Unraveling the Complexities of cUTI Care: Modernizing cUTI Care with the 2025 IDSA and EAU Updates

CMEO Podcast Transcript

Kalpana Gupta MD, MPH:

Hello. On behalf of CME Outfitters, I would like to welcome you to today's educational activity titled, *Unraveling the Complexities of cUTI Care: Modernizing cUTI Care with the 2025 IDSA and EAU Updates*. This program is supported by an educational grant from GlaxoSmithKline.

Thank you to CME Outfitters for producing this program. This activity may include discussions of products or devices that are not currently labeled for use by the FDA. As faculty, we have been informed of our responsibility to disclose to the audience if we will be discussing off-label or investigational uses of products or devices. And now I'd like to introduce ourselves.

I am Dr. Kalpana Gupta. I am a professor of medicine and infectious diseases at Boston University School of Medicine in Boston, Massachusetts. And with me, I'm delighted to have my esteemed colleagues, Dr. Tammy Lewis, who is a urology urogynecology specialist at Comprehensive Urological Care in Barrington, Illinois, and also especially delighted to have Paula Cobb, our patient advocate.

And these are our learning objectives for today. We are going to demonstrate the burden of cUTI on individual patients and on the broader healthcare system, identify opportunities for improved care and outcomes for patients with cUTI through the utilization of up-to-date guidelines and new and emerging antibiotic therapies.

And thirdly, ensure patients with cUTI are treated in the appropriate healthcare setting and are transitioned seamlessly between inpatient and outpatient care. In the first part of our presentation, we are going to cover the burden and clinical challenges of UTI. So now I'm going to briefly discuss Paula's case.

So, Paula is 57 years old. She's had a long history of urinary symptoms that began back in childhood and her first bladder procedure was at age five to address infections. She has had a history of recurrent UTIs since her late 20s. Initial infections responded to antibiotics, but at age 25, symptoms persisted with more complex episodes despite negative cultures.

Her journey has included multiple antibiotic courses, visits to urgent care, ED, urology, and primary care, significant impact on her work, energy level, travel, and daily functioning, and several incidences of feeling unheard and frustrated after years of ongoing symptoms and inconsistent care.

Tamra E. Lewis, MD, URPS:

So, your story is certainly complex, Paula. Were you ever systemically affected by your UTIs? Did you present with a fever or any upper urinary tract symptoms like pyelonephritis?

Paula Cobb:

So, the only thing that I know of for sure was that I had a kidney stone about four years ago. I'm not sure if I was ever with fever, had a fever with those incidents, but definitely had an incidence of a kidney stone.

Tamra E. Lewis, MD, URPS:

So, before we go into more detail, let's ask what the audience thinks of your diagnosis. So, based on Paula's history and symptom pattern, how should her past episodes be classified according to the 2025 IDSA and EAU presentation-based symptoms?

Kalpana Gupta MD, MPH:

I'm going to turn it to you, Tammy, to tell us what makes a UTI complicated in 2025.

Tamra E. Lewis, MD, URPS:

Right. So, Paula's story is a great segue. So, 2025 IDSA and EAU updates a complicated UTI includes systemic signs like fever, rigors, flank pain, hemodynamic instability, or infection extending beyond the bladder, such as pyelonephritis, kidney infection.

Localized cystitis without systemic features can be uncomplicated even if patients have comorbidities such as diabetes. For example, a patient without fever who has dysuria and has diabetes without the fever make it uncomplicated. If there is a fever, then it becomes a complicated infection. A febrile UTI in any adult, either male or female is considered a complicated UTI. And then patients who have indwelling catheters or evidence of urinary obstruction such as a stone or from an enlarged prostate automatically classify the infection as complicated.

So why the burden of complicated UTIs matters, complicated UTIs represent a substantial and increasing burden across emergency medicine, urology, infectious disease, and also primary care.

