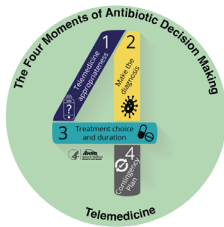


Best Practices in Managing Urinary Tract Infections Over Telemedicine

Slide Title and Commentary	Slide Number and Slide
Best Practices in Managing Urinary Tract Infections Over Telemedicine SAY: Welcome to the presentation titled, “Best Practices in Managing Urinary Tract Infections Over Telemedicine.”	Slide 1 AHRQ Safety Program for Telemedicine: Improving Antibiotic Use Best Practices in Managing Urinary Tract Infections Over Telemedicine  AHRQ Pub. No. 2017-001 October 2018
Objectives SAY: This presentation will use a clinical case–based format to discuss the approach to managing urinary tract infections or UTIs. By the end of this presentation, participants will be able to— • Distinguish asymptomatic bacteriuria from a UTI • Discuss indications for sending a urinalysis and urine cultures • Recommend antibiotic regimens for UTIs that maximize clinical success while minimizing adverse events • Learn when a patient presenting with a UTI may need to be evaluated in person	Slide 2 Objectives By the end of this presentation, participants will be able to— • Distinguish asymptomatic bacteriuria from a urinary tract infection (UTI) • Discuss indications for sending a urinalysis and urine cultures • Recommend antibiotic regimens for UTIs that maximize clinical success while minimizing adverse events • Learn when a patient presenting with a potential UTI in a telemedicine visit may need to be evaluated in person AHRQ Safety Program for Telemedicine: Improving Antibiotic Use Urinary Tract Infections 2

Slide Title and Commentary	Slide Number and Slide
The Four Moments of Antibiotic Decision Making SAY: This presentation will review a clinical case using the Four Moments of Antibiotic Decision Making framework. Briefly, this framework consists of the following moments: Moment 1: Is my patient an appropriate candidate for a telemedicine visit? Moment 2: Does my patient have signs and symptoms indicating an infection that may require antibiotics? Is a diagnostic test needed? Moment 3: If antibiotics are indicated, what is the narrowest, safest, and shortest regimen I can prescribe? Moment 4: What symptomatic relief should I offer or prescribe to my patient? What should I tell my patient about the expected course and the followup plan?	Slide 3 The Four Moments of Antibiotic Decision Making  1. Is my patient an appropriate candidate for a telemedicine visit? 2. Does my patient have signs and symptoms indicating an infection that may require antibiotics? Is a diagnostic test needed? 3. If antibiotics are indicated, what is the narrowest, safest, and shortest regimen I can prescribe? 4. What symptomatic relief should I offer or prescribe to my patient? What should I tell my patient about the expected course and the followup plan? AHRQ Safety Program for Telemedicine: Improving Antibiotic Use Urinary Tract Infections 3
Clinical Case SAY: Let's begin with a clinical case. The electronic triage form indicates that the next patient you are seeing is a 32-year-old woman named Sara who is presenting with dysuria and urgency. She thinks she has a UTI. The form states she is unsure if she has a fever.	Slide 4 Clinical Case • 32-year-old woman presenting via telehealth with dysuria and urgency • Thinks she has a UTI • Unsure if she has a fever  AHRQ Safety Program for Telemedicine: Improving Antibiotic Use Urinary Tract Infections 4

