Department of Urology
Symptoms of Urinary Tract Infection (UTI) Nursing Protocol

I. Purpose:
To provide direction and clinical support for the timely and safe management by a registered nurse, of adult men and non-pregnant women with symptoms of urinary tract infection, with or without lab data in the Department of Urology clinics.

II. Indications:
This guideline offers the registered nurse (RN) a framework on timely, consistent, and appropriate information needed to make an assessment and offers guidelines for documentation for a patient who presents via phone call, patient portal, or RN visit with information relative to symptoms of urinary tract infection. This guideline categorizes symptoms as complicated and uncomplicated, appropriate measures of treatment for those symptoms, and medications used.

A. If a patient calls with signs and symptoms suggestive of UTI, the nurse will collect the information necessary to assess for uncomplicated or complicated UTI using the standardized template.
B. After the information has been obtained and the assessment decision has been made the nurse will continue to Section IV. Procedure.
C. If patient calls on Friday or on a day before a Holiday with symptoms of UTI whether uncomplicated or complicated, decision for antibiotic coverage must be processed before end of the day. Page provider to notify about In Basket Message,

Medications Included:
A. Bactrim DS 800/160 mg. (Sulfamethaxozole/Trimethoprim or TMP/SMX)
B. Macrobid 100 mg (Nitrofurantoin or Macrodantin)
C. Ciprofloxacin 500 mg (Cipro)
D. Levofoxacin 500 mg (Levaquin)
E. Keflex 500 mg (Cephelexin)
F. Amoxicillin 500 mg.
G. Pyridium 200 mg. (Phenazopyridine Hydrochloride) Requires a Prescription
H. Urispas (Flavoxate HCL)
I. AZO 100 mg (Contains Phenazopyridine hydrochloride) (OTC)
J. Uribel or Urelle (Methenamine, Sodium Phosphate Monobasic, PhenylSalicylate, methylene Blue, Hyoscycamine Sulfate) Requires a prescription.
III  Categorized by Uncomplicated and Complicated symptoms for UTI

NOTE: If patient is on Coumadin, regardless of complicated or uncomplicated symptoms, MD should be notified for appropriate treatment.

Uncomplicated Symptoms:
A. Symptoms of urinary tract infection that do meet criteria for treatment with phone triage:
   1. Burning with urination (Dysuria)
   2. Frequency, Urgency of new onset
   3. Characteristics: Foul smelling or cloudy urine
   4. Fever of 100.5 F or less
   5. New low back pain or bladder pain

B. Complicated Symptoms and patient history:
   Symptoms/events related to urinary tract infection that do not meet criteria for treatment with phone triage.
   1. Fever greater than 100.5 F
   2. Nausea, vomiting or flank pain
   3. New or worsening incontinence
   4. Nursing home resident
   5. History of greater than 5 UTI’s per year
   6. Treated for UTI within the past 30 days
   7. Unresponsive to current active treatment
   8. Current prophylactic antibiotics
   9. Chronic cystitis
   10. Intermittent self-catheterization
   11. Indwelling catheter (SPT or urethral)
   12. Urinary augmentation or diversion
   13. Neurogenic bladder
   14. Pregnancy
   15. Kidney stones
   16. Chronic renal or urologic disease
   17. Urinary tract instrumentation or surgery in last 30 days
   18. Polycystic kidneys
   19. Interstitial cystitis
   20. Current use of any antibiotic
   21. Taking immunosuppression medication
   22. History of urinary retention requiring catheterization
   23. Urethral stricture, urethral reconstructive surgery.

IV. Procedure – RN
A. Patient calls or presents with symptoms of UTI.
1. Generate MiChart new encounter using standardized UTI Nursing Template.
2. Assess symptoms/history as outlined per this protocol and determine if uncomplicated or complicated UTI.

B. **Uncomplicated UTI criteria met for phone treatment**

1. Place an order for patient to submit urine sample for microscopic U/A and C/S to any UMHS lab or outside lab.
      i. If patient brings urine sample to Taubman Clinic, instruct patient to take the urine sample to the lab.
      ii. If urine sample is to be processed in any of the other U of M system labs, note lab and phone number on the documentation template
      iii. Results of the lab studies within the U of M system will be sent directly to the provider results in-box.
      iv. RN will route encounter to the UTI Inbasket for results follow up. This will automatically go into the providers "co-sign clinic orders" box.
   
   b. Out-side of the U of M System Lab
      i. Initiate order in MiChart, print order, and Fax the requisition (with the face sheet) for the U/A and C/S to the appropriate lab and include fax number 734-615-0886 for return results.
      ii. Document lab of choice with phone number.
      iii. Route encounter to UTI Inbasket for results follow up. PA and administrative assistant will follow up on a daily basis.