Updated guidelines from the IDSA, EAU, and also the AUA were necessary because of rising incidence, diagnostic uncertainty, and antimicrobial resistance trend. These infections account for hundreds of thousands of admissions annually and disproportionately affect high-risk groups. Failure to identify or appropriately classify complicated UTI contributes to treatment delays and avoidable complications.

Kalpana Gupta MD, MPH:

Well, let's look at the numbers. cUTI is a big problem, even though it may be underappreciated. We know that UTIs lead up to three million ED encounters, 400,000 hospitalizations annually in the US. This makes UTI one of the leading infection-related causes of hospital admissions. In addition, the incidence of UTI rises sharply as we age, certainly in adults over 65 years of age.

And in that older population, the rate of UTIs is similar in men and women, but men will have a higher morbidity and mortality than women in that older age group. In addition, as our patients become more complicated in terms of their medical comorbidities, either are in long-term care residences, may have indwelling urinary catheters, may have urinary tract stones, all of those factors increase the risk for cUTI.

And once you have an indwelling catheter in place, it is important to know that it's near universal that bacteria or bacteria in the urine will develop over time.

And its many times asymptomatic, but it increases the risk that there will ultimately be a symptomatic infection.

Paula Cobb:

So, I think age is definitely, especially in my case, played a factor, as soon as I hit menopause, it was a game changer for me. It seemed like they were tougher to treat, tougher to stay away. Then of course, the hormonal aspect had to be taken into account. So, age is a very important factor, definitely.

Kalpana Gupta MD, MPH:

Yeah. Thank you for that, Tammy. Excellent.

Tamra E. Lewis, MD, URPS:

So recurrent and even complicated UTIs significantly impair people's quality of life. Patients report fear of seeking care after negative experiences, diminished intimacy, and increasing social isolation. We often focus on infection control and antimicrobial therapy, but the emotional burden, including anxiety, frustration, healthcare fatigue is substantial and should inform our management approach. In addition to emotional impact, functional limitations such as fatigue, disrupted sleep, restriction in work or travel are common among patients with recurrent urinary tract infections. These symptoms profoundly affect daily living and long-term wellbeing, reinforcing the importance of comprehensive patient-centered care.

Paula Cobb:

100%. I often say that there isn't any aspect of my life that this disease hasn't touched. So that's 100% accurate, and we need to be seen as a total whole person and not just as our urinary tract system only.

Kalpana Gupta MD, MPH:

Thank you, Paula. That's a really important addition in terms of information for our providers. The other thing about UTI is the financial burden. I think we all could think about the direct costs, ED visits, hospitalizations, imaging, IV, oral antibiotics, seeing specialists, but it's really the indirect costs that are somewhat hidden and need to be considered.

Lost wages, transportation, caregiver burden, those are equally as significant. Recent analyses estimated that US expenditures of five to $6 billion annually were needed for complicated UTI. And this reflects both the high incidence and the complexity of care that's required for this infection.

Now, what are the pitfalls that increase the burden of this infection? First of all, we know that patients can be lost at diagnosis, meaning they either have an incomplete evaluation or their symptoms are attributed to non-infectious causes. And when that's happening in an ED or urgent care, there may not be appropriate follow-up to really unearth the right diagnosis.

Also, there may be empiric treatment failures due to resistant organisms or inadequate initial therapy. Now, on the other hand, there can be misdiagnosis from asymptomatic bacteria, which is a very common condition. So, if there's bacteria in the urine without the presence of symptoms and it's diagnosed as a UTI, then that can lead to increased use of antibiotics, all the side effects related to that, and of course increased rates of infection related to that. So inconsistent follow-up of our patients can then contribute to recurrent or unresolved UTIs.

All of these things can further contribute to the burden that patients already experienced, and the healthcare system already experiences from complicated UTI.

There are also inequities in complicated UTI burden. We know that individuals in underserved racial and ethnic populations and low-income patients often access care later and more frequently through the ED or urgent care settings, which we've already established can become a problem in terms of appropriate diagnosis and follow-up of UTI.

