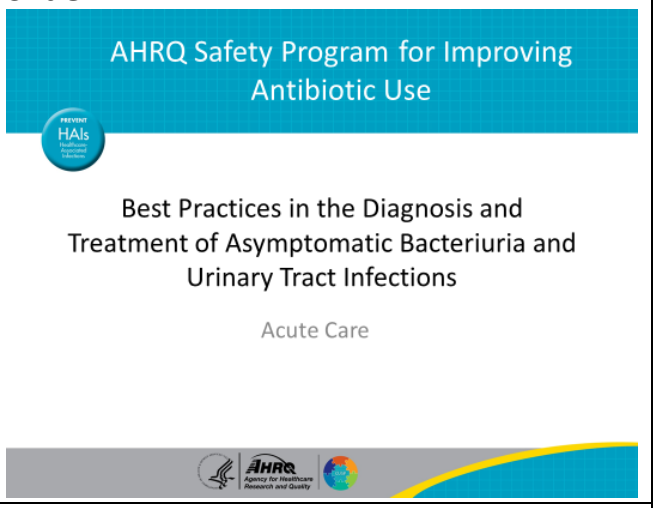
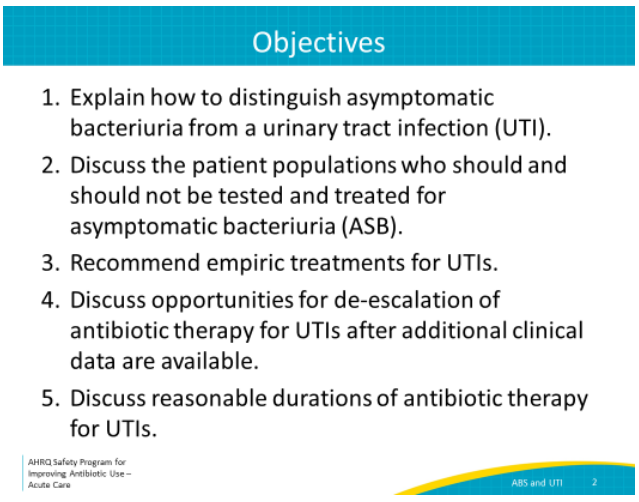
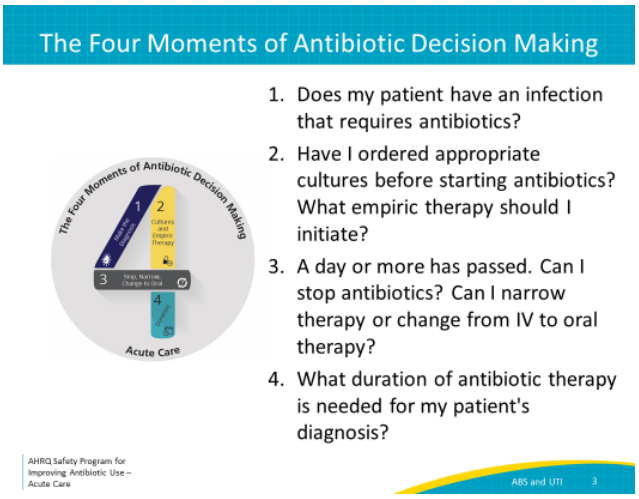
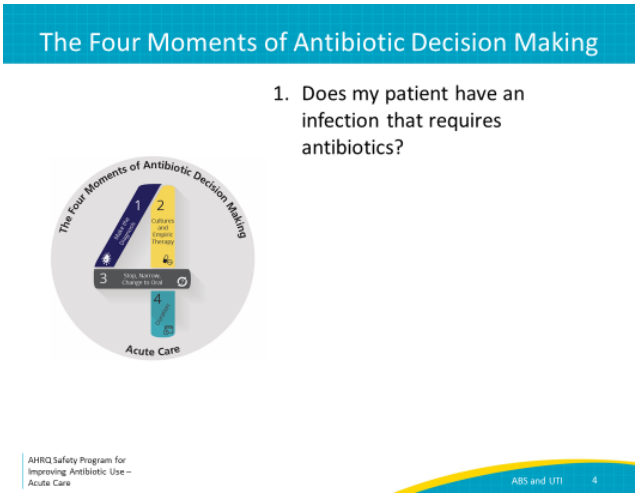
AHRQ Safety Program for Improving Antibiotic Use

Best Practices in the Diagnosis and Treatment of Asymptomatic Bacteriuria and Urinary Tract Infections

Acute Care

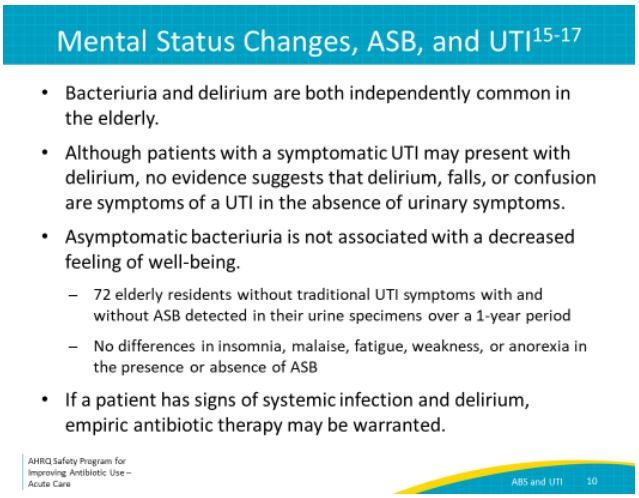
Slide Title and Commentary	Slide Number and Slide
Asymptomatic Bacteriuria and Urinary Tract Infections **Acute Care** SAY: This presentation will address best practices in the diagnosis and treatment of asymptomatic bacteriuria and urinary tract infections.	**Slide 1** 
Objectives: SAY: By the end of this presentation you will be able to— • Explain how to distinguish asymptomatic bacteriuria from a urinary tract infection or UTI • Discuss the patient populations who should and should not be tested and treated for asymptomatic bacteriuria • Recommend empiric treatments for UTIs • Discuss opportunities for de-escalation of antibiotic therapy for UTIs after additional clinical data are available • Discuss reasonable durations of antibiotic therapy for UTIs	**Slide 2** 