Slide Title and Commentary	Slide Number and Slide
Moment 1: Telemedicine Appropriateness SAY: Regarding Moment 1: “Is my patient an appropriate candidate for a telemedicine visit?” There are two general categories of UTIs. Uncomplicated UTI is an infection of the bladder and commonly presents with an acute onset of dysuria or painful urination, frequent need to urinate, and an urgent need to urinate. It is commonly referred to as cystitis. Complicated UTI (which includes pyelonephritis) is an infection of the kidney. Common symptoms of pyelonephritis are fevers, chills, nausea, emesis, and flank pain, in addition to the symptoms of cystitis. Additionally, UTIs in immunocompromised patients, in males, during pregnancy, and those associated with urinary obstruction (e.g., stones) or urinary catheters are also considered complicated UTIs. In general, when there are concerns for pyelonephritis, an in-person visit is preferred so that a urine culture can be obtained. Also, physical examination may be needed to decide if hospitalization is necessary. Of note, foul-smelling or cloudy urine without urinary symptoms does not indicate a UTI. Rather, the characteristics may be related to dehydration or diet. Based on the information on the triage form, it seems like Sara may have cystitis. Therefore, it is reasonable to proceed with a telemedicine visit for now.	Slide 5 Moment 1: Telemedicine Appropriateness¹⁻³ • Cystitis is an infection of the bladder ◦ Presents with acute onset of dysuria (painful urination), frequent need to urinate, and urgent need to urinate that began 1 day prior ▪ Most cases appropriate for telemedicine visit • Pyelonephritis is an infection of the kidney ◦ Symptoms include fevers, chills, nausea, emesis, and flank pain, in addition to the symptoms of cystitis ▪ In-person visit is preferred to enable obtaining urine culture and evaluation for possible hospitalization • Foul-smelling or cloudy urine without urinary symptoms do not indicate a UTI AHRQ Safety Program for Telemedicine: Improving Antibiotic Use  Urinary Tract Infections 5

Moment 1: Consider For In-Person Visit

SAY:

If the triage form documented symptoms suggesting pyelonephritis, it is reasonable to perform a history and physical examination to assist Sara with the next steps for a likely in-person visit. These include whether it is more appropriate to see her primary care clinician or to go to the emergency department or urgent care.

Aside from patients with concerns for pyelonephritis, there are four other general groups for which in-person visits should be strongly considered when there are concerns for a UTI: (1) children or non–sexually active female adolescents, (2) adolescent or adult males, (3) elderly patients with mental status changes, and (4) people with concerns for urinary stasis or obstruction—each of which we will discuss briefly before turning our attention back to Sara.

First, if the patient is a child (regardless of sex) or a non–sexually active adolescent female, an in-person referral for a physical examination to evaluate for alternative diagnoses is recommended. For sexually active adolescent females, the most likely cause of a UTI remains recent sexual activity, and they are generally appropriate to be seen via telemedicine. In general, seeing children under 3 years of age for a telemedicine visit is not suggested as they are unlikely to appropriately verbalize their symptoms, making the differential diagnosis broad.

For older children who may be more likely to verbalize urinary symptoms, an in-person visit is preferred to determine if more investigation is necessary. For example, an underlying urologic abnormality such as posterior urethral valves or neurogenic bladder causing vesicoureteral reflux or functional reflux such as constipation may be present. Additionally, girls undergoing toilet training may insert foreign bodies such as toilet paper in their vaginal region that can lead to an infection. Furthermore, an in-person visit for children with UTIs can be helpful to ensure there are not concerns for a sexually transmitted infection indicating possible sexual abuse.

A second group of patients who should generally be referred for in-person visits are adolescent or adult males. This is because it is atypical for males in these age ranges to have UTIs. An evaluation for the underlying cause should be pursued through an in-person visit. Examples of causes of UTIs in males include urinary obstruction by renal stones, ureteral strictures from previous trauma, or an enlarged prostate. Alternative diagnoses such as prostatitis,

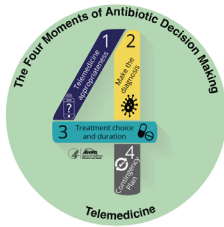
Slide 6

Moment 1: Consider For In-Person Visit

- Reasons to consider referral for an in-person visit
 - Clinical signs and symptoms suggestive of pyelonephritis¹⁻³
 - Children or non–sexually active adolescents
 - Adolescent or adult males
 - Elderly patients with mental status changes⁴⁻⁵
 - People with indwelling urinary catheters or known urinary stasis