Social drivers of health, things like transportation limitations, insurance gaps, neighborhood resources can all drive the progression of simple UTI to a more complicated infection with systemic symptoms because of delayed diagnosis or limited follow-up.

These inequities translate into higher recurrences and hospitalization rates in marginalized populations exacerbating the burden of cUTI in these populations. Now, another issue that's come up in cUTI is the impact of antimicrobial resistance. Extended spectrum beta-lactamase, or popularly known as ESBL producing and multi-drug resistant uropathogens are increasingly common in complicated UTI, even in our patients in the community, and they limit the empiric choices and certainly limit the oral treatment options that we have for our patients.

AMR contributes to treatment failures, longer hospital stays, increased toxicity, and higher cost because of all of those parameters. And cUTI sits at the intersection of high antibiotic use and antibiotic resistance. It highlights the need for guideline-based therapy so that the appropriate therapy can be chosen upfront and initially to limit the impact of antimicrobial resistance on or appropriate treatment of cUTI.

Tamra E. Lewis, MD, URPS:

Complicated UTIs can progress to pyelonephritis, renal or perirenal abscess, renal damage, or urosepsis, which it carries approximately 10% mortality. Obstruction such as with kidney stones or catheter related issues markedly heightens this type of risk. So prompt recognition and guideline directed treatment are essential to prevent these types of outcomes.

Kalpana Gupta MD, MPH:

All right. Let's go on to our part two, complicated UTI management. This is where we will talk a little bit more about Paula's case, and we can talk about novel and emerging therapies in complicated UTI, as well as patient-centered approaches that we implement in clinical practice.

Tamra E. Lewis, MD, URPS:

So, as you recall from Paula's case, age 57, long history of urinary symptoms beginning in childhood, she had a bladder procedure at age five to address her infections called hydro distension. She has a history of recurrent urinary tract infections since her late 20s.

Initially, they responded to antibiotics, after age 25 they persisted more complex episodes despite negative cultures. She has had multiple antibiotics, multiple care visits, significant quality of life impact on several areas, and a lot of frustration going along with this.

So, this slide clarifies which elements of Paula's care align with evidence-based recommendations and which fall outside validated clinical practice. So, evidence-based components include the use of topical vaginal estrogen to support genital urinary health, appropriate antibiotic therapy during symptomatic episodes, and addressing bladder emptying and device related factors.

In contrast, repeated PCR, NGS testing, biofilm disruptor, supplements, lipid-lowering therapies are not necessarily supported by UTI evidence-based.

These interventions can obscure clinical decision-making and can lead to overtreatment or delayed recognition of true infections. So, kind of going over my experience as a urologist, Paula could have presented to me at several times during her therapy here. So, when I'm seeing patients in the outpatient in the office, I see patients who present with acute dysuria, urgency frequency flank pain. And the first decision that we have to make is how severe is it? Is this something that can be safely managed in the office or are there factors that make it complicated that may necessitate change in terms of where that patient can be treated? Does it necessitate admission to the hospital and starting IV antibiotics or more stronger empiric therapy?

On the other hand, if the patient doesn't meet the criteria for a complicated infection, then we can treat the patient based on uncomplicated UTI guidelines, which the AUA has.

So, second scenario, an established patient who I already have some prior cultures testing, so I kind of know what the background is. In those cases, knowing what organisms or what has prompted these episodes in the past helps to give me a better baseline for deciding on empiric therapy to start treatment.

Also, if a patient isn't admitted to the hospital, worked up for a complicated UTI, what are the factors that will make that complicated? If there's a fever or evidence of obstruction, what's causing those obstructions? So that's where we might want to look at other risk factors, obstruction, stones, incomplete bladder emptying, postmenopausal status, anatomic abnormalities. So, looking into structural and functional issues to help prevent not only treatment of the patient, but longer-term prevention strategies.

And then finally, understanding what the environment is around you. In a community setting, my local antibiogram may be different than that at a large academic institution or in a big city.

And so, understanding what that tells you gives you some basis for what are some good empiric choices for the patients.