AHRQ Pub. No. 17(20)-0028-EF
November 2019

Slide Title and Commentary	Slide Number and Slide
The Four Moments of Antibiotic Decision Making SAY: We will review the diagnosis and management of sepsis using the Four Moments of Antibiotic Decision Making framework. As a reminder, the Four Moments include: Moment 1: Does my patient have an infection that requires antibiotics? Moment 2: Have I ordered appropriate cultures before starting antibiotics? What empiric therapy should I initiate? Moment 3: A day or more has passed. Can I stop antibiotics? Can I narrow therapy or change from intravenous to oral therapy? Moment 4: What duration of antibiotic therapy is needed for my patient's diagnosis?	**Slide 3** 
Moment 1 — Asymptomatic Bacteriuria and Pyuria SAY: When considering asymptomatic bacteriuria in the context of the four moments of antibiotic decision making, management of asymptomatic bacteriuria largely falls under just the first moment: does my patient have an infection that requires antibiotics? By definition, asymptomatic bacteriuria is not an infection. In rare cases where treatment is recommended—pregnant women and patients about to undergo a urological procedure involving the mucosa—the prescription of antibiotics should be considered prophylaxis against subsequent infection, rather than treatment of infection.	**Slide 4** 

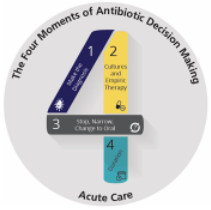
Slide Title and Commentary	Slide Number and Slide
Asymptomatic Bacteriuria SAY: Asymptomatic bacteriuria is defined as the isolation of significant colony counts of bacteria in the urine from a person *without* symptoms of a urinary tract infection. Common symptoms of cystitis are dysuria, frequency, urgency, and suprapubic pain. Common symptoms of pyelonephritis are fever and flank pain. Common symptoms of catheter-associated urinary tract infection, or CAUTI, are fever and suprapubic tenderness. In addition, a severe CAUTI can lead to pyelonephritis, in which patients will then have fever and flank pain. Foul-smelling or cloudy urine does not indicate a UTI. Further, mental status changes alone in the absence of other evidence of UTI do not indicate a UTI. Pyuria can be seen in patients with a UTI but is not diagnostic of a UTI in the absence of relevant symptoms.	**Slide 5** Asymptomatic Bacteriuria • Definition – Isolation of significant colony counts of bacteria in the urine from a person WITHOUT symptoms of a UTI. • Remember: – Common symptoms of cystitis are dysuria, frequency, urgency, and suprapubic pain. – Common symptoms of pyelonephritis are fever and flank pain. – Common symptoms of catheter-associated UTI are fever and suprapubic tenderness. – Foul-smelling or cloudy urine does not indicate a UTI. – Mental status changes alone do not indicate a UTI. – Pyuria can be seen in patients with a UTI but is not diagnostic of a UTI in the absence of urinary symptoms.  AHRQ Safety Program for Improving Antibiotic Use – Acute Care ABS and UTI 5
Asymptomatic Bacteriuria, Continued SAY: Asymptomatic bacteriuria is common. This table shows the prevalence of asymptomatic bacteriuria in certain populations. Asymptomatic bacteriuria increases with age, particularly in women. It is also common in nursing home residents and people with diabetes or on hemodialysis. The majority of people with long-term indwelling urinary catheters will grow bacteria in urine cultures because of bacterial colonization, also known as biofilm formation, on the catheter.	**Slide 6** Asymptomatic Bacteriuria Continued • Asymptomatic bacteriuria (ASB) is COMMON.[1-4] Population / Prevalence Healthy premenopausal women: 1-5% Women 70–90 years old: 11–16% Female long-term care residents: 25–50% Male long-term care residents: 15–50% Females with diabetes: 9–29% Males with diabetes: 1-11% People receiving hemodialysis: 25% People with long-term indwelling urinary catheters: > 90% AHRQ Safety Program for Improving Antibiotic Use – Acute Care ABS and UTI 6

Slide Title and Commentary	Slide Number and Slide
Asymptomatic Pyuria SAY: Pyuria is also common in patients with asymptomatic bacteriuria. The table shows the prevalence of pyuria in patient populations with asymptomatic bacteriuria. The presence of pyuria is not enough to diagnose a UTI and is not an indication for antibiotic therapy. If you have a patient with pyuria, you should consider whether the patient might have another cause, such as a sexually transmitted infection or interstitial nephritis.	**Slide 7** Asymptomatic Pyuria • Pyuria is COMMON in patients with ASB.[5] Population With ASB / Prevalence of Pyuria Young women 32% Pregnant women 30–70% Women with diabetes 70% Elderly institutionalized patients 90% Dialysis patients 90% Patients with short-term catheters 30–75% Patients with long-term catheters 50-100% • Pyuria in patients with asymptomatic bacteriuria is not an indication for antibiotic therapy. • Other causes of pyuria to consider: sexually transmitted infections and interstitial nephritis. AHRQ Safety Program for Improving Antibiotic Use – Acute Care ABS and UTI 7
Treatment of ASB Is Not Beneficial SAY: Randomized controlled trials have been performed in many populations to assess whether there is any benefit to treating asymptomatic bacteriuria. Treatment did not decrease the risk of subsequent UTI in healthy women, diabetic women, patients with long-term indwelling urinary catheters, older women in the community, elderly nursing home residents, or renal transplant patients. Treatment did not prevent subsequent joint infection in patients undergoing orthopedic surgery.	**Slide 8** Treatment of ASB Is Not Beneficial • Randomized, controlled trials have demonstrated a LACK of benefit of antibiotic treatment of ASB in the following populations:[6-13] – Healthy, nonpregnant women aged 18–40 years – Diabetic women – Patients with long-term indwelling catheters – Older women in the community – Elderly nursing home residents – Renal transplant patients – Patients undergoing orthopedic surgery AHRQ Safety Program for Improving Antibiotic Use – Acute Care ABS and UTI 8
Treatment of ASB May Cause Harm SAY: Treatment of asymptomatic bacteriuria is associated with adverse events related to antibiotics and development of resistant organisms causing future UTIs. In addition, a randomized controlled trial suggested that treatment of asymptomatic bacteriuria in healthy women increased the risk of a subsequent symptomatic UTI.	**Slide 9** Treatment of ASB May Cause Harm[6-9, 14] • Treatment is associated with— – Adverse events and development of resistance – An increased risk of subsequent UTIs  AHRQ Safety Program for Improving Antibiotic Use – Acute Care ABS and UTI 9