2. On Friday or the day before a holiday, both Administrative Assistant and RN/PA will check for results for results follow up prior to the end of the day. Page provider to notify about In Basket Message.

3. Initiate order for antibiotic regime for uncomplicated UTI per this protocol pending culture results. **Instruct patient not to start the antibiotic treatment until after dropping off the urine sample.**
   a. In the order of preference, prescribe the following:
      i. If no Sulfa or Bactrim allergy: Bactrim DS 800/160mg, one tablet by mouth BID for 3 days for women and 7 days for men.
ii. If Sulfa or Bactrim allergy: Macrobid 100mg, one tablet by mouth. BID for 7 days women only. Do not prescribe for men.

iii. If allergy to Sulfa, Bactrim, and Macrobid: Cipro 500mg, one tablet by mouth. BID for 3 days for women and 7 days for men.

iv. Levaquin 500mg, one tablet by mouth once daily for 3 days for women and 7 days for men. (only if sensitive and no allergy to Cipro)

v. If allergy to Sulfa, Bactrim, Macrobid, Cipro, Levaquin: Keflex 500 mg, one tablet by mouth QID for 3 days for women and 7 days for men.

vi. If allergy to Sulfa, Bactrim, Macrobid, Cipro, Levaquin, Keflex: Amoxicillin 500 mg. by mouth TID x 7 days.

vi. If multiple allergies, discuss with provider.

b. Other Medications that may be offered:
   i. Pyridium (Phenazopyridine Hydrochloride) 200 mg by mouth every 8 hours as needed for bladder pain if patient desires. Dispense 12 tablets with no refills.
   ii. Urispas (Flavoxate HCL)100 mg by mouth every 8 hours as needed. Dispense 12 tablets with no refills.
   iii. AZO (contains phenazopyridine hydrochloride) 2 tablets (100 mg. tabs) by mouth TID with or after meals as needed for symptoms for 2 days only. Over the counter.
   i. Uribel or Urelle (Methanamine, Sodium Phosphate Monobasic, Phenyl Salicylate, Methylene Blue, Hyoscyamine Sulfate). These may be used interchangeably.

c. Other Instructions
   i. Instruct patient to start antibiotic only after submitting sample.
   ii. Instruct patient to hold prophylactic treatment such as nightly prophylactic antibiotics or methenamine combinations while taking antibiotic.
   iii. Inform patient to restart methanamine combinations after completion of antibiotic regimen. Check with provider about restarting prophylactic antibiotic.
d. Results of Urine culture and sensitivity

Preliminary/Final results are **negative**:
i. If preliminary or final culture comes back negative, confirm patient did not start the antibiotic until after obtaining urine sample. If true, instruct them to stop taking the antibiotic.
ii. If patient has persistent symptoms after the course of antibiotic, schedule a follow up visit with next available provider for evaluation.

Preliminary/Final culture is **positive**
i. Call patient to tell them to complete the antibiotic and ask them to call if symptoms are not relieved or if symptoms return after the antibiotic regimen is completed.
ii. Close Encounter and route to provider.

Preliminary/Final culture results are **resistant** to prescribed antibiotic.
i. Send note to provider requesting change in antibiotic.
ii. Call patient regarding new prescription and ask them to call if symptoms are not relieved or return after the full course.
iii. Order the newly prescribed antibiotic in MiChart. This will automatically go to the provider “co-sign clinic orders” box for signature.

Preliminary/Final culture results are **sensitive** to prescribed antibiotic.
i. If culture results show that the bacteria are sensitive to prescribed antibiotic – notify patient to complete full prescription.
ii. Ask patient to call back if symptoms are not relieved or return after the full course.

e. Close encounter and route to Provider, noting in Comments field for your information”.

4. **Complicated UTI criteria met.**

a. Place an order in MiChart to have patient submit urine sample for microscopic U/A and C/S to any UMHS lab or outside lab.
Inside U of M System Lab.
i. If patient brings urine sample to Taubman Clinic instruct patient to take the urine sample to the lab. If urine sample is to be processed in any of the other U of M system labs, note which lab on documentation template.

ii. Results of the lab studies within the U of M system will be sent directly to the provider results in-box.

