding. Use a bladder scan to determine bladder volume (see Site specific Urinary retention CPDs).

Do not remove indwelling catheter for the following reasons:

- If the patient requires a catheter for prolonged post operative duration (i.e. structural repair of urethra or contiguous structures, prolonged effect of spinal anesthesia), leave the catheter in place.
- A doctor's order to leave an indwelling catheter in situ overrides a nurse's decision to remove it. Continue to collaborate daily with physician for a goal of prompt removal of catheter.

Additional Interventions:

For patients with:

1. ***Compromised nutritional status:***
   - ensure adequate fluid and management of nutrition in accordance with patient status
   - consider consulting a dietitian regarding poor nutritional intake and inadequate fluid intake
2. ***Uncontrolled diabetes:*** assess and control glucose levels, monitor HgA1C levels
3. ***Other site infection:*** prevent cross contamination from other sites of infection
4. ***Compromised bowel function:*** Assess and treat underlying cause:
   - Diarrhea – query if CDiff, review medications as well ensure toileting, hygiene, skin care
   - Fecal incontinence – constipation, increase fluids and bulking agents
   - Ensure meticulous hygiene, skin care, routine toileting, and prevent contamination
   - Compromised bladder function
5. ***Chronic urinary retention:*** if identified/suspected, consult a physician, Nurse Practitioner (NP), Nurse Continence Advisor (NCA) or Enterostomal Therapy Nurse (ET) as available to your practice area for further directives

Urine Sampling and CAUTI or UTI Investigations:

1. ***For detailed information regarding urine sampling or CAUTI/UTI investigation please see:***
   - Appendix B: Urine sampling at VCH (excludes VGH)
   - Appendix C: Urine culture screening at VGH
   - Appendix D: CAUTI algorithm

Expected Client/Family Outcomes

- The patient will be free from catheter associated UTI.
- The patient will maintain bladder health.

Patient/Client/Resident Education

- Educate patient/family and/or caregiver on CAUTI prevention
  - Care and management of indwelling/intermittent urinary catheterization in the home/community setting
  - Patient education handout pending
- Inform patient/family and/or caregiver of signs and symptoms of UTI and instruct patient to contact physician if any signs or symptoms appear.
- If patient had indwelling urinary catheter removed within 48 hours and have at least one of the following symptoms with no other recognized cause, notify most responsible provider (MRP). (if urine sample required, see Appendix B):
  - Fever (greater than 37.8°C or 1°C above baseline for SCI patients)
  - Chills
  - New or increased urgency to void
  - New or increased frequency to void
  - New or increased urinary retention
  - Gross hematuria
  - Acute Dysuria
  - Supra-pubic pain or tenderness
  - New onset Costovertebral angle pain or tenderness
  - Episode of autonomic dysflexia with no other apparent cause

- **Note: You must think about the older adult and look for all causes for changes in mental status in the older patient population and not assume it is UTI. Symptoms that are not ALWAYS associated with UTI include smelly urine, cloudy urine, changes in cognitive function or activities of daily living require full clinical assessment.**

Evaluation

- A decreased incidence of UTI, will confirm a change towards Best Practice.
- A decreased incidence of Bacteremia associated with urinary tract system will indicate a change towards Best Practice.

Monitoring

- Direct observation of holistic assessment, standardized care and management of indwelling urethral catheter, evaluation of systems, and follow up.
- Ongoing audits – chart reviews, and/or utilizing Care Rounds

Documentation

Patient Care Record (i.e.: tube/drain form. Narrative Notes, Nurses' Notes, Progress Notes), clearly labelled with PCIS labels:

a. Assessment data (i.e.: clinical indications requiring indwelling urethral catheter)
b. Record intake and output (volume drained via indwelling urinary catheter, and/or void volume plus residual volume drained by in/out catheter - PVR)
c. Interventions and response to treatment:
   - Catheter removed – ensure date and time of catheter removal is documented in Patient Care Record or electronic health record. Once catheter is removed, document time of first void and PVR. Implement strategies to facilitate voiding and prevent reinsertion of indwelling urethral catheter (i.e.: intermittent urinary catheter, prompted voiding or timed voiding, and adequate hydration (see D-00-07-30040).
d. Patient outcomes
e. Patient teaching
f. Consultation with Physician or appropriate health care professional and any related orders for ongoing management

Document in Kardex:

a. Insertion and planned removal date
b. Catheter information – size and type
c. Clinical indicator met for indwelling catheter