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Urinary Tract Infections 6

Slide Title and Commentary	Slide Number and Slide
epididymitis, or sexually transmitted infections may also need to be considered. The third group that generally should be referred for in-person visits are elderly patients for whom there is a concern for a UTI based on mental status changes. Elderly women without mental status changes presenting with typical symptoms of cystitis remain appropriate to see via telemedicine. Bacteriuria and delirium are both common in the elderly. Therefore, it can be difficult to understand if there is a causal relationship between these two conditions. While a UTI diagnosed based on the traditional urinary symptoms such as dysuria may also be associated with delirium, there is no evidence that delirium, falls, or confusion are symptoms of a UTI in the absence of UTI symptoms. For elderly patients who are presenting for a telemedicine visit (generally through a caretaker) with concerns about confusion—an in-person visit is suggested to rule out alternative diagnoses related to falls, dehydration, electrolyte disturbances, bleeds, or other infections. The fourth category of people who should be referred for in-person visits are people at risk for complicated UTIs. These include pregnant women, patients with renal transplants, known urinary stones, and patients with indwelling or intermittent genitourinary hardware like ureteral stents or patients requiring intermittent catheterization. For patients at risk for a complicated UTI, in-person visits are preferred to obtain a urinalysis and urine culture to guide appropriate antibiotic therapy—and to decide if any additional intervention is indicated.	
Moment 2: Need for Antibiotics SAY: You move on to Moment 2, which states, “Does my patient have signs and symptoms indicating an infection that may require antibiotics? Is a diagnostic test needed?”	Slide 7 Moment 2: Need for Antibiotics  1. Is my patient an appropriate candidate for a telemedicine visit? 2. Does my patient have signs and symptoms indicating an infection that may require antibiotics? Is a diagnostic test needed? AHRQ Safety Program for Telemedicine: Improving Antibiotic Use Urinary Tract Infections 7

Moment 2: History

SAY:

You inquire again about the symptoms Sara has been experiencing. She states that for the past 24 hours, it has been hurting a lot when she urinates, and she has needed to urinate multiple times per hour. She feels like the part of her private area where she urinates from (i.e., her urethra) has been having spasms, prompting her to suddenly have to urinate.

You ask if she has had fevers, chills, vomiting, or flank pain over the past two days. Since patients are unlikely to know what flank pain is, it is helpful to point to the area between the upper abdomen and the back, on either side of the body, to demonstrate what you are referring to. Sara says she does not have any of these symptoms.

You ask if she has noticed any ulcers, lesions, blood, or unusual discharge in her vaginal region, and she states no. New ulcers, lesions, or unusual discharge might be concerning for a sexually transmitted infection, as discussed in the presentation titled “Best Practices in Addressing Concerns Related to Sexually Transmitted Infections.”

You ask Sara if she has vaginal pruritis or thick white vaginal discharge. Vaginal yeast infections typically present with vaginal pruritis with or without vaginal discharge. Recent antibiotic use increases the risk of vaginal yeast infections. Sara says she does not have symptoms more indicative of a sexually transmitted infection or yeast infection.

You then do a very brief review of symptoms to confirm she is otherwise well by asking about respiratory symptoms, abdominal symptoms, new skin findings, and any other symptoms of concern to her. She does not report any.

You ask about the last time she had sexual intercourse, and she states it was 2 days ago with her boyfriend. You ask if she has had any other sexual partners over the past several months, and she states no.

You ask Sara if she has ever experienced similar symptoms before, and she states that she has had three UTIs within the past year. You ask Sara what antibiotics she has tried before and which ones have helped. She states she usually receives nitrofurantoin and it has helped her feel better within 1–2 days.

Based on her history, Sara’s symptoms appear consistent with cystitis given her reported dysuria, urgency, and frequency, and lack of symptoms that may be more

Slide 8

Moment 2: History

- Experiencing pain with urination, need to urinate with increased frequency, having sudden urges to urinate over past 24 hours
- Reports no fevers, chills, vomiting, or flank pain
- Reports no vaginal ulcers or lesions, blood, or unusual discharge from the vaginal region
- Reports no other symptoms
- One sexual partner; had intercourse 2 days ago
- Has had three UTIs within the past year
 - Successfully treated with nitrofurantoin