Outside of the U of M System

i. Fax lab requisition for the U/A and C/S to the appropriate lab (with face sheet) and include fax number 734-615-0886 for return results. Note name of lab used on nursing documentation template.

b. Send note to provider with patient’s reported symptoms (per template) and request if treatment is needed while awaiting results of UA and C&S. Note should include detailed symptoms on template plus the following.
   i. Allergies
   ii. Patient is on Coumadin
   iii. Patient takes birth control pills and is there any chance patient is pregnant
   iv. The most recent urine culture results.
   v. Prior antibiotic used for treatment with successful outcome.
   vi. Creatinine level if history of poor renal function

c. Route encounter to UTI Inbasket for follow up per protocol.

d. Provider responds with further orders.
   i. Provider orders catheterized specimen
      1. Instruct patient to schedule an RN visit at Taubman Clinic, go to their PCP or local urologist, or obtain by self cathing and take sample to lab.
         a. If obtained at Taubman Center, perform POC U/A dipstick and then send on to lab for Micro U/A and C/S.
         b. If POC is negative for leukocytes and/or nitrites, document as
appropriate in MiChart, notify provider for further instructions. Send to Lab for Microscopic UA C&S as per MD order.

c. If POC U/A is positive for leukocytes and nitrites, notify provider and get further instruction for treatment while awaiting final results.

d. RN will post charges for RN visit, close encounter and route to UTI Inbasket for follow up.

2. If sample is taken to outside lab:
   a. Obtain name of local lab or name of urologist where sample will be obtained/taken.
   b. Initiate order in MiChart indicating this is a catheterized specimen, print requisition, and fax (with face sheet) to appropriate resource. Indicate on requisition catheterized urine sample for Micro U/A with C/S. Note fax number for return results.
   c. Leave encounter open and route to UTI Inbasket for follow up per protocol.

ii. Provider orders antibiotic while waiting for UA and C&S results.
   1. Initiate order MiChart and call patient with prescription information. Order goes to provider “co-sign clinic orders” box automatically.

iii. Provider states no further orders – await results of UA and C&S.
   1. Call patient and inform of plan.

e. Disposition of lab results
   i. Microscopic analysis:
      1. If negative return note to UTI Inbasket stating
      2. If positive for leukocytes and/or nitrites, send note to provider requesting if
treatment is needed prior to culture results.

ii. Preliminary culture result
1. If negative send note to provider asking for additional comments and/or orders.
2. If positive send note to provider asking if treatment is needed prior to final results.

iii. Final culture
1. If negative inform provider and call patient with results. If patient was placed on antibiotic, instruct patient to stop the antibiotic and inform provider of actions.
2. If positive and patient has been placed on antibiotic which is listed as susceptible, inform patient of results and instruct patient to finish the course.
3. Close note and route to provider.
4. If culture is positive and patient has been placed on antibiotic which is not susceptible, inform MD and request appropriate antibiotic.

iv. MD will respond and route the note back to the RN pool for follow up.
1. RN will order prescribed antibiotic via MiChart and will inform patient of the results of the culture along with the change in antibiotic coverage. Order will automatically go to provider’s “co-sign clinic orders” box.
2. Instruct patient to stop previously prescribed antibiotic and to take the newly prescribed antibiotic for the full course.

v. Instruct patient to call back if symptoms are not relieved or if symptoms return following full course of antibiotics.

5. Self Start Antibiotic – always MD initiated.
   a. If self-start antibiotic is initiated, MD must tell patient they need to call the clinic and inform RN when and where they submit the urine sample so results can be followed up per protocol. MD must tell patient to submit urine sample before they initiate self-start antibiotic.
6. Contraindication to Medical treatment
   a. **Bactrim DS:** Allergic to Sulfa or Trimethoprim. Patients with megaloblastic anemia due to folate deficiency. Use with caution for patients who are on Coumadin, have kidney disease, liver disease, asthma, decreased bone marrow function (bone marrow suppression), and certain metabolic disorder (G6PD deficiency). For pregnancy and **lactating mothers** should not be used near the expected delivery date because of possible harm to the unborn baby. Bactrim passes into breast milk.

   b. **Macrodantin:** Allergy to Macrodantin. Use with caution for patients who are pregnant. May be used with breast feeding mothers. Use with caution in patients who have renal impairment, and in patients with porphyria. Do not use with poor pulmonary function.