Kalpana Gupta MD, MPH:

Thank you for that excellent background explanation, Dr. Lewis. I want to move now to this four-step empiric therapy algorithm. This is a structured approach that enables optimized empiric therapy, rapid de-escalation and antimicrobial stewardship. And the 2025 IDSA and EAU guidelines emphasize using this four-step approach.

Now, I want to start by saying many of you already do this clinically. This is somewhat the usual way that we evaluate our patients, but now it's in a more structured framework, so you can go through the steps and make sure that you hit each one, and that is designed to lead you to a more optimal empiric choice for therapy. So, number one, assess severity of illness. Does the patient meet criteria for sepsis? What is their level of care? Are they on the medical floor or in the ICU?

Do they have systemic symptoms and/or fever? And of course, when we're talking about complicated UTI, most of our patients should have some systemic symptom because remember, that is part of the underlying diagnostic criteria, but we will have patients who don't have sepsis.

So, we do want to have a different approach depending on that severity of illness. The second is evaluate risk factors for resistance. And this is very nicely outlined in the IDSA guidelines in terms of what kind of factors to entertain.

Number one, has the patient had recent prior antibiotic use? Have they had previous cultures which can be very useful in understanding their risk for resistance? And do they have healthcare associated risk factors also for resistance? And then thirdly, consider the patient specific factors. Do they have allergies? What is their renal function? Are they pregnant? Do they have comorbidities that rule out some of your antibiotic choices?

And are they on medications that might cause drug interactions? Again, these are things that you probably already do as part of your clinical conduct in everyday situations. And then the last piece is to consult the local antibiogram.

Now, this is especially true for patients who have sepsis, because for patients who do not have sepsis, the IDSA guidelines suggest that you don't actually need the antibiogram, you can make your choice using the first three steps, and we'll walk you through that a bit.

Okay. So, let's first talk about what the FDA-approved antibiotic options are for complicated UTI in a patient with sepsis. So obviously here we're going to be using IV therapy, and the preferred agents, and I will say that these are not in any specific order. These agents are in a list, and you will choose them based on those previous four steps. So, third or fourth generation sulfasporins, things like ceftriaxone, these are beta-lactams. They inhibit cell wall synthesis, piperacillin-tazobactam, also beta-lactam, carbapenems also in that same group. And then fluoroquinolones, they are DNA gyrus inhibitors preventing DNA replication. All of those are preferred agents.

If you cannot use those agents because of the assessment that you do in terms of steps two and three, the patient's specific factors or known resistance, then there are alternative agents. And those are the newer beta-lactam, beta-lactam inhibitor combinations, cefiderocol, plazomicin, and other immunoglycosides.

Again, these are more on the alternative side, and you might use those again in consultation with your local ID consultant or hospitalist in terms of when you need to move to those alternative agents. Okay, let's say that our patient does not have sepsis. What would be our choices there? So here you have to think about the clinical context because not having sepsis is a big clinical category. It may be a patient that still needs to be hospitalized either because they're sick enough to be in the hospital related to their infection or they have a comorbidity that lands them in the hospital and you want to use IV therapy, or they can be well enough that they're taking oral and they can be home taking oral therapy.

So, there's different agents that you would choose. For IV therapy without sepsis, it's really the similar agents as for sepsis with identical mechanisms of action, but your choice may be different in terms of the steps that you go to. You can do steps one, two, and three, and you don't have to factor in the antibiogram here.

So, you can choose, again, probably based on the institutional preference and the individual characteristics of the patient, one of those agents. For oral therapy, for complicated UTI, the choices are fluoroquinolones because they have excellent bioavailability and trimethoprim sulfa with alternatives being amoxicillin clavulanate and other oral cephalosporins.

And there are times when you want to use those alternative agents. Again, you go through your four-step process, you decide if the antibiotics in the middle row would be appropriate, or if you're worried about resistance to those, you can use these alternative agents.