Slide Title and Commentary	Slide Number and Slide
Mental Status Changes, ASB, and UTI SAY: Bacteriuria and delirium are both common in the elderly; thus, it can be difficult to understand if there is a causal relationship between these two conditions. While a UTI diagnosed based on the traditional symptoms reviewed earlier may also be associated with delirium, there is no evidence that delirium, falls, or confusion are symptoms of a UTI in the absence of development of symptoms related to the urinary tract, such as dysuria or systemic signs of infection. In a study in which 72 elderly residents without traditional UTI symptoms were questioned about symptoms of well-being when they did and did not have asymptomatic bacteriuria detected in urine specimens over a year, no differences in insomnia, malaise, fatigue, weakness, or anorexia were noted in the presence or absence of asymptomatic bacteriuria. These findings suggest that asymptomatic bacteriuria is not associated with a reduction in neurologic function. As of April 2019, guidelines recommend that in the absence of local genitourinary symptoms or systemic signs of infection, older patients with bacteriuria experiencing delirium or falls should be managed with assessment for other causes, such as dehydration, and careful observation rather than antibiotic therapy. It is important to remember that if a patient has symptoms suggestive of a systemic infection, such as hypotension, antibiotic initiation should be considered, regardless of the presence of symptoms related to the urinary tract.	**Slide 10** 

Slide Title and Commentary	Slide Number and Slide

When Is Screening/Treating For ASB Indicated?
 	
SAY:
 	
As of April 2019, guidelines recommend screening for and treating asymptomatic bacteriuria in two specific situations: pregnant women in early pregnancy and individuals about to undergo a urologic procedure in which mucosal bleeding is expected.
 	
Asymptomatic bacteriuria in early pregnancy confers a 20- to 30-fold increased risk for the development of pyelonephritis during the pregnancy compared with women without bacteriuria. It is also associated with preterm labor and low birth weight. As of April 2019, the optimal duration of antibiotic therapy has not been yet determined, although guidelines suggest 3–7 days.
 	
Asymptomatic bacteriuria has been associated with urosepsis in patients undergoing urologic procedures involving mucosal bleeding. Of note, the term “urologic procedure” does not include placement or removal of a urinary catheter.
	Slide 11
	
	When Is Screening/Treating for ASB Indicated?
	
	• Guidelines recommend screening and treating for ASB in two situations[1]
	
	1. Pregnant women at 12–16 weeks gestation
	  • Prevents pyelonephritis, preterm labor, and infant low birth weight
	2. Impending urologic procedure in which mucosal bleeding is expected
	  • May prevent urosepsis
	  • This does not include placement of a urinary catheter
	
	 
	
	AHRQ Safety Program for Improving Antibiotic Use – Acute Care
	
	ABS and UTI 11

Slide Title and Commentary	Slide Number and Slide
Can I Follow the Same Rules for Candiduria? SAY: Ten percent of urine cultures in hospitalized patients grow *Candida*. In a multicenter, placebo-controlled trial of fluconazole in patients with candiduria who were asymptomatic or minimally symptomatic, fluconazole eradicated candiduria in two-thirds of patients. However, one-third of patients cleared the candiduria without therapy, and two-thirds of patients in both groups had recurrence of candiduria 2 weeks after fluconazole was stopped. Note that half of the patients had indwelling catheters, and to be in the study, urine cultures had to grow *Candida* after the catheter had been removed. Importantly, no patient developed pyelonephritis or candidemia in either group. Thus, treatment of asymptomatic or mildly symptomatic candida in urine cultures appears to have no clinical benefit.	**Slide 12** Can I Follow the Same Rules for Candiduria? • ~10% of urine cultures in hospitalized patients grow *Candida* species. • Multicenter placebo-controlled trial of fluconazole in patients with *Candida* in two consecutive urine cultures who were asymptomatic (95%) or minimally symptomatic (5%).[18] – Fluconazole eradicated candiduria in 2/3. – 1/3 had eradication with no therapy. – Two weeks after completion of fluconazole, *Candida* grew in 2/3 of urine cultures in both the fluconazole and placebo groups. – 56% of patients had catheters—urine cultures had to grow *Candida* after the catheter had been removed. – No patients developed pyelonephritis or candidemia. AHRQ Safety Program for Improving Antibiotic Use – Acute Care ASB and UTI 12
The Four Moments of Antibiotic Decision Making SAY: In this discussion of asymptomatic bacteriuria, we've focused on Moment 1 and reviewed the critical distinction between asymptomatic bacteriuria, which is not an infection as it is not associated with signs and symptoms of infection, and urinary tract infections, which are associated with signs and symptoms that vary based on the location of the infection in the urinary tract. The rest of this presentation will focus on moments 2, 3, and 4.	**Slide 13** The Four Moments of Antibiotic Decision Making  1. Does my patient have an infection that requires antibiotics? 2. Have I ordered appropriate cultures before starting antibiotics? What empiric therapy should I initiate? 3. A day or more has passed. Can I stop antibiotics? Can I narrow therapy or change from IV to oral therapy? 4. What duration of antibiotic therapy is needed for my patient's diagnosis? AHRQ Safety Program for Improving Antibiotic Use – Acute Care ABS and UTI 13