Order Sheet/Directive form

a. Use daily reminder systems to target opportunities to remove catheter
b. Ensure physician referral to Home Health as needed

Related Documents

- D-00-12-30111: Intermittent Urinary catheter insertion (aseptic technique)
- D-00-07-30108: Indwelling Urinary catheter: Care and Management (short term)
- D-00-12-30109: Indwelling Urinary catheter: Procedure for Insertion and Removal
- D-00-07-30040: Hydration: Promoting Fluid intake and Preventing Dehydration
- Bladder Scanner: see Urinary Retention
- VA: C-590: Delirium

References

1. APIC (2008). Guide to the elimination of catheter-associated urinary tract infections (CAUTIs). Washington, D.C. Retrieved August 16, 2012 from http://www.apic.org/Resource_/EliminationGuideForm/c0790db8-2aca-4179-a7ae-676c27592de2/File/APIC-CAUTI-Guide.pdf
2. Health Protection Scotland (2012). Targeted literature review: What are the key infection prevention and control recommendations to inform a urinary catheter insertion quality improvement tool? Author. Retrieved June 11, 2012 from http://www.documents.hps.scot.nhs.uk/hai/infection-control/evidence-for-care-bundles/literature-reviews/urinary-catheter-insertion-review.pdf
3. Institute for Health Improvement (2011). How-to-guide: Prevent catheter-associated urinary tract infections. Cambridge, MA: Author. Retrieved June 11, 2012 from http://www.ihi.org/explore/CAUTI/Pages/default.aspx
4. Madeo M. Roodhouse A.J. (2009) Reducing the risks associated with urinary catheters. Nursing Standard. 23(29), pg 47-5.
5. Nazarko, L. (2008). Reducing the risk of catheter-realted urinary tract infection. British Journal of Nursing. 17 916). Pg. 1002-1010.
6. Royal College of Nursing (2012). Catheter care: RCN guidance for nurses. London, Great Britain. Accessed August 16, 2012 from http://www.rcn.org.uk/__data/assets/pdf_file/0018/157410/003237.pdf
7. Schaeffer, A. J. (2010). Placement and management of urinary catheters. UpToDate. Retrieved August 01 2012 from http://www.uptodate.com
8. Vancouver Coastal Health – Regional PolicyNet (2010). Indwelling urinary catheter: Guideline to prevent catheter associated urinary tract infections (CAUTI) – Adult.
9. Vancouver Coastal Health – Coastal PolicyNet (Feb 2009). Guideline: Catheters Urinary: In-dwelling and/or Straight In and Out - Insertion, Removal - PCG C-15,
10. Vancouver Coastal Health – Vancouver Acute PolicyNet (Feb 2009). Guideline: Indwelling Urethral Catheter: Care and Management - PCG C-190.
11. Royal College of Nursing (2012). Catheter care: RCN guidance for nurses. London, Great Britain. Accessed August 16, 2012 from http://www.rcn.org.uk/__data/assets/pdf_file/0018/157410/003237.pdf
12. SARI (2011). A Strategy for the Control of Antimicrobial Resistance in Ireland: Guidelines for the Prevention of Catheter-associated Urinary Tract Infection. HSE Health Protection Surveillance Center.
13. Schaeffer, A. J. (2010). Placement and management of urinary catheters. UpToDate. Retrieved August 01 2012 from http://www.uptodate.com
14. Society of Urological Nurses and Associates (SUNA) (2005). Clinical Practice Guidelines: Male urethral catheterization. Author. Accessed August 16, 2012 from http://www.fycurology.com/male_catheterization.pdf
15. SUNA (2005). Clinical Practice Guidelines: Female urethral catheterization. Author. Accessed August 16, 2012 from http://www.fycurology.com/female_catheterization.pdf

