SASKATCHEWAN REGISTERED NURSES' ASSOCIATION

RNs WITH ADDITIONAL AUTHORIZED PRACTICE
CLINICAL DECISION TOOL
DECEMBER 1, 2016

CYSTITIS ADULT

DEFINITION

Description:

- Cystitis is an acute infection of the urinary bladder (lower urinary tract) and can occur alone or in conjunction with pyelonephritis.
- This topic refers primarily to infectious cystitis; other urinary tract infections (UTIs) such as pyelonephritis, are addressed in other SRNA CDTs.
- Uncomplicated UTI: occurs in clients who have a normal, unobstructed genitourinary tract, who have no history of recent instrumentation, and whose symptoms are confined to the lower urinary tract. Uncomplicated UTIs are most common in young, sexually active women.
- Complicated UTI: is an infection of the lower or upper urinary tract in the presence of an anatomic abnormality, a functional abnormality, or a urinary catheter.
  - All pregnant females and males are considered to present with complicated UTIs.
- Recurrent UTI: is a symptomatic UTI that follows resolution of an earlier episode, usually after appropriate treatment.
  - No single definition of the frequency of recurrent UTI exists but three or more infections per year are commonly understood to be "recurrent".
  - Most recurrences are thought to represent reinfection rather than relapse.

IMMEDIATE CONSULTATION REQUIRED IN THE FOLLOWING SITUATIONS

- Gross hematuria
- Temperature > 38°C oral with chills and increased respiration (> 24 resp/minute) and hypotension or hypertension
- Acute abdominal pain
- Immunocompromised client
- New onset edema
- Immediate consultation must take place for any other factor listed under complicated UTI, excluding pregnant females.

CAUSES

- Most UTIs in females are caused by bacteria originating from bowel flora:
  - *Escherichia coli* (*E. coli*) is the causative organism in 80% of cases of uncomplicated cystitis

  - *Staphylococcus saprophyticus* accounts for 15% of infections
  - Enterobacteriaceae (e.g., Klebsiella, Proteus, Enterobacter, Pseudomonas) also contribute
  - Candida is associated with nosocomial UTI
- In males:
  - *E. coli* (80% of infections)
  - Other organisms include: Klebsiella, Enterobacter, Proteus, Pseudomonas, Serratia, *Streptococcus faecalis*, and Staphylococcus spp.

PREDISPOSING AND RISK FACTORS

Female:

- Previous UTI
- Diabetes mellitus
- Pregnancy
- Sexual activity
- Use of spermicides or diaphragm
- Underlying abnormalities of the urinary tract such as tumours, calculi, strictures, incomplete bladder emptying, urinary incontinence, neurogenic bladder
- Catheterization
- Recent antibiotic use
- Poor hygiene
- Estrogen deficiency
- Inadequate fluid intake

Male:

- Benign prostatic hypertrophy (BPH)
- Cognitive impairment
- Fecal incontinence
- Urinary incontinence
- Anal intercourse
- Recent urological surgery, catheterization
- Infection of the prostate or kidney
- Urinary tract instrumentation
- Immunocompromised
- Outlet obstruction

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HISTORY

Female (any or all may be present):

- Burning during urination
- Dysuria (painful or difficult urination)
- Urgency (a sudden almost uncontrollable need to urinate)
- Frequency
- Sensation of incomplete bladder emptying
- Blood in urine
- Lower abdominal pain or cramping
- Offensive odour of urine
- Nocturia
- Sudden onset of urinary incontinence
- Low back pain

Male:

- Enquire as to all of the above symptoms plus symptoms that may indicate prostatitis, such as:
  - Hesitancy
  - Slow urinary stream
  - Dribbling of urine
  - Nocturia
- Suprapubic tenderness and urethral discomfort

PHYSICAL FINDINGS

There may be no physical findings in cystitis.

Female:

- Suprapubic tenderness
- Urethral or vaginal tenderness
- Fever or costovertebral angle tenderness indicates upper UTI

Male:

- Systemic symptoms (e.g., chills, fever) present with concomitant pyelonephritis or prostatitis

DIFFERENTIAL DIAGNOSIS

Female:

- Vaginitis
- Asymptomatic bacteriuria
- Sexually transmitted infections (STIs) causing urethritis or pyuria
- Hematuria from causes other than infection (e.g., neoplasm, calculi)
- Interstitial cystitis
- Psychological dysfunction

Male:

- Anatomic or functional pathology
- Urethritis/STIs
- Infection in other sites of the genitourinary tract (e.g., epididymis)
- Prostate disorders (e.g., BPH, prostatitis)

COMPLICATIONS

Female:

- Pyelonephritis or sepsis
- Renal abscess
- Acute urinary outlet obstruction
- Pregnant females are at higher risk of pyelonephritis
- Recurrent infection

Male:

- Pyelonephritis or sepsis
- Renal abscess
- Acute urinary outlet obstruction
- Recurrent infection

INVESTIGATIONS AND DIAGNOSTIC TESTS

Female and Male:

- Dipstick urinalysis:
  - Leukocyte esterase
  - Nitrite tests are useful with nitrite-producing organisms (e.g., Enterococci, *S. saprophyticus*, Acinetobacter, Chlamydia)

- Urine culture: only indicated if diagnosis is unclear or client has recurrent infections (> 3 infections per year) and resistance is suspected. Other situations where urine culture is recommended include:
  - All males
  - All pregnant females
  - Elderly women
  - Those with indwelling catheters
- Consider differentiating UTI from STI based on history and risk factors, and if present, test and treat for Chlamydia and *Neisseria gonorrhoeae*.

MAKING THE DIAGNOSIS

Female:

- Presumptive diagnosis of UTI can be made if either:
  - Dysuria and frequency are present
  - Dipstick urinalysis shows positive result for nitrite or positive leukocyte esterase
- Women with recurrent UTI may accurately self-diagnose UTI
- Elderly clients with UTIs may present with atypical symptoms

Male:

- UTIs are less common in males. Alternate diagnoses should be considered.
- As stated above, all males presenting with symptoms of UTI should have a urine culture performed.

MANAGEMENT AND INTERVENTIONS

Goals of Treatment

Female and Male:

- Relieve symptoms of acute infection
- Prevent ascending infection
- Prevent recurrent infection
- Prevent complications

Non-Pharmacological Interventions

- Drink plenty of water and other fluids every day (8-10 glasses)

- Empty bladder as soon as urge is felt
- Females should wipe from front to back after using the toilet
- Try to void before, and as soon after, intercourse

Pharmacological Interventions

Uncomplicated UTI (most common in young, sexually active women)

- Nitrofurantoin (Macrobid) 100 mg orally q12h for 5 days
- Sulfamethoxazole/Trimethoprim (SMX/TMP) 400/80 2 tabs orally q12h for 3 days or 800/160 (DS) 1 tab orally q12h for 3 days in areas where *E. coli* resistance is < 20%
- Fosfomycin 3 g orally one dose

Complicated UTI (includes males, excluding pregnant females)

- Consult with a physician/RN(NP)

Pregnant Women:

- Cephalexin 250-500 mg orally q6h for 7 days
- Amoxicillin 500 mg orally q8h for 7 days
- ** Nitrofurantoin (Macrobid) 100 mg orally q12h for 7 days
- Fosfomycin 3 g orally one dose

**Nitrofurantoin is contraindicated in pregnant clients at term (36-42 weeks' gestation) and during labour.

Male:

Consultation with a physician/RN(NP) should take place prior to treatment. Some options the physician/RN(NP) may recommend include the following:

- SMX/TMP 400/80 2 tabs orally q12h or 800/160 (DS) 1 tab orally q12h for 7-10 days
- Nitrofurantoin (Macrobid) 100 mg orally q12h for 7-10 days
- Ciprofloxin 500 mg orally q12h for 7-10 days

Client and Caregiver Information

- Counsel client about appropriate use of medications (dose, frequency, side effects, the need to complete entire course of treatment, etc.).

- Instruct client in proper perineal hygiene (wiping from front to back) to prevent recurrence.
- If a catheter is present, consult a physician/RN(NP) for guidance.

Monitoring and Follow-up

- First or rare UTI: in young or middle-aged non-pregnant females, no follow-up is required if cured after antibiotic therapy.

Referral

- All who present with the criteria listed in the "Immediate Consultation Required in the Following Situations" section
- Anyone who does not respond to listed antibiotic treatment
- Recurrent UTI
- Males

DOCUMENTATION

- As per employer policy

REFERENCES

Anti-infective Review Panel. (2013). *Anti-infective guidelines for community-acquired infections*. Toronto: MUMS Guideline Clearinghouse.

Colgan, R., & Williams, M. (2011). Diagnosis and treatment of acute uncomplicated cystitis. *American Family Physician*, *84*(7), 771–776.

Das, A., & Gomella, L. G. (2014). *Urinary tract infection in females; Urinary tract infections in males*. In Lexicomp 5-Minute Clinical Consult. Retrieved from Lexi-Comp Inc. Hudson, OH.

Haddock, G. (2015). Improving the management of urinary tract infection. *Nursing & Residential Care*, *17*(1), 22–25.

Health Canada. (2011). *First Nations and Inuit health: Clinical practice guidelines for nurses in primary care*. Ottawa, ON: Author. Retrieved from http://www.hc-sc.gc.ca

Rx Files Academic Detailing Program. (2014). *Rx Files: Drug comparison charts* (10th ed.). Saskatoon, SK: Saskatoon Health Region.

Umeed, M. (2012). Take home messages in the management of cystitis. *Practice Nurse*, *42*(12), 13–16.