Slide Title and Commentary	Slide Number and Slide
Moment 2: Urinalysis and Cultures SAY: The diagnostic evaluation for hospitalized patients suspected to have UTI should include a urinalysis and urine culture. Remember, urine cultures should be sent when a patient has signs and symptoms of UTI. The following situations are not indications for sending a urine culture: foul-smelling or cloudy urine, routinely on admission or preoperatively, routinely before or after a catheter change, as part of the evaluation into a fever if there are no signs or symptoms localizing to the urinary tract, or as a test of cure for a UTI. It is important to optimize the collection of urine cultures to increase their clinical utility. They should be collected using the clean catch approach or straight catheterization if clean catch is not possible. Standard guidance should be followed in patients with urinary catheters, and urinary catheters should optimally be changed before cultures are sent in patients with chronic indwelling catheters.	**Slide 14** Moment 2: Urinalysis and Cultures • Send urinalysis (UA) and urine cultures when patients have symptoms of UTI • Do not send urine cultures for— – Foul-smelling or cloudy urine – Routinely on admission or preoperatively – Routinely before or after a catheter change – As part of a fever workup if there are no signs or symptoms localizing to the urinary tract – As a test of cure • Ensure that urine cultures are collected correctly  AHRQ Safety Program for Improving Antibiotic Use – Acute Care ABS and UTI 14

Slide Title and Commentary	Slide Number and Slide
Moment 2: Urinalysis and Cultures, Continued	**Slide 15**

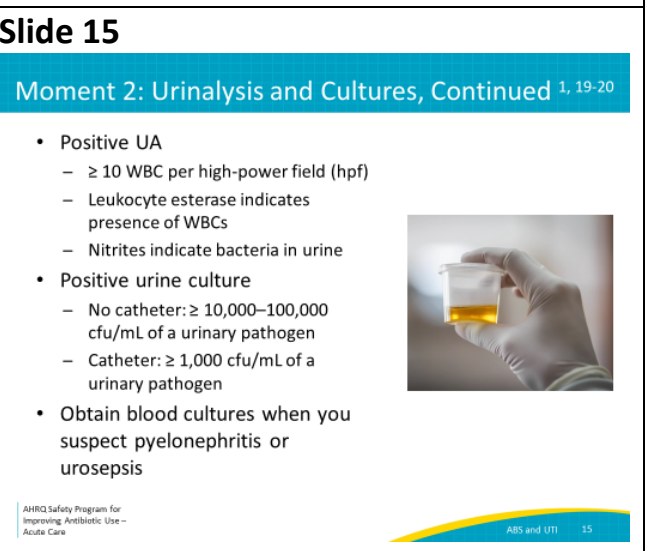
SAY:

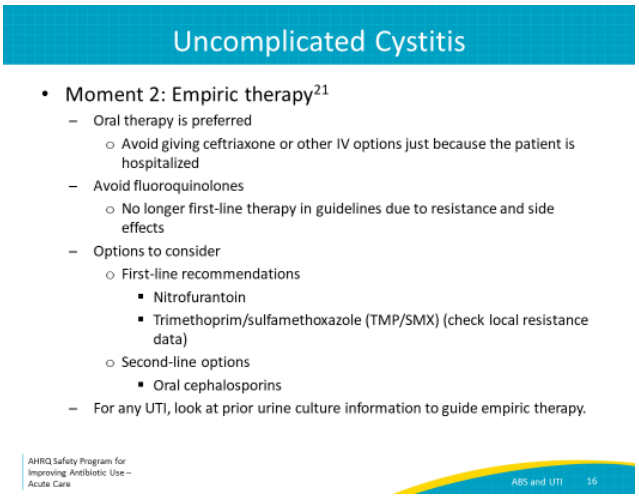
The number of urinary white blood cells or WBC that is considered abnormal is based on the specific laboratory testing approach and, therefore, may vary from site to site. However, a general cutoff for a positive urinalysis or UA is greater than or equal to 10 WBC per high-power field. Thus, in a patient with fewer than 10 WBC per high-power field, there is minimal or no inflammation, making the diagnosis of UTI unlikely.

Leukocyte esterase is also often reported and indicates the presence of WBCs. But leukocyte esterase can still be detected even when the WBC count is low and may not be clinically significant. Nitrites indicate the presence of bacteria in the urine—this result should not be used alone to determine whether there is a UTI given that a positive test may represent asymptomatic bacteriuria.

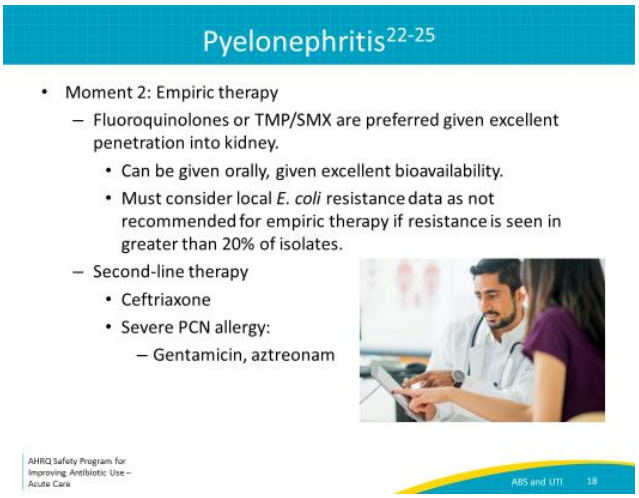
The colony count representing a positive urine culture generally ranges from greater than or equal to 10,000 colony forming units or cfu per milliliter or mL to greater than or equal to 100,000 cfu per mL of a urinary pathogen; this may vary by microbiology laboratory. Lower cutoffs may be considered if the patient has received antibiotics before the culture was sent, if there is strong clinical suspicion of a UTI, or if the culture is from a suprapubic catheter. For urine cultures obtained from catheterized patients, the colony count representing a positive urine culture can be as low as 1,000 cfu per mL of a urinary pathogen.

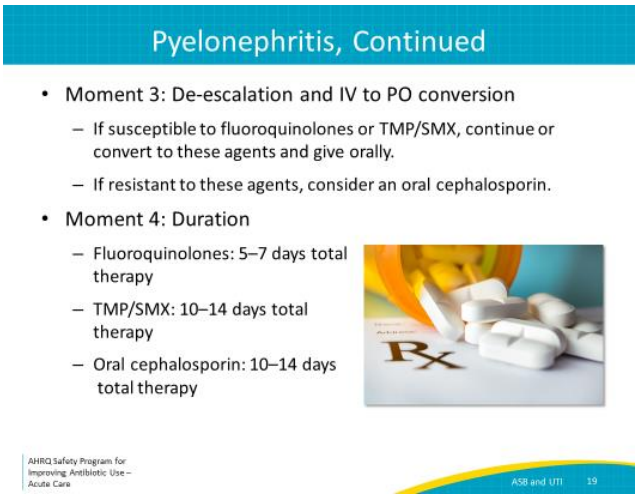
Most patients with a UTI do not need blood cultures, although they should be obtained in patients with pyelonephritis admitted to the hospital or if urosepsis is suspected.