16. Vancouver Coastal Health (2010). Indwelling urinary catheter: Guideline to prevent catheter associated urinary tract infections (CAUTI) – Adult. Author: VCH.
17. Centres for Disease Control and Prevention (CDC). Guideline for Prevention of Catheter-Associated Urinary Tract Infections. ; 2009.
18. VCH CPD C-550: Continence Promotion and Maintenance
19. Lo E, Nicolle L, Classen D, et al. Strategies to prevent catheter-associated urinary tract infection in acute care hospitals. Infection Control Hospital Epidemiol 2008 Oct;29: Suppl 1: S41-50.
20. McGarvey E., BC Health Authority Leads for RN Scope of Practice. Registered nurse initiated activity decision support tool: nurse initiated medication administration to treat a condition. British Columbia; 2008
21. Parker D, Callan L, Harwood J, Thompson DL, Wilde M, Gray M. Nursing interventions to reduce the risk of catheter-associated urinary tract infection. Part 1: Catheter selection. J. Wound Ostomy Continence Nurs. 2009 Jan-Feb; 36(1):23-34
22. Newman DK. Removing Indwelling Catheters in Acute Care: A step-by-step Clinical Pathway for Nurses, 2009. Available at www.urotoday.com. Accessed Mar 11, 2010
23. Ciavarella DJ, Ritter J. Strategies to prevent catheter-associated urinary tract infection. Infect.Control Hosp.Epidemiol. 2009 04;30(4):404-405.
24. Wein, A. J., Schaeffer, A. J., Schaeffer,E. M.; Infection of the Urinary Tract: Campbell-Walsh, Urology 9th Edition (2007), chapter 8,pg. 237
25. Curran,E, Murdoch, H. Aiming to reduce catheter associated urinary tract Infections (CAUTI) by adopting a checklist and bundle to achieve sustained system improvements. Infection Prevention Society 2009. J INFECT PREV 2009;10 (2):57-61
26. Richens, Y.; Complications of catheterization; British Journal of Midwifery, 2007 Oct.15(10): 622, 624-625
27. Journal of Infection Prevention 2009; 10(2):44-48.
28. Cochran, S. Care of the indwelling urinary catheter: Is it evidenced based? J Wound Ostomy Continence Nurse. 2007: 34 (3); 282-288.
29. Miles, G. & Schroeder, J. An evidenced-based approach to urinary catheter changes. British Journal of Community Nursing. 2009: 14 (5); 182-7.

Revised by

Developer Lead: Practice Initiatives Lead, Professional Practice, Coastal

Regional CAUTI Steering Group 2014

Director, Medical Administration/Quality & Patient Safety/Perioperative Services	Richmond
Director, Professional Practice, Nursing	Vancouver
Operations Director, Surgical Services	Vancouver
Regional Medical Director, Infection Control/Medical Microbiologist	Regional
Infection Control Practitioner	Richmond
Director, Regional Clinical Service Planning & Strategic Development Medicine and Critical Care Council	Regional
Epidemiologist & Manager, Surveillance and Performance Measurement	Quality & Patient Safety
Practice Lead, Nursing, Professional Practice	Vancouver
Practice Initiatives Lead, Professional Practice	Coastal
Urologist	Richmond
Project Manager, Quality & Patient Safety	Vancouver
Quality Improvement Specialist, Quality & Utilization Improvement	Providence

Clinical Quality & Patient Safety Officer	Richmond
Director, Clinical Quality and Patient Safety	Coastal
Medical Microbiologist	Vancouver
Medicine Program Director, Clinical Site Director MSJ	Providence

Endorsed by

VCH: *(Regional SharePoint 2nd Reading)*
Health Authority & Area Specific Interprofessional Advisory Council Chairs (HAIAC)
Health Authority Professional Specific Advisory Council Chairs (HAPSAC)
Operations Directors
Professional Practice Directors:

Final Sign-off & Approved for Posting by

Vice President Professional Practice and Chief Clinical Information Officer, VGH

Date of Creation/Review/Revision

Original publication date: December 30, 2010
Revised: March 18, 2011 *(Practice Update);*
August 13, 2014
January 13, 2016 (minor revision)

Appendix A: Definitions

Anti-microbial	Substance that kills or inhibits the growth of microorganisms
Bacteremia	The presence of bacteria in the blood. (Mosby's Medical Dictionary 8th edition).
Bacteriuria	Bacteria in urine. *Frequently present without associated UTI*.
Biofilm	A densely adherent polysaccharide structure that provides a shelter for bacterial growth & reproduction on the catheter. May be established within hours or days of catheterization.
CAUTI	Catheter Associated Urinary Tract Infection
HAI	Healthcare–Associated Infection (formerly known as nosocomial)
Long - term catheterization	Remains indwelling greater than 2 weeks
Short - term catheterization	Remains indwelling less than or equal to 2 weeks
Uropathogens	Infective agents in the urinary tract
Urinary retention -acute, symptomatic	Inability to void despite urge to void
Urinalysis	Physical, chemical or microscopic analysis or examination of urine
Urine culture screen	Includes routine urinalysis and screen for bacteria and white blood cells.
Urinary retention -chronic, asymptomatic	Inability to void, with no urge to void, incomplete emptying with large volume urine residual
UTI	Urinary tract infection

Appendix B: Urine Culture at VCH Lab (excludes VGH)

Vancouver CoastalHealth
Promoting wellness. Ensuring care.