   c. **Ciprofloxacin:** Allergic to Ciprofloxacin or Levaquin. Use with caution for patients who are on Coumadin, patients who are diabetic, have heart problems or recent heart attack, kidney and/or liver disease, seizure disorder, joint/tendon problems. Should not be used with pediatric aged patients. Should be used with caution for patients with peripheral neuropathy.

   d. **Levaquin:** Allergic to Levaquin or Ciprofloxacin. Use with caution for patients who are diabetic. Use with caution in patients on Coumadin.

   e. **Keflex:** Hypersensitivity to cephalosporins and should be used with caution in patients with hypersensitivity to penicillins. Use with caution in patients with known gastrointestinal disorders. Okay to use with lactating mothers.

   f. **Amoxicillin:** Allergy to Amoxicillin. Should not be used with women who are breastfeeding. Should be used with caution for patients who have liver disease and porphyria. Can cause discoloration of teeth.
7. Side effects of medication

a. **Bactrim:**
   i. **Common:** rash, urticarial, loss of appetite, nausea, vomiting.
   ii. **Serious:** Erythema multiforme, Stevens-Johnson syndrome, C-diff, aplastic anemia, Neutropenia, thrombocytopenia, hepatic necrosis, anaphylaxis, rhabdomyolysis

b. **Macrodantin:**
   i. **Common:** Loss of appetite, nausea, vomiting
   ii. **Serious:** Hemolytic anemia, hepatitis, cholestatic jaundice syndrome, Immune hypersensitivity reaction, peripheral neuropathy.

c. **Ciprofloxacin:**
   i. **Common:** (may occur with one-time dose) Hypersensitivity to ciprofloxacin or any product component, or other quinolones concomitant tizanidine administration.
   ii. **Serious:** Fluoroquinolones, including ciprofloxacin, are associated with an increased risk of tendonitis and tendon rupture in all ages. Risk further increases with age over 60 years, concomitant steroid therapy, and kidney, heart, or lung transplants.

d. **Levofloxacin:**
   i. **Common:** Diarrhea, nausea, dizziness, headache, insomnia
   ii. **Serious:** Cardiac arrest, ventricular tachycardia, prolonged QT interval, Stevens-Johnson syndrome, hypoglycemia, liver failure, anaphylactoid reaction, rupture of tendon, tendinitis, seizure, acute renal failure.

e. **Keflex:**
   i. **Common:** (may occur with one-time dose) Abdominal pain, diarrhea, transient increased liver enzymes, vaginal yeast infection, headache, unexplained rash.
ii. **Serious**: Hives, severe rash, itching, peeling of the skin, wheezing, difficulty breathing, swelling of the throat, severe or watery diarrhea.

f. **Amoxicillin**:
   i. **Common**: Diarrhea (frequent)
   ii. **Serious**: Stevens-Johnson syndrome, toxic epidermal necrolysis, hemorrhagic colitis, anaphylaxis.

g. **Phenazopyridine Hydrochloride (Pyridium)**
   i. **Common**: headache
   ii. **Serious**: Hemolytic anemia, hepatotoxicity, anaphylactoid reaction, nephrotoxicity

C. **Patient Care and instructions for follow up.**

1. Encourage patient to maintain hydration
2. May offer Pyridium 200 mg by mouth every 8 hours as needed for bladder symptoms. Remind patient that this will turn urine orange and may stain contacts lens if worn.
3. May recommend AZO 100 mg by mouth 2 tablets 3 times a day with or after meals as needed. This is over the counter.
4. Don’t start antibiotic regimen until after urine sample has been submitted.
5. Instruct to call if symptoms persist or worsen after being on antibiotic 48-72 hours.
6. Instruct to call if symptoms recur after medication is finished
7. Encourage patient to use “Patient Portal” as needed if they have access to computer.

D. **Duties for other staff/assistive personnel who may be involved.**

1. Administrative assistant to follow up on lab results on a daily basis.
2. Medical Assistant to send urine samples and perform POC as needed for culture and sensitivity at direction of MD, PA, NP or RN.
3. Clerical Staff to schedule appointments as directed.

V. **Authors**: C.Neer RN, Z.Fuller RN, S.Lenherr MD, A.Oldendorf MD; 2013

VI. **References**:

1. UNIVERSITY OF MICHIGAN HEALTH SYSTEM, Hospitals and Health Centers,
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