Care and Treatment Plan: Lower Urinary Tract Infection – *Adult and Pediatric*

Definition

Bacterial infection of the bladder, also known as cystitis, caused by bacteria multiplying in the urine.

Uncomplicated UTIs are acute infections of the bladder in otherwise healthy women.

UTIs are considered complicated in the following circumstances:

- All UTIs in men
- Anatomic or functional abnormalities of the GU system such as obstruction, neurogenic bladder, stones, prostatic hypertrophy, vesicoureteral reflux
- Long term catheterization or recent GU instrumentation
- Treatment for a UTI within the previous month
- Renal failure, poorly controlled diabetes or clients who are immunocompromised

Registered Nurses with **RN First Call** Certified Practice (RN(C)) designation are authorized to manage, diagnose, and treat **uncomplicated UTIs in adults only.**

Registered Nurses with **Remote Nursing** Certified Practice (RN(C)) designation are authorized to manage, diagnose and treat lower UTIs in adults, and in children who are **2 years of age are and older**. Younger children require consultation with or referral to a physician or nurse practitioner.

Management and Intervention

Goals of Treatment

- Eradicate infection
- Relieve symptoms
- Prevent complications (ascending infection)

Non-pharmacologic Interventions

- Rest
- Hydrate with 8-10 glasses of fluid per day

Pharmacologic Interventions: Adult

Note: Nitrofurantoin, in both formulations, has renal and geriatric cautions.

Prior to ordering Nitrofurantoin, please consult MD/NP if patient is elderly or has a history, or labs, suggestive of renal dysfunction.

Antibiotics: Adult Acute Uncomplicated UTI

Primary Regimen

Note: Nitrofurantoin, in both formulations, has renal and geriatric cautions.

Prior to ordering Nitrofurantoin, please consult MD/NP if patient is elderly or has a history, or labs, suggestive of renal dysfunction.

- Nitrofurantoin (monohydrate/macrocrystal formulation - Macrobid) 100mg PO BID. for 5 days, or
- Nitrofurantoin (macrocrystal formulation - Macrodantin) 50-100mg PO QID for 5 days, or
- Fosfomycin 3g PO for one dose

Alternative Regimen

Second Choice

- Trimethoprim 160mg/sulfamethoxazole 800mg, 1 tab PO BID for 3 days

Third Choice

- Cefixime 400mg PO daily for 5-7 days

If Allergic or Resistance Risk to Above Medications

- Amoxicillin/clavulanate 875/125mg, 1 tab PO BID for 5-7 days

If Allergic to Amoxicillin/Clavulanate

- Ciprofloxacin 250mg PO BID for 3 days

Antibiotics: Adult Male, UTI (Acute Cystitis)

Note: All UTIs in men are considered complicated.

Primary Regimen

- Trimethoprim 160mg/sulfamethoxazole 800mg, 1 tab PO BID for 7 days, or
- Ciprofloxacin 500mg PO BID for 7 days

Alternate Regimen

- Amoxicillin/clavulanate 875/125mg, 1 tab PO BID for 7 days, or
- Cephalexin 500mg PO QID for 7 days

Antibiotics: Complicated UTI (e.g., Obstruction, Reflux, Azotemia) or Urinary Catheter-Related Infection

- If low risk of multi-drug resistant infection:
  - Ciprofloxacin 500 mg PO BID for 7-14 days
- For high risk of multi-drug resistant infection consult physician or nurse practitioner

Note: Treatment for pyelonephritis is not included in this document as it is an upper UTI.

Note: Ensure sensitivity of organism to the chosen antibiotic once culture and sensitivity result are returned.
If resistant, consult with or refer to a physician or nurse practitioner.

Pregnant and Breastfeeding Person

- Nitrofurantoin (monohydrate/macrocrystal formulation - Macrobid) 100mg PO BID for 7 days (do not use in third trimester or labour), or
- Nitrofurantoin (macrocrystal formulation - Macrodantin) 50-100mg PO QID for 7 days (do not use in third trimester or labour), or
- Cefixime 400mg PO daily for 7 days

Pregnant Person

- *DO NOT USE*: Nitrofurantoin it is contraindicated in pregnant patients in third trimester including at term (38 to 42 weeks' gestation), during labor and delivery, or when the onset of labor is imminent. Alternative antibiotics should be used in pregnant patients with G-6-PD deficiency
- Use of nitrofurantoin earlier in pregnancy should *ONLY* be used after consultation with physician or nurse practitioner
- Amoxicillin/clavulanate should *ONLY* be used during pregnancy after consultation with physician or nurse practitioner
- *DO NOT USE* trimethoprim/sulfamethoxazole or ciprofloxacin