Now, just as importantly, it's critical to know which antibiotics are not recommended for complicated UTI specifically. We do use them for uncomplicated UTI, nitrofurantoin and fosfomycin, and that's because they do not get adequate renal parenchymal penetration or systemic levels. So, they really concentrate in the bladder, and that's why they're not appropriate for complicated UTI.

So, let's go through the algorithmic approach to the empiric treatment of cUTI. You can obtain abdominal pelvic imaging if it's not already performed. This is in non-pregnant adults, and you can obtain urological consultation to evaluate and manage potential urinary tract obstruction. I would say that those two things happen when the severity of illness is relatively high, when you're feeling that they're either a critical illness or going into the ICU, because you want to rule out obstruction as that needs to be addressed right away.

If they do have those things, then you want to ask yourself, is the community institutional rate of ESBL producing organisms known to be low? So, this is something that many providers say to me like, "How do I know?" Well, most hospitals will have a hospital antibiogram. So again, here you would look at that and look at the rate of ESBL production amongst E. Coli.

If it's greater than 10%, then you're going to consider yourself as possibly having an ESBL infection in your patient. So, if that's yes, you move over to that box to the right and you ask yourself, "Are there any other risk factors for MDR?" I'm sorry, if that's yes, meaning it's low, then you can ask yourself if there's patient specific factors for having an MDR. And that would be, again, some of the things we talked about. Did they have a previous urine culture?

Have they had recent antibiotics that would make you think that they still do have a resistant organism? And if not, then you're going into the box all the way on the right, standard spectrum gram-negative coverage. But if they do have one of those factors, then you're going to use something a little bit broader, and that would be cefepime, piptazo, meropenem, or imipenem.

Now, otherwise, if you really find that the ESBL rate of your pathogen resistance is high in your hospital and you're now back on the left-hand side, you want to use something that's pretty broad spectrum. Here, you can think about a carbapenem like meropenem or imipenem, and you want to think about adding vancomycin or other broad spectrum gram-positive agent. And that's because, remember, you have a patient who's come in, who's quite ill. You want to make sure that you cover whatever is going on and you don't have that information back yet.

And although you've diagnosed UTI, you at this point don't know if there may be something else going on and sometimes UTI is caused by a gram-positive organism. So, you don't want to be narrow here. You want to make the broader choice, cover gram-negatives, cover gram-positives, and you can always pair back when you get your information back in terms of what the organism is and when you've really confirmed your diagnosis.

So, let's talk about some newer antibiotics that are in the pipeline. If you've gone through that previous algorithm and you're concerned either because of previous microbiology or some history in the patient that makes you feel that you may not be able to use one of our standard antibiotics for treatment of this patient, I think what's important to know on this slide is, A, none of these drugs is yet FDA-approved. These are all drugs that are in the pipeline.

They're in different phases of studies. Two of them have finished their phase three studies, and two of them are still in that process. They also have different classes and mechanisms of action. So, the first three are in the sulfas porin class. The last one is first in class, oral carbapenem, and the cefabutin, the second one is also an oral drug. So, when they become available, they will impact our ability to treat very resistant organisms, number one, also impact the route of treatment because we now will have some oral options for these very resistant organisms.

And the last piece that I want you to get from this slide is that the rationale for use of any of these agents when they do come to us clinically is that they cover the very resistant multidrug resistant uropathogens. And we do want to use them carefully and save them for when we really need to have that extra level of antimicrobial spectrum of activity.

Typically, when you already have your culture back and you know that you need something that's quite novel.

Tamra E. Lewis, MD, URPS:

Well, that's a lot of great information. Let's shift gears and talk about another patient case here. So, this is Dan. He's a 55-year-old male who presents with fever, flank pain, dysuria, and incomplete bladder emptying. So, this prompted labs and a urine culture. So, the updated guidelines clarify that UTIs in male are no longer automatically classified as complicated.

Instead, the presence of systemic features determines his classification. So, in Dan's case, he had a fever, he had flank pain. This clearly indicates a systemic complicated UTI, and his inability to void raises concern for obstruction or prostatitis, both of which will influence our treatment choices.