AHRQ Safety Program for Telemedicine: Improving Antibiotic Use

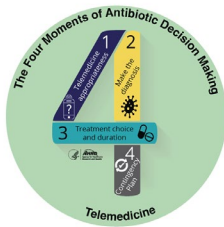
Urinary Tract Infections 8

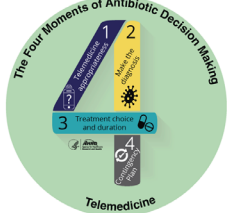
Slide Title and Commentary	Slide Number and Slide
suggestive of a yeast infection or sexually transmitted infection (e.g., pruritis, discharge). Now you can proceed to a virtual physical examination to ensure that there are not concerning findings making pyelonephritis more likely.	
Moment 2: Virtual Physical Examination SAY: On the virtual examination, you note that Sara’s mentation is appropriate as she answers all questions appropriately. Although she does not have a thermometer to check her temperature, she does not appear to be sweating, flushed, or shivering, suggesting fevers or hypothermia. You observe that she appears to be breathing comfortably without an increased respiratory rate or retractions of her neck muscles. You ask Sara to check her heart rate by placing the tips of her index and middle fingers on the inside of her wrist, just below her thumb. You ask her to press lightly until she feels her pulse and then count the beats for 15 seconds. Multiply that number by four to get your beats per minute. Her pulse is normal at about 80 beats per minute. The absence of obvious fevers, rigors, mental status changes, or other systemic symptoms make the diagnosis of pyelonephritis less likely.	Slide 9 Moment 2: Virtual Physical Examination • Answers questions appropriately • Not sweating or feeling flushed • Breathing comfortably • Normal heart rate (80 beats per minute) based on guided self-exam  AHRQ Safety Program for Telemedicine: Improving Antibiotic Use Urinary Tract Infections 9

Slide Title and Commentary	Slide Number and Slide
Asymptomatic Bacteriuria SAY: Let's pretend that you are seeing a different patient, named Ethel. Ethel is a 72-year-old woman with hypertension and a remote history of early-stage breast cancer, but she is otherwise in good health. Ethel is presenting to you because a urine culture previously sent by another clinician is growing bacteria. Ethel is requesting antibiotics. When you ask her about dysuria, she says she does not have pain when she urinates or other symptoms. The presence of bacteria in the urine in the absence of signs or symptoms consistent with a urinary tract infection is termed asymptomatic bacteriuria. Although urine was historically considered sterile, it is now recognized that bacterial colonization of the urinary tract can occur without infection or adverse clinical consequences. The prevalence of asymptomatic bacteriuria differs depending on the population, but generally, the risk increases with age. People experiencing asymptomatic bacteriuria—outside of pregnant women and those undergoing urologic procedures in the very near future—do not need antibiotic therapy. In fact, clinical trials indicate that antibiotic therapy for asymptomatic bacteriuria does not reduce the risk of a future UTI but does increase the risk that future UTIs will be resistant to common oral antibiotics, making finding treatment options more challenging. Additionally, treating asymptomatic bacteriuria with antibiotics places patients at risk for avoidable antibiotic-associated adverse events. For patients presenting with asymptomatic bacteriuria like Ethel, antibiotics are not necessary, and it is important to communicate to patients why this is the case.	Slide 10 Asymptomatic Bacteriuria - Asymptomatic bacteriuria is bacteria in the urine in the absence of UTI symptoms (e.g., dysuria, urgency, frequency, flank pain) - Prevalence of asymptomatic bacteriuria generally increases with age⁶ - People experiencing asymptomatic bacteriuria do not need antibiotic therapy - Exceptions: pregnant women or those about to undergo urological procedures - Prescribing antibiotics for asymptomatic bacteriuria does not reduce risk of future UTIs; increases risk that future UTIs will be more antibiotic resistant AHRQ Safety Program for Telemedicine: Improving Antibiotic Use Urinary Tract Infections 10