Slide Title and Commentary	Slide Number and Slide
Uncomplicated Cystitis SAY: Uncomplicated cystitis is cystitis in a woman in the absence of urinary tract abnormalities. Oral therapy is preferred for empiric therapy, and you should avoid giving intravenous, or IV, therapy just because the patient is in the hospital. Fluoroquinolones are not considered first-line therapy for uncomplicated cystitis because of both increasing *E. coli* resistance and their associated side effects that include tendinitis, aortic dissection, and *Clostridioides difficile* infection. They can also cause mental status changes in the elderly. First-line treatment recommendations include nitrofurantoin, ideally in a twice-daily formulation, and trimethoprim/sulfamethoxazole or trim/sulfa. It is important to know local resistance patterns for both of these agents before using them, given increasing resistance particularly with trim/sulfa. For patients unable to take these agents, oral cephalosporins can also be used. When making empiric treatment decisions, remember to look at prior urine culture information as previous susceptibility patterns may help guide antibiotic choices.	**Slide 16** 

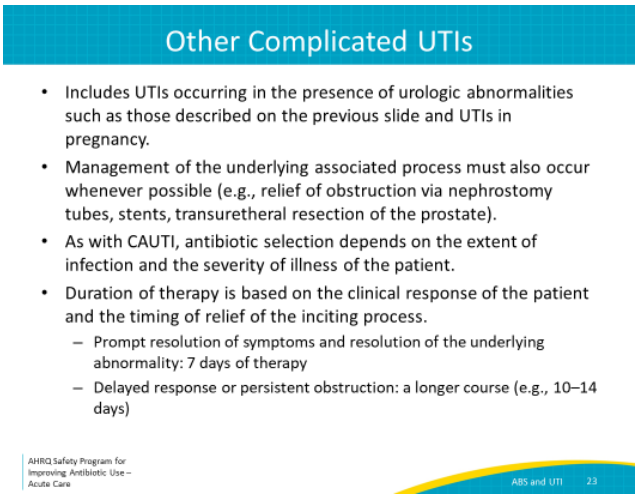
Slide Title and Commentary	Slide Number and Slide
Uncomplicated Cystitis, Continued SAY: The de-escalation and intravenous to oral conversion components of Moment 3 are uncommon in the management of uncomplicated cystitis, as most patients should be treated with relatively narrow spectrum oral agents for a short duration. However, it is important to re-examine the diagnosis of cystitis daily and if an alternative diagnosis is found, antibiotics should be stopped. Moment 4, optimal duration, should also be straightforward for uncomplicated cystitis. The table shows both first-line agents (in bold) and second-line agents and the recommended durations of therapy based on clinical trials. Note that most of the cephalosporins were studied for 5-day courses except cefpodoxime, which was studied for a 3-day course, and cephalexin, which was studied for a 7-day course.	**Slide 17** Uncomplicated Cystitis, Continued • Moment 3: De-escalation and IV to PO conversion[21] – Patients will be treated for 3–5 days with relatively narrow-spectrum agents, so there is not often an opportunity to de-escalate. – If you started therapy for cystitis and subsequently determined an alternative diagnosis, stop antibiotics. • Moment 4: Duration Drug / Duration Studied **Nitrofurantoin 5 days** **TMP/SMX 3 days** Cefaclor 5 days Cefpodoxime 3 days Cephalexin 7 days Cefdinir 5 days  AHRQ Safety Program for Improving Antibiotic Use – Acute Care ABS and UTI 17

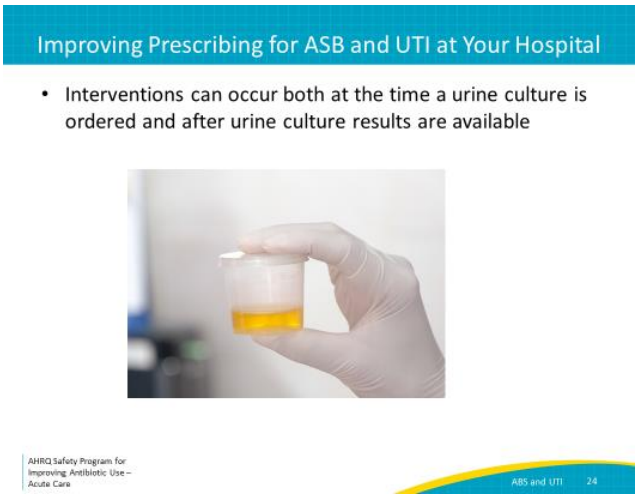
Slide Title and Commentary	Slide Number and Slide
Pyelonephritis SAY: The next few slides primarily refer to uncomplicated pyelonephritis in women admitted to the hospital. Men with UTIs often have additional contributing pathology that should be investigated and may require longer durations of antibiotic therapy. Empiric therapy for pyelonephritis in women has become more challenging because of emerging *E. coli* resistance to commonly used antibiotics. Fluoroquinolones or trim/sulfa are preferred given excellent penetration into kidney. In addition, they can be given orally and have excellent bioavailability. However, local *E. coli* resistance data must be considered as these agents cannot be recommended for empiric therapy if resistance is seen in a large proportion of isolates—some have proposed a cutoff of greater than 20 percent of isolates. Remember that *E. coli* susceptibilities on a hospital antibiogram may not reflect the *E. coli* susceptibilities of patients being admitted to the hospital from the community with pyelonephritis, which may show a greater proportion of susceptible isolates. If possible, it is useful to develop urine antibiograms and even more specifically, emergency department urine antibiograms, which are likely more reflective of resistance patterns in the community. Options when there is concern about declining susceptibility to fluoroquinolones and trim/sulfa include third generation cephalosporins such as ceftriaxone. For patients with severe penicillin allergies, aztreonam or gentamicin can be used. In patients with a history of colonization or infection with an extended-spectrum beta-lactamase-producing, or ESBL-producing, organism, ertapenem can be considered.	**Slide 18** 