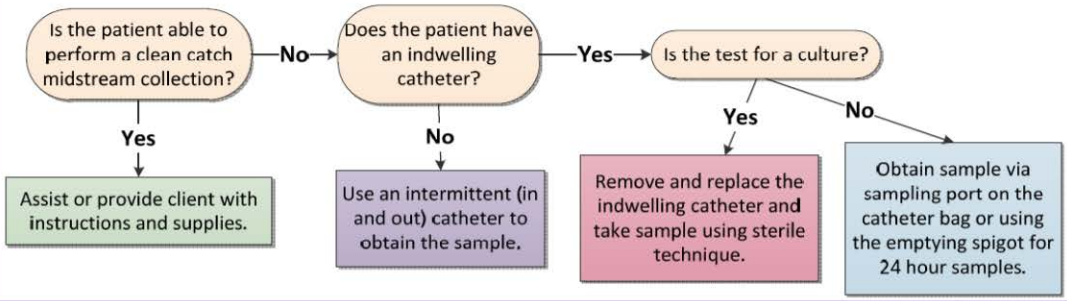
Urine Culture at VCH Lab

Frequently Asked Questions

How do I collect the urine sample?

Using the sterile orange top container

1. **Preferred option:** Clean catch midstream urine
   Alternate options: Insert and remove an intermittent catheter (in & out)
   OR
   Replace a current indwelling catheter
2. Dip UriSwab into sterile orange top container for 5 seconds.
3. Pour urine into urinalysis tube.
4. Label UriSwab and Urinalysis tube lengthwise.
5. Send UriSwab and Urinalysis tube to the lab in the same specimen bag.



Principles of specimen preparation:

- UriSwab cannot be dipped into the urinalysis tube because the urinalysis tube is not sterile.
- Samples should be sent to lab already separated into a urinalysis tube and a UriSwab, unless the sample is less than 3 mL
- Urine should not be poured into the UriSwab tube, as the sponge is designed to soak up the correct amount of urine. The sponge needs to be dipped in the urine (held in the stream or into the orange top container) for 5 seconds.
- Sample should be sent to the lab ASAP so accurate testing can be performed within 2 hours of collection.

Professional Practice Nursing, Vancouver Acute
Date: 9-Nov-15

Key Principles

- Culture only if SYMPTOMS of UTI are present
- Cultures should not be taken for:
- Smelly, cloudy urine
- For patients without symptoms of UTI
- As a routine

Understanding Culture Results

- Not all positive cultures mean the patient has an infection – over 50% of elderly people have bacteria in their urine without an infection
- Mixed cultures may suggest poor collection technique/contamination
- Treatment is only required for positive cultures with signs, symptoms and/or laboratory evidence of infection

What is the Difference between UTI vs. Asymptomatic Bacteriuria (ABU)?

- Both UTI and ABU result in isolation of significant quantities of bacteria in urine
- KEY DIFFERENCE is that UTI involves presence of systemic or local genitourinary signs or symptoms
- ABU does NOT require antibiotic treatment
- No benefit to treatment of ABU; Instead, may cause increased toxicity risk and antibiotic resistance

Appendix C: Urine Culture at VGH Lab

Vancouver CoastalHealth
Promoting wellness. Ensuring care.

Urine Culture at VGH Lab
Frequently Asked Questions

What is changing for urine cultures?
July 22, 2015 the VGH lab implemented use of an automated urinalysis system and new protocol for urine culture. When urine culture is ordered, urinalysis is performed and a cytometry test completes urine culture screen**. This test detects the number of bacteria and WBCs in the sample. The results of the urinalysis and urine culture screens are available within 2 hours. A urine culture is completed if indicated. Prior to July 22, 2015, urine culture results took 2-3 days to obtain, and we needed to submit a separate request for urinalysis, which often was missed.
Validation Period: July 22, 2015 – November 1, 2015 A urinalysis, urine culture screen, AND a culture will be completed on all samples that are sent. Lab is validating their criteria for doing a urine culture. **November 2, 2015 - onward** A urine culture screen will be completed on all samples ordered as "UCSB - Urinalysis, Culture if Indicated" but culture will only be completed on samples where WBC and/or bacteria are detected on the culture screen. A culture can still be requested in the absence of WBC and/or bacteria by physician consultation with the Medical Microbiologist on-call.