Slide Title and Commentary	Slide Number and Slide
Moment 2: Urine Culture SAY: Most adolescents and adult women with symptoms of cystitis, such as dysuria, urgency, or suprapubic pain, do not require a urinalysis or a urine culture, as these symptoms are strongly suggestive of the presence of cystitis. As we will discuss in Moment 3, it is reasonable to prescribe a course of antibiotics without needing to obtain a urine culture. Let's turn our attention back to Sara. Sara has had several UTIs in the past, but she stated they generally respond to the antibiotic nitrofurantoin. Had Sara mentioned that multiple common oral antibiotics in the past did not help her, such as nitrofurantoin, trimethoprim-sulfamethoxazole, or ciprofloxacin, this would increase the risk that she might be infected with an antibiotic-resistant bacteria such as an ESBL-producing <i>E. coli</i>. You might still elect to treat her empirically for cystitis, but it is reasonable to give her the option of obtaining a urine culture via an in-person or laboratory visit to guide antibiotic therapy if her symptoms do not improve over the next 3 days. ESBL-producing bacteria are bacteria that make enzymes that can inactivate a lot of commonly used beta-lactam antibiotics such as oral cephalosporins. Of note, if you are placing a urine culture order to Sara to be collected at a clinic or commercial laboratory for analysis, it is important to instruct her to first clean the perineum from front to back, then start the flow of urine, and catch the urine in the sterile cup they provided. Improper urine collection can lead to contamination, resulting in unnecessary antibiotic use and potential antibiotic-associated harm. As previously stated, if pyelonephritis is a concern, for adolescent or adult males, children, the elderly with mental status changes, or patients at risk for complicated UTIs, a urine culture may be needed but this should be determined during an in-person visit.	Slide 11 Moment 2: Urine Culture - Adolescent and adult women with symptoms of cystitis, such as dysuria, urgency, or suprapubic pain can generally be treated for a UTI even if a urinalysis or urine culture is not available - Urine cultures should be considered in patients with a history of recurrent UTIs, given the higher likelihood of antibiotic-resistant UTIs - If suggesting self-collection of a urine specimen at a commercial laboratory, instruct patient to— - Clean the perineum from front to back - Start the flow of urine - Catch the urine in sterile cup - Determine how you can access the lab results from the third-party laboratory to prescribe active antibiotic therapy  AHRQ Safety Program for Telemedicine: Improving Antibiotic Use Urinary Tract Infections 11

Slide Title and Commentary	Slide Number and Slide
Moment 2: Interpreting Urinalysis and Cultures SAY: Although for patients like Sara you will generally not be suggesting obtaining sending her for a urinalysis or urine culture, it is still important to understand how to interpret these tests. Remember, pyuria—white cells in the urine—or bacteriuria—bacteria in the urine—in the absence of clinical symptoms of UTI are not concerning for an infection. A urinalysis is considered abnormal when there are more than the normal number of white blood cells (WBCs) identified. The range of WBCs that is considered normal may differ between laboratories, but generally 10 or more WBCs per high-power field in the urine is indicative of pyuria. Although pyuria without relevant urinary symptoms make the diagnosis of a UTI unlikely, the absence of pyuria is helpful to exclude the diagnosis of a UTI. Other findings that may be reported on a urinalysis include leukocyte esterase and nitrites. Leukocyte esterase indicates the presence of WBCs and nitrates may indicate the presence of certain bacteria. Since the presence of WBCs or bacteria in the urine in the absence of relevant clinical symptoms does not indicate a UTI, the significance of positive leukocyte esterase or nitrites is not always clear. Furthermore, these values may be positive even in settings of small quantities of WBCs or bacteria in the urine. Therefore, it is reasonable to generally discount leukocyte esterase or nitrates when reported in a urinalysis. The colony count representing a positive urine culture generally ranges from greater than or equal to 10,000 colony forming units (CFU) per milliliter (mL) to greater than or equal to 100,000 CFU per mL of a urinary pathogen in adults; this may vary by microbiology laboratory. Lower cutoffs may be considered if the patient has received antibiotics before the culture was sent, in patients with clinical symptoms of a UTI.	Slide 12 Moment 2: Interpreting Urinalysis and Cultures • Results of urinalysis and urine culture are relevant ONLY if patient has UTI symptoms • Abnormal urinalysis ◦ ≥ 10 white blood cells per high-powered field ◦ Presence of leukocyte esterase and nitrites less relevant for diagnosis of a UTI • Abnormal urine culture ◦ $\geq 100,000$ CFU/mL ◦ Lower cutoffs if patient received antibiotics before urine culture obtained AHRQ Safety Program for Telemedicine: Improving Antibiotic Use Urinary Tract Infections 12