Slide Title and Commentary	Slide Number and Slide
Pyelonephritis Continued SAY: For Moment 3 of pyelonephritis management, if the isolated organism is susceptible to fluoroquinolones or trim/sulfa, continuation of or conversion to these agents is reasonable. If neither can be used because of resistance, then consider converting to an oral cephalosporin once the patient has improved. Duration of therapy depends on the agent used. In women, 7 days of a fluoroquinolone has been shown to be equivalent to longer courses, and 5 days has been shown to be effective for levofloxacin. Most patients can also receive 10 days of trim/sulfa, although a 14-day course can be considered in patient who was slow to respond. There is less clinical data with oral cephalosporins in treatment of pyelonephritis, but if they need to be used because of resistance, a longer course of 10–14 days total should be considered based on clinical response and duration of the preceding IV therapy. Remember to count days of appropriate inpatient IV therapy towards the total count of days of therapy. For example, a patient who received 2 days of ceftriaxone needs only 5 days of oral ciprofloxacin to complete a total 7-day course.	**Slide 19** 

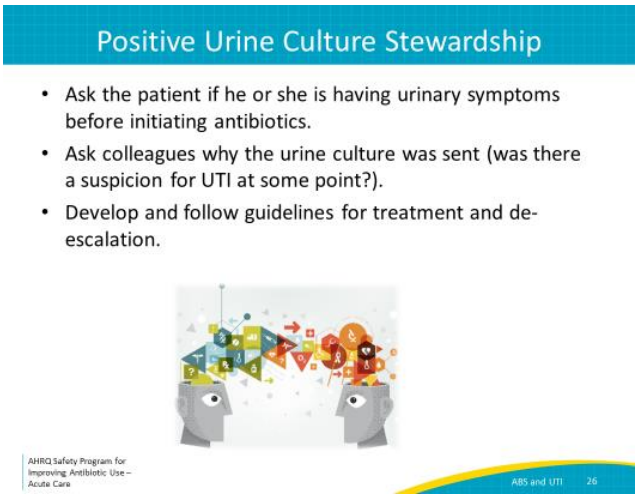
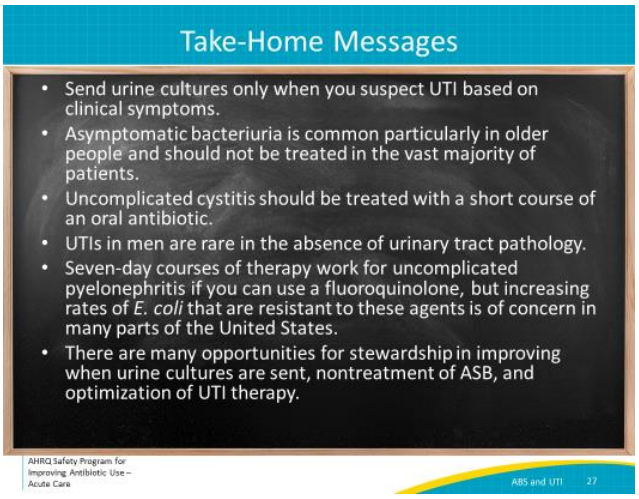
Slide Title and Commentary	Slide Number and Slide
Catheter-Associated UTI SAY: For patients with catheter-associated UTI, or CAUTI, you can take the same general approach when interpreting urine results as with non-CAUTI with a few caveats. First, for patients with chronic catheters, the catheter should be removed, and replaced if necessary, before urine cultures are obtained. If this is not done, results are likely to show polymicrobial growth because of colonizing bacteria in the biofilm around the catheter. Thus, determining the causative organisms will be potentially challenging. Second, patients with catheters often have pyuria in the absence of CAUTI because of local inflammation of the bladder from the catheter. Third, a positive urine culture is considered ≥ 1,000 CFU per mL of a urinary pathogen. All patients with CAUTI should have their catheters removed whenever possible. Empiric therapy for CAUTI depends on how ill the patient appears and is the extent of the infection—limited to the bladder vs. involving the upper tract. Narrower spectrum agents that do not have pseudomonal activity can be considered for lower tract infection, such as trim/sulfa or ceftriaxone. Most would recommend an agent with anti-pseudomonal activity (for example, cefepime) for an ill patient or one in whom pyelonephritis is suspected.	**Slide 20** Catheter-Associated UTI[20] • Moment 2: Urinalysis and culture – Same general approach as with non-CAUTI • For patients with chronic catheters, catheter should be removed before cultures are obtained. • Patients often have pyuria in the absence of CAUTI. • Positive urine culture: ≥ 1000 CFU/mL of a urinary pathogen. • Moment 2: Empiric therapy – Remove the catheter whenever possible. – Empiric therapy based on severity of illness, location of infection (upper vs. lower tract), and information from prior urine cultures if available.  AHRQ Safety Program for Improving Antibiotic Use – Acute Care ABS and UTI 20