So, applying the four-step algorithm to Dan's presentation. So, in his severity assessment, he has some systemic illness, fever, flank pain, temperature of 101.8, CVA tenderness, he's tachycardic. So that would fall under cUTI level management. His resistance factors reveal recent fluoroquinolone exposure, which increases his risk of resistance.

And then regarding patient specific factors, if we're concerned about possible acute bacterial prostatitis, that does require agents that can get into the prostate. He does not have beta-lactam allergy. Creatinine is normal, so no renal dose adjustments are needed and no major drug interactions.

So, empiric therapy should align with local resistance patterns shown in a local antibiogram. So, we can see some of those resistance patterns in the last box here. So, when fluoroquine exposure is recent and ESPL risk is elevated, then either cefepime or a carbapenem becomes an appropriate empiric choice until cultures return. Again, we want to avoid agents like nitrofurantoin because there's not good prostate penetration with those agents.

Paula Cobb:

Okay. This is a great time to ask another audience response question. Which of the following is the most appropriate next step in empiric management for DNS? Presenting with fever, flank pain, and prior recent fluoroquinolone exposure, given the 2025 IDSA EAU four-step algorithm.

Kalpana Gupta MD, MPH:

So, we can go through the choices here. Start oral ciprofloxacin and discharge with outpatient follow-up. Clearly, he is quite ill, so he would not be appropriate for outpatient management. Begin IV piperacillin-tazobactam and defer imaging unless symptoms worsen. Again, he's a bit on the sicker side, so he's not quite septic, but he definitely has some symptoms of SIRS and we are concerned about potential obstruction.

So, I think that that would not be the appropriate choice. And we did see that he's had some recent antibiotic exposure. So, we're a little bit worried about making sure we have a broad-spectrum agent on board. So, the correct answer is initiate IV cefepime and obtain a renal ultrasound and blood cultures.

All of that information helps us to understand whether he needs further intervention and also whether he has bacteremia related to his cUTI. And then start nitrofurantoin and schedule urology follow-up.

We've already discussed that that would not be an appropriate choice given that nitrofurantoin really does not get into the tissue very well. And a few people said, "I don't know," but the majority of you did excellent on this one, so great job.

All right. So, the summary for Dan is, because there is a high suspicion for ESBL, we want to use a cefepime agent. That would be carbapenem-sparing. And you could, if you are concerned about cefepime either based on your institutional antibiogram or you're worried that he's going into the ICU and in some places the ICU has a specific approach to septic patients you can use in that setting ertapenem or meropenem.

Remember, these are the agents that we want to use when there's a high suspicion for ESBL. And if you are concerned about prostatitis, make sure you have good prosthetic penetration.

Now, the fluoroquinolones like levofloxacin do have very good prosthetic penetration, but in this case, you would want to make sure that it's active against the uropathogen, which you might not have in your hands at that point when you're giving empiric therapy. But otherwise, a carbapenem is acceptable. And plazomicin is something that not every institution uses but can be added if there's a severe risk of multidrug resistance and you want to empirically cover, double cover essentially upfront while you're waiting to find out what you're actually dealing with. All right. Let's go on to Gene.

Tamra E. Lewis, MD, URPS:

So, moving on to Gene, he's a 72-year-old man with a chronic Foley catheter presenting with fever, cloudy urine, fatigue, and three weeks of altered mental status. So, this combination immediately is going to raise some concern for catheter-associated complicated UTI with systemic features. So, catheter-associated UTI or CAUTI often involves biofilm-associated organisms with higher MDR risks.

So, the updated guidelines emphasize that the catheter must be replaced before obtaining a urine culture because cultures from an old catheter may be unreliable and do not treat asymptomatic bacteria and catheterized patients, only treat when systemic or local symptoms are present.