Breastfeeding Person

- Nitrofurantoin, amoxicillin/clavulanate should only be used during breast feeding after consultation with physician or nurse practitioner
- *DO NOT USE* trimethoprim/sulfamethoxazole or ciprofloxacin

Pharmacologic Interventions: Pediatric

Antibiotics: Treat only if Routine and Microscopic (R&M) results are positive for nitrites, leukocyte esterase, protein or blood

Children 2 years and older

- Cefixime 8mg/kg/day PO divided BID for 5-7 days, or
- if weight appropriate and able to swallow nitrofurantoin tabs, Nitrofurantoin (Macrodantin) 5-7mg/kg/day PO divided QID for 5 days

Second Line

- Trimethoprim 8mg/ml - Sulfamethoxazole 40mg/ml. 6-12mg/kg per day PO BID for 3 days. *Dosing is based on Trimethoprim*, or
- Amoxicillin – Clavulanate 40mg/kg/day po divided TID for 5-7 days. *Dosing is based on the Amoxicillin component*

Pregnant and Breastfeeding Youth

- Nitrofurantoin (monohydrate/macrocrystal formulation - Macrobid) 100mg, PO BID for 7 days (do not use in third trimester or labour), or
- Nitrofurantoin (macrocrystal formulation - Macrodantin) 50-100mg, PO QID for 7 days (do not use in third trimester or labour), or
- Cefixime 400mg PO daily for 7 days.
- *DO NOT USE Trimethoprim 160mg/Sulphamethoxazole 800mg*

Consult with a physician or nurse practitioner if client allergic to the above medications.

Potential Complications

- Ascending infection (Pyelonephritis)
- Chronic cystitis

Additional Pediatric Considerations:

- Recurrent UTI
- Sepsis (in neonates and infants)
- Renal Scaring
- Meningitis

Client Education/Discharge Information

- Advise on condition, treatment and expected course of disease process
- Counsel to return to clinic if fever develops or symptoms do not improve in 48-72 hours
- Counsel on appropriate use of medications (dose, frequency, side effects, need to complete entire course of medications)
- Recommend increasing fluid intake to 8-10 glasses per day
- Counsel on sitting in a warm tub to relieve symptoms of dysuria
- For women, advise regarding wiping front to back after a bowel movement
- Counsel on not using douches
- Counsel on avoidance of bubble baths

- Advise that voiding after intercourse may be beneficial
- Advise as to alternative contraception to avoid spermicide use
- Use appropriate cleaning for sex toys and advise against sharing sex toys

Additional Pediatric Considerations:

- Return to clinic if fever continues or symptoms do not improve in 2 days
- Increase fluid intake while child is unwell (1.5 times usual intake)
- For females, advise regarding wiping front to back after a bowel movement

Monitoring and Follow-up

- If symptoms do not begin to resolve in 48-72 hours, or if symptoms progress despite treatment, patient should return to the clinic for reassessment
- Pregnant women who present with symptoms of UTI are recommended to have urine for urinalysis and culture and sensitivity as indicated
- All pregnant women treated for UTIs are recommended to have a urinalysis and urine for culture and sensitivity 1-2 weeks following treatment and then as indicated

Additional Pediatric Considerations:

- Follow up in 24-48 hours, make sure that antibiotics are sensitive to organisms
- If symptoms progress despite treatment, client should return to the clinic for reassessment and consultation with a physician or nurse practitioner
- Arrange follow up for one week after the completion of therapy
- Discuss follow-up urinalysis with physician or nurse practitioner

Consultation and/or Referral

- Presence of complicating factors suggestive of upper UTI (fever [>38° C] chills, flank pain, CVA tenderness, nausea and vomiting)
- Women presenting with a second UTI within one month (or a third UTI within two months) or more than three in one year should be referred to a physician or nurse practitioner
- Women presenting with complicated UTIs require urine for culture and sensitivity and consultation with and/or referral to a physician or nurse practitioner
- Men who present with an uncertain cause or more than one UTI should be referred to a physician or nurse practitioner for further evaluation.
- Men greater than or equal to 50 years of age who present with a true (culture-positive) urinary tract infection for the first time should be referred to a physician or nurse practitioner for further evaluation.

Additional Pediatric Considerations:

- All infants less than 4 months of age or who look acutely ill must be referred to a physician or nurse practitioner
- Consult a physician or nurse practitioner for treatment failure after 72 hours
- Children presenting with symptoms of pyelonephritis such as high fever, abdomen, flank and CVA tenderness must be referred to a physician or nurse practitioner
- Following the first UTI, all children should be referred to a physician or nurse practitioner as they may require further investigation to rule out a congenital anomaly such as vesico-ureteral reflux

Documentation

- As per agency policy.

References

More recent editions of any of the items in the References List may have been published since this DST was published. If you have a newer version, please use it.

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