Slide Title and Commentary	Slide Number and Slide
Moment 3: Antibiotic Therapy SAY: Let's move on to Moment 3, which states, "If antibiotics are indicated, what is the narrowest, safest, and shortest regimen I can prescribe?"	Slide 13 Moment 3: Antibiotic Therapy  1. Is my patient an appropriate candidate for a telemedicine visit? 2. Does my patient have signs and symptoms indicating an infection that may require antibiotics? Is a diagnostic test needed? 3. If antibiotics are indicated, what is the narrowest, safest, and shortest regimen I can prescribe? AHRQ Safety Program for Telemedicine: Improving Antibiotic Use Urinary Tract Infections 13
Empiric Therapy: Uncomplicated Cystitis 1 SAY: Preferred options for cystitis include nitrofurantoin or trimethoprim-sulfamethoxazole. The formulation of nitrofurantoin has the brand name Macrobid® and is prescribed 100 mg orally twice daily for 5 days. Trimethoprim-sulfamethoxazole (commonly referred to by the brand names Bactrim® or Septra®) is prescribed as one double-strength tablet (160 mg/800 mg) orally twice daily for 3 days. Of note, although resistance to trimethoprim-sulfamethoxazole is increasing, resistance to nitrofurantoin remains rare—even among ESBL-producing <i>E. coli</i>. Alternate options to consider in the setting of a known allergy or resistance to nitrofurantoin or trimethoprim-sulfamethoxazole include oral fosfomycin, pivmecillinam, amoxicillin-clavulanic acid, or oral cephalosporins. Dosing and duration for these agents is provided in the clinician guide for this topic in the AHRQ Improving Antibiotic Use in Telemedicine toolkit.	Slide 14 Empiric Therapy: Uncomplicated Cystitis 1 - Preferred antibiotic options for cystitis¹ - Nitrofurantoin (Macrobid®) – 100 mg orally twice daily for 5 days⁷⁻⁹ - Trimethoprim-sulfamethoxazole (Bactrim® or Septra®) – one double-strength tablet (160 mg/800 mg) orally twice daily for 3 days¹⁰ - Alternate antibiotic options for cystitis - Amoxicillin-clavulanate, cephalosporins, fosfomycin, gepotodacin, pivmecillinam, sulopenem  AHRQ Safety Program for Telemedicine: Improving Antibiotic Use Urinary Tract Infections 14

Slide Title and Commentary	Slide Number and Slide
Empiric Therapy: Uncomplicated Cystitis 2 SAY: Fluoroquinolones are not considered first-line therapy for uncomplicated cystitis. This is because of the risk versus benefit of their use for a relatively uncomplicated infection when considering their associated adverse events that include tendinitis, aortic dissection, <i>Clostridioides difficile</i> infection, and mental status changes. If you are seeing a patient for whom you have access to previous medical records, review their previous urine culture and antibiotic susceptibility results as this information can be helpful in ensuring you select effective antibiotic therapy for the current UTI.	Slide 15 Empiric Therapy: Uncomplicated Cystitis 2 - Fluoroquinolones not first-line therapy for uncomplicated cystitis - Adverse events include tendinitis (<1%), aortic dissection (<1%), <i>Clostridioides difficile</i> infection (<1%), prolonged QTc intervals (<1%), and mental status changes (1–4%) - Review any available urine cultures and antibiotic susceptibility results within the past 12 months to guide antibiotic selection  AHRQ Safety Program for Telemedicine: Improving Antibiotic Use Urinary Tract Infections 15
Moment 4 SAY: Finally, let's move to Moment 4. The first part of Moment 4 asks, "What symptomatic relief should I offer or prescribe to my patient?" while the second part asks, "What should I tell my patient about the expected course and the followup plan?"	Slide 16 Moment 4  - Is my patient an appropriate candidate for a telemedicine visit? - Does my patient have signs and symptoms indicating an infection that may require antibiotics? Is a diagnostic test needed? - If antibiotics are indicated, what is the narrowest, safest, and shortest regimen I can prescribe? - What symptomatic relief should I offer or prescribe to my patient? What should I tell my patient about the expected course and the followup plan? AHRQ Safety Program for Telemedicine: Improving Antibiotic Use Urinary Tract Infections 16
Moment 4: Supportive Care SAY: Cystitis symptoms generally start to improve within a few hours of initiating antibiotic therapy and should significantly improve by about 48 hours. Therefore, aside from acetaminophen (Tylenol®) or ibuprofen (Motrin®, Advil®) as needed, additional medications are generally not necessary. Over-the-counter urinary analgesics such as phenazopyridine which is commonly sold under brand names like Azo Standard® or Pyridium® can be offered if Sara prefers the dysuria be reduced more quickly. Hydration likely helps eliminate bacteria from the urinary tract faster, and increased water intake should be suggested for patients with UTIs.	Slide 17 Moment 4: Supportive Care - Symptoms improve within hours of initiating antibiotic therapy and significantly improve by 48 hours - Over-the-counter medications - Acetaminophen (Tylenol®) or ibuprofen (Motrin®, Advil®) - Urinary analgesics such as phenazopyridine (Azo Standard® or Pyridium®) can be considered - Suggest increasing water intake  AHRQ Safety Program for Telemedicine: Improving Antibiotic Use Urinary Tract Infections 17