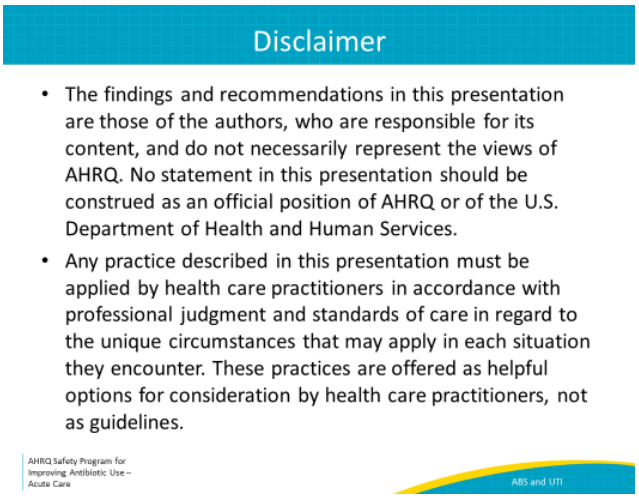
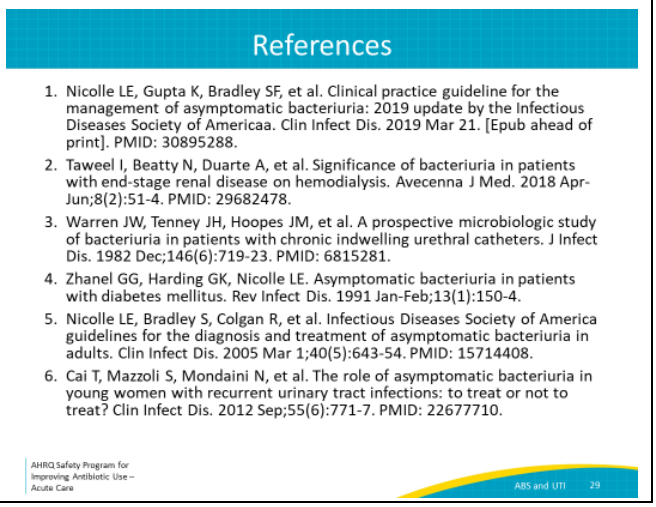
Slide Title and Commentary	Slide Number and Slide
Catheter-Associated UTI Continued SAY: If the isolated organism is susceptible to trim/sulfa, continuation of or conversion to it is reasonable. Ciprofloxacin or levofloxacin can be considered for more severe infections but should be avoided for uncomplicated lower tract infections given emerging issues with side effects. If trim/sulfa or fluoroquinolones cannot be used because of resistance, then consider converting to an oral cephalosporin once the patient has improved. Duration of therapy depends on the clinical scenario. If the catheter is removed in a female patient, ≤ 65 years, and no upper tract disease is present, 3 days of therapy has been shown to be effective. For other patients, if there is prompt resolution of symptoms 7 days of therapy will likely suffice. If there is delayed response or continued need for a catheter, a 10- to 14-day course may be required. The duration of therapy chosen is not dependent on catheter removal (except for a 3-day regimen), although catheter retention may prolong clearance of infection.	**Slide 21** Catheter-Associated UTI, Continued[20] • Moment 3: De-escalation and IV to PO conversion – If susceptible to TMP/SMX can continue or convert to it and give orally – If treating severe infection, can consider oral ciprofloxacin or levofloxacin • Avoid for uncomplicated infections given side effects – If resistant to these agents, consider an oral cephalosporin • Moment 4: Duration – If catheter removed in a female patient ≤ 65 years and no upper tract disease: 3 days[26] – Prompt resolution of symptoms: 7 days – Delayed response or obstruction: 10–14 days  AHRQ Safety Program for Improving Antibiotic Use – Acute Care ABS and UTI 21
UTI in Males SAY: UTIs in males are considered complicated because they are usually associated with obstructive pathology such as renal stones, strictures, or enlarged prostates. In the absence of these risk factors, UTI is a rare diagnosis in males, and this diagnosis should be evaluated critically, particularly if it is being driven by a positive urine culture and nonspecific symptoms. Other causes of urinary symptoms in males to consider include prostatitis, epididymitis, and sexually transmitted infections.	**Slide 22** UTI in Males • UTIs in the absence of a urinary catheter in men are considered complicated because they are usually associated with obstructive pathology such as— – Renal stones – Strictures – Enlarged prostate • In the absence of these risk factors, UTI is a rare diagnosis in males. • Other causes of urinary symptoms in males: prostatitis, epididymitis, sexually transmitted infections. AHRQ Safety Program for Improving Antibiotic Use – Acute Care ABS and UTI 22

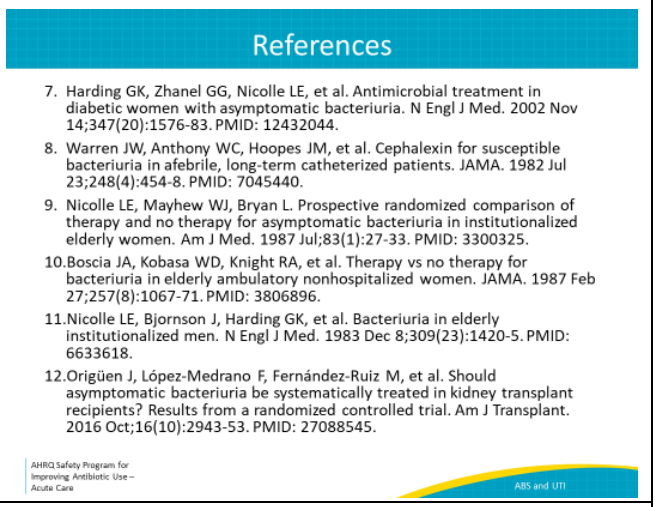
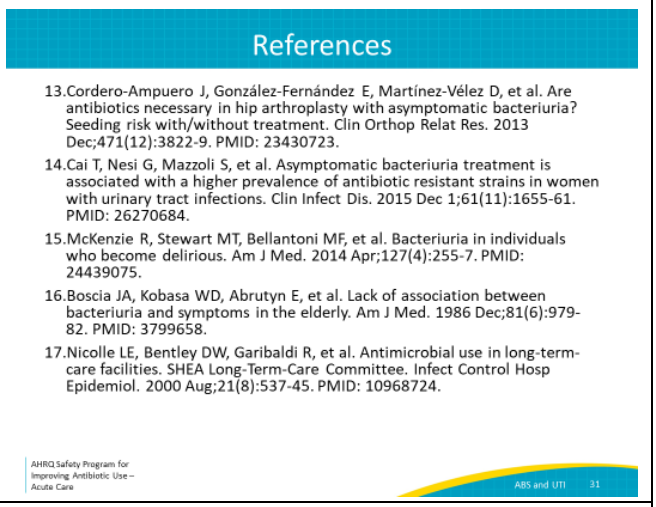
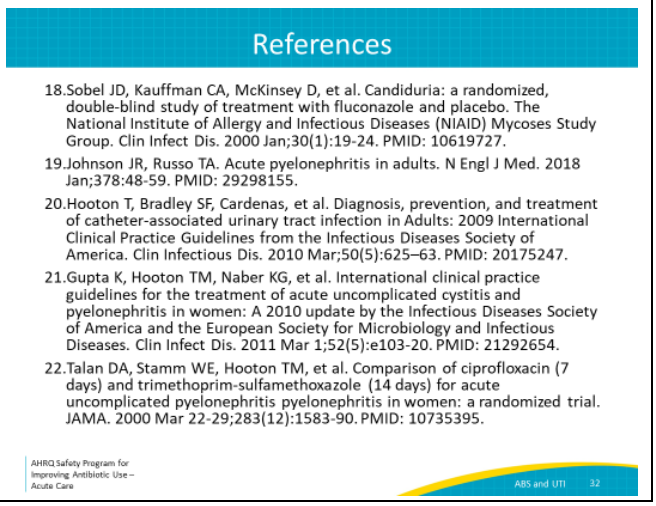
Slide Title and Commentary	Slide Number and Slide
Other Complicated UTIs **SAY:** Besides CAUTI, other complicated UTIs include those occurring in the presence of a urological abnormality or UTI associated with pregnancy. In addition to antibiotics, management of the underlying associated process must also occur whenever possible (e.g., relief of obstruction via nephrostomy tubes, stents, transuretheral resection of the prostate, etc.). As with CAUTI, antibiotic selection and duration depend on the extent of infection and the severity of illness of the patient. Narrower spectrum agents that do not have anti-pseudomonal activity can be considered for empiric treatment of lower tract infections, while most would recommend an agent with anti-pseudomonal activity for a patient in whom urosepsis or pyelonephritis is suspected. Therapy should be narrowed based on culture results. Duration of therapy should be determined based on clinical response of the patient and the timing of relief of the inciting process. If there is prompt resolution of symptoms and resolution of the underlying abnormality, 7 days of therapy will likely suffice. If there is delayed response or persistent obstruction, a longer course (such as 10–14 days) may be required.	**Slide 23** 