What is the difference between a urinalysis and a culture screen?	
Urinalysis	**Urine Culture Screen**
PCIS Order: "Urinalysis Routine" or "Urinalysis with Microscopic"	PCIS Order: "UCSB – Urinalysis, Culture if Indicated"
Nurses only need to send a urinalysis tube.  Will get one set of results (Leukocytes, blood, glucose, protein, etc)	Nurses need to send a urinalysis tube AND UriSwab.  **AND**  Will get two sets of results – urinalysis with a preliminary urine culture screen, then will get a urine culture result.

What's the difference between a urine culture and a urine culture screen?
Urine culture: Incubating the sample on a growth medium for 2-3 days, then manually looking at growth and sensitivities. ** **Urine Culture Screen**: Using an analyzer device to provide a bacteria and white blood cell count in a sample. The device also completes the urinalysis testing.

Professional Practice Nursing, Vancouver Acute
Date: 9-Nov-15

Appendix D: Algorithm – Management of Catheter Associated Urinary Tract Infections (CAUTI) in Adult - Nursing

KEY POINTS:

1. **Malodorous/cloudy urine alone is NOT a sign/symptom of UTI and is NOT an indication to obtain urine cultures**
2. **Changes in cognitive function and activities of daily living REQUIRE clinical assessment; never assume these are due to UTI**
3. **Urine cultures should ALWAYS be collected midstream, by in/out catheterization or through a new catheter (unless contraindicated)**
4. **Positive urine cultures in asymptomatic patients should NOT be treated except in pregnancy or prior to urologic/ gynaecologic surgery**

ASSESSMENT: Signs and Symptoms of Suspected CAUTI

One of the following in febrile patients (oral temp greater than 37.8°C or 1°C above baseline in Spinal Cord Injury) or two of the following in afebrile patients:

1. Suprapubic pain
2. Gross hematuria or pyuria (pus in urine)
3. New onset of acute costovertebral angle pain or tenderness
4. Episode of autonomic dysreflexia (with no apparent cause)
5. Swelling, or tenderness of testes, epididymis or prostate

NOTE: Only after clinical assessment and ruling-out of other possible causes should changes in mental status and functional decline, and sudden fever, rigors or new-onset hypotension suggest UTI in patients; use clinical judgment.

For Geriatric and Spinal Cord Injury (including conus/cauda equina): UTI may present atypically; clinical assessment should be used to guide decision for urine culture and urinalysis.

Presence of indwelling catheter?

YES

Assess need for catheter (see Clinical indications):

- Remove catheter if NO clinical indication present as per Removal Algorithm (D-00-12-30109) & reassess in 24 hours; see UTI management information on Quality and Patient Safety portal if UTI suspect after catheter removal **OR**
- If catheter cannot be removed then replace catheter (if in place greater than 24 hours) before urine collection unless contraindicated (e.g., catheter placed by Urology, urethral stricture/trauma, patient unable to tolerate procedure)

Obtain urine for **urinalysis** **AND** Obtain urine for **urine culture**
(to check for leukocyte esterase (LE), and nitrites (NIT)

NOTE: In stable patients with non-specific symptoms where UTI is suspected, a **urinalysis** *alone* may be obtained to screen for a possible UTI prior to sending **urine cultures**: a UA specimen may be obtained from a sampling port of an *existing* catheter, a C&S specimen

Special Considerations:

a. UA can be ordered alone for screening purposes
b. Applicable to VA sites only: If urine cultures screen is suggestive of infection, urine culture will be processed

LE (–) (i.e., Urine WBC 0 to 5/hpf) **AND/OR**
NIT (–) (WBC/bacteria not detected)

CAUTI is unlikely.
(Only 0 to 20% chance of having a UTI)
Consult physician/nurse practitioner for consideration of alternate diagnosis.

LE (+) (i.e., Urine WBC greater than 5/hpf) **AND/OR**
NIT (+) (WBC/bacteria detected)

CAUTI is possible: Presence of Symptoms?

- Fever, costovertebral angle tenderness, new-onset hypotension or signs of sepsis (refer to site specific sepsis PPO).

Contact physician/nurse practitioner with assessment details for them to determine if new diagnosis and empiric (antibiotic) treatment is necessary.

If treatment initiated, the most responsible physician is to review culture and sensitivity results at 48 hours and adjust therapy based on the results

Adapted from ASPIRES (updated Oct 2015)

Appendix E: Biofilm: Life Cycle