Slide Title and Commentary	Slide Number and Slide
Moment 4: Expectations and Followup Plan SAY: The second part of Moment 4 asks, “What should I tell my patient about the expected course and the followup plan?” It generally takes about 2 days for patients with cystitis to have symptomatic improvement. Patients with cystitis should be guided to seek in-person medical care if their symptoms are not improving by day 3 of antibiotics or if they are developing symptoms concerning for flank pain or fevers, or generally are feeling more ill. Of note, if a urine culture was obtained and the results—which generally take 2–3 days—indicate the bacteria growing is not susceptible to the antibiotic that was prescribed, it is important to contact the patient to inquire about continued symptoms. If the patient no longer has urinary symptoms, no change in antibiotic therapy is indicated. This happens frequently because cystitis, even in the absence of effective antibiotics, can resolve on its own in over half of the patients. The second reason is many antibiotics achieve high concentrations in the urine, enabling them to sterilize the urine even if susceptibility is not demonstrated on a laboratory report.	Slide 18 Moment 4: Expectations and Followup Plan • Cystitis symptoms typically improve within 2 days • Seek in-person evaluation if— ◦ Symptoms do not improve by day 3 ◦ Develop flank pain, fever ◦ Generally feeling more ill • If urine culture obtained and results indicate bacteria growing not susceptible to antibiotic prescribed, contact patient about continued symptoms • If patient no longer has urinary symptoms, no change in antibiotic therapy indicated  AHRQ Safety Program for Telemedicine: Improving Antibiotic Use Urinary Tract Infections 18
Strategies for Preventing Future UTIs 1 SAY: Since UTIs are often preventable, it is always a good idea to discuss preventative approaches. These include behavioral changes, nonantibiotic options, and antibiotic options. Behavioral changes include liberal fluid intake, contraception modification, planned voiding, and hygiene. It has been shown in a clinical trial that fluid intake, generally in the range of 2–3 liters per day, reduces the risk of recurrent UTIs by about 50 percent. Women using diaphragms and spermicides may be at increased risk of UTIs and should speak to their clinicians about potentially changing their contraceptive methods if necessary. Postcoital voiding should be suggested as a strategy to reduce the risk of recurrent UTIs. Additionally, wiping from front to back after stooling should be suggested as it theoretically reduces the likelihood of introducing stool into the urethra.	Slide 19 Strategies for Preventing Future UTIs 1³ • Behavioral changes ◦ Liberal fluid intake (e.g., 6–8 glasses of water daily)¹¹ ◦ Contraception modification ◦ Planned postcoital voiding ◦ Hygiene: wipe from front to back, showers instead of baths, minimize douche, sprays or powders  AHRQ Safety Program for Telemedicine: Improving Antibiotic Use Urinary Tract Infections 19

Strategies for Preventing Future UTIs 2

SAY:

There are several nonantibiotic options for reducing the risk of recurrent UTIs. For postmenopausal women, they may consider speaking to their clinician about if they are a candidate for topical estrogen as this has been association with a reduction in the risk of cystitis.

Methenamine or cranberry products are nonantibiotic strategies that may reduce the risk of future UTIs. Although the evidence on their effectiveness is mixed, they are considered low risk strategies.

Methenamine is a urinary antiseptic that is generally taken as 1 gram orally twice daily to prevent the risk of future episodes of cystitis. Some studies suggest it is almost as effective as oral antibiotic prophylaxis without the risk of promoting more resistant uropathogens. For example, patients receiving methenamine prophylaxis may have only one more UTI per year than those receiving antibiotic prophylaxis. Of note, methenamine should not be taken with trimethoprim-sulfamethoxazole because it can form painful crystals in the urine.

Cranberry products are another antibiotic-sparing strategy to reduce the risk of UTI recurrence. Studies suggest that cranberry products inhibit the adherence of uropathogens to uroepithelial cells. Although the optimal dosing and formulation are not clear, an 8-ounce glass of cranberry juice once or twice a day likely provides the same effect as some more expensive cranberry pill supplements. In general, it is best to advise your patients to look into the strategy that works best with their lifestyle. For example, if they are able to find affordable cranberry pills they can easily place in their pill box, they may prefer this over cranberry juice.