Slide Title and Commentary	Slide Number and Slide
Improving Prescribing for ASB and UTI at Your Hospital SAY: Prevention of testing for and treatment of asymptomatic bacteriuria is of critical importance as the collective goal is to treat patients who have UTIs while avoiding antibiotics in those who do not. The concept of asymptomatic bacteriuria is often new to clinicians who have been trained to respond to positive urine cultures without asking the important questions about signs and symptoms. The data discussed in this presentation should provide some reassurance that not treating asymptomatic bacteriuria, with rare exceptions, will not hurt and likely help our patients.	**Slide 24** 

Slide Title and Commentary	Slide Number and Slide
Urine Culture Ordering Stewardship SAY: Let's consider some strategies to reinforce optimal management of asymptomatic bacteriuria and UTI. Frontline providers should avoid ordering urine cultures in the absence of signs and symptoms of UTI, including in patients with urinary catheters and those in patients undergoing preoperative evaluation unless mucosal bleeding is expected. Frontline providers and stewardship teams should work together to find approaches to reduce the sending of urine cultures. It can be helpful to identify prescribers or services that send many urine cultures and then determine why they are being sent. For example, if many urine cultures are sent as part of preoperative testing that is not guideline-based, a meeting can be convened to discuss revisiting this approach and determining strategies for dissemination of new recommendations not to send preoperative cultures. Other approaches include working with the clinical lab to set up reflex testing protocols where urine cultures are only performed if certain parameters on the UA are met such as increased WBCs. It is important to note that this will not completely solve the problem of treatment of asymptomatic bacteriuria because patients can have pyuria and bacteria in the urine and not have a UTI, but it may reduce the collection of some unnecessary urine cultures. Frontline providers and stewardship teams may also consider working with information technology to develop prompts in the electronic health record that require documentation of an indication for urine cultures.	**Slide 25** Urine Culture Ordering Stewardship • Do not order in the absence of signs and symptoms of UTI, including patients with urinary catheters and those undergoing preoperative evaluation (unless urinary mucosal bleeding anticipated). • Work with lab to determine from where and why urine cultures are being sent to identify targets for improvement. • Consider reflex testing protocols with the lab. • Develop tools in the EHR to prompt providers to document indication for sending a urine culture.  AHRQ Safety Program for Improving Antibiotic Use – Acute Care ABS and UTI 25

Slide Title and Commentary	Slide Number and Slide
Positive Urine Culture Stewardship SAY: Both frontline providers and stewardship teams should consider strategies to optimize management of positive urine cultures. Frontline providers should make a habit of asking patients if they have urinary symptoms before initiating antibiotic therapy for positive urine cultures. Also, it is important to work with colleagues to improve communication about why a urine culture was sent through documentation in the medical record or during handoffs. If a patient merits treatment, follow local guidelines developed by frontline providers and stewardship teams that include avoiding IV therapy when oral therapy is possible and minimization of use of fluoroquinolones for lower tract infection.	**Slide 26** 
Take-Home Messages SAY: Here are the take-home messages to remember: • Send urine cultures only when you suspect UTI based on clinical symptoms • Asymptomatic bacteriuria is common particularly in older people and should not be treated in the vast majority of patients • Uncomplicated cystitis should be treated with a short course of an oral antibiotic • UTIs in men are rare in the absence of urinary tract pathology • Seven day courses of therapy work for uncomplicated pyelonephritis if you can use a fluoroquinolone, but increasing rates of *E. coli* that are resistant to these agents is of concern in many parts of the United States • There are <u>many</u> opportunities to improve when urine cultures are sent, nontreatment of asymptomatic bacteriuria, and optimization of UTI therapy	**Slide 27** 

Slide Title and Commentary	Slide Number and Slide
Disclaimer SAY • 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. • Any practice described in this presentation must be applied by health care practitioners in accordance with professional judgment and standards of care in regard to the unique circumstances that may apply in each situation they encounter. These practices are offered as helpful options for consideration by health care practitioners, not as guidelines.	**Slide 28** 
References	**Slide 29** 

Slide Title and Commentary	Slide Number and Slide
References	**Slide 30** 
References	**Slide 31** 
References	**Slide 32** 

Slide Title and Commentary	Slide Number and Slide
References	**Slide 33**