Although the risk of harm is low, available data do not indicate a benefit with D-mannose or probiotics in preventing future UTIs.

Antibiotic prophylaxis consists of either postcoital or continuous prophylaxis. Data supporting the efficacy of antibiotic prophylaxis are more consistent than antibiotic-sparing option. However, remember to weigh the risk of antibiotic-associated adverse events and the risk of future antibiotic-resistant UTIs that are increasingly difficult to treat with oral antibiotics, especially as cystitis is still a relatively benign condition and antibiotic-sparing options may be effective with less adverse events. Antibiotic prophylaxis

Slide 20

Strategies for Preventing Future UTIs 2³

- Nonantibiotic treatment options
 - Peri and postmenopausal women: topical estrogen¹²⁻¹³
 - Mixed evidence:
 - Methenamine¹⁴⁻¹⁵
 - Cranberry products¹⁶⁻¹⁹
- Antibiotic prophylaxis: at least two UTIs in 6 months²⁰⁻²¹
 - Postcoital²⁰
 - Continuous

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Urinary Tract Infections 20

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should generally be reserved for women with two or more UTIs within 6 months. Postcoital prophylaxis antibiotics can be used for women with cystitis episodes associated with sexual activity. This typically consists of a single dose of an antibiotic such as nitrofurantoin, trimethoprim-sulfamethoxazole, or cephalexin after sexual activity. The choice of antibiotic is usually driven by previous antibiotic susceptibility results or previous clinical response with the antibiotic of interest and drug intolerances. Although it may be reasonable to prescribe antibiotics for postcoital use during a telemedicine visit if continuous prophylaxis (i.e., daily use of antibiotics) is being considered, it is preferable to have a clinician make that decision.	
Take-Home Messages SAY: To summarize, most cases of UTIs do not require in-person visits and can be managed via telemedicine. While it is very reasonable to see women with cystitis via telemedicine, if systemic symptoms suggestive of pyelonephritis are present, the patient is preadolescent, an adolescent or adult male, an elderly person with mental status changes, or has risk factors for pyelonephritis, an in-person visit is preferred. For positive urine cultures that were obtained in the absence of urinary symptoms, there is no need to prescribe antibiotic therapy. Common first-line antibiotics for cystitis include nitrofurantoin for 5 days or trimethoprim-sulfamethoxazole for 3 days. Always discuss supportive care, when to return to medical attention, and preventative approaches with your patients. This toolkit has additional resources you can review about how you and your practice will manage UTIs, such as the brief summary on managing UTIs in the telemedicine setting intended for clinicians, the sample patient portal scripts for communicating with patients efficiently about UTIs, and the patient and family education materials.	Slide 21 Take-Home Messages ✓ Most cases of UTIs can be managed via telemedicine ✓ If pyelonephritis are present, the patient is a non-sexually active adolescent, an adolescent or adult male, an elderly person with mental status changes, or has risk factors for a complicated UTI, an in-person visit is preferred. ✓ For positive urine cultures obtained in the absence of urinary symptoms, there is no need to prescribe antibiotic therapy. ✓ Common first-line antibiotics for cystitis include nitrofurantoin for 5 days or trimethoprim-sulfamethoxazole for 3 days. ✓ Always discuss supportive care, return precautions, and preventive approaches with your patients. AHRQ Safety Program for Telemedicine: Improving Antibiotic Use Urinary Tract Infections 21

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Disclaimer SAY: Please review this disclaimer.	Slide 22 Disclaimer - The findings and recommendations in this presentation are those of the authors, who are responsible for its content, and do not necessarily represent the views of AHRQ. No statement in this presentation should be construed as an official position of AHRQ or of the U.S. Department of Health and Human Services. - Participants have an implied responsibility to use the newly acquired information to enhance patient outcomes and their own professional development. The information presented in this activity is not meant to serve as a guideline for patient management. Any procedures, medications, or other courses of diagnosis or treatment discussed or suggested in this activity should not be used by clinicians without evaluation of their patient's conditions and possible contraindications and/or dangers in use, review of any applicable manufacturer's product information, and comparison with recommendations of other authorities. AHRQ Safety Program for Telemedicine: Improving Antibiotic Use Urinary Tract Infections 22
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