Kalpana Gupta MD, MPH:

All right. So, let's use our four-step empiric therapy algorithm to figure out what is the right approach to this patient. He has a fever of 101, so he has systemic infection. His blood pressure looks all right. He does have acute mental status change though, possible early sepsis and some suprapubic tenderness.

So, he's really on that cusp, maybe not quite septic yet, but he definitely requires inpatient level evaluation and is quite ill. So, his risk category for resistance, step two, is that you are concerned about ESBL because he had a prior urine culture five months ago with an ESBL. That I will tell you is one of the strongest indicators that there's a risk of ESBL with this current infection.

So that's something very important to pay attention to. Other risk factors, he has this chronic indwelling Foley, which creates a biofilm burden. He's had multiple courses of other antibiotics.

He's in a nursing facility, which itself is an independent risk for ESBL and carbapenem resistance as well. He has no known colonization with carbapenems or with non-fermentor organisms though, so that's helpful. So, we

would say that his risk for CRE, carbapenem resistance and for pseudomonas is mild to moderate, while his risk for ESBL is quite high.

And then he has some patient specific considerations. First of all, we do want to try and change that Foley out before we get our culture so we really can get a clean culture and understand what's causing his acute decompensation rather than picking up old organisms that have just been sitting there. That's really the rationale behind changing that Foley out and getting a brand-new culture from there. And then you can do your local antibiogram integration. In this hospital, the ESBL prevalence is 18 to 24%. Fluoroquinolone resistance is quite high.

Ceftriaxone resistance is 18%, which is also getting high. And carbapenem, I would say that susceptibility is greater than 99%. So, we want to avoid the fluoroquinolones and standard oral agents. We want to choose IV therapy against an ESBL and possibly against pseudomonas in this case.

Paula Cobb:

Okay. Here is your next opportunity to interact. Let's see if we're paying attention. What is the most appropriate next step in the management for this 72-year-old male with chronic Foley and suspected CAUTI?

Kalpana Gupta MD, MPH:

So, let's go through these. Oral Cipro and avoid removing the catheter to reduce discomfort. Obviously, that's not a good answer in this case. We do want to try to get a fresh catheter in. Exchange the Foley catheter, obtain a urine culture post-exchange and start IV cefepime. That is definitely the right answer.

I will tell you that sometimes in clinical practice, it's hard to get that catheter changed and get your urine culture while you're waiting to give antibiotics. So sometimes these things are happening right all at the same time, but that is your goal, is to get that urine culture before the IV antibiotics go in.

However, obviously if the patient is going the wrong direction clinically, you need to get that antibiotic in because time to antibiotics is a critical step in our patients with sepsis.

But in the meantime, you really want to try to be getting a clean culture so that you can appropriately tailor the antibiotics once you get that information back.

Begin IV piperacillin and obtain a urine culture from the existing catheter. Again, because of the high ESBL risk, because he's quite sick, piperacillin is going to be lower on my list of first-line agents for this patient. And obviously, I really want to get that urine culture from a brand-new catheter without the existing biofilm there.

And nitrofurantoin clearly is not the right answer because it just will not get enough levels in him. So, let's summarize Gene for us. Our empiric options, again, are going to be cefepime because of its strong ESBL activity, and it does have good CAUTI data from the ALIAM group trial subgroup. Otherwise, ertapenem or meropenem are also reasonable choices. Certainly, if the patient's getting sicker and you want to get very broad-spectrum antibiotic therapy on board.

And if there's a strong suspicion for CRE, carbapenem resistance, then you're going to start bringing out some of those other agents that we've talked about that do have activity against CRE.

Again, this would most likely be done in consultation with your ID colleagues because these agents are typically reserved for very, very rare cases where you either have incredibly high suspicion or known CRE organism. So,

let's talk about healthcare settings, and this is very important. Where do we treat our patients, inpatient versus outpatient care?

Tamra E. Lewis, MD, URPS:

So, this section focuses on an essential operational component of cUTI management, which is selecting the correct site of care. So, the updated guidelines emphasize that inappropriate admission or delayed escalation contributes substantially to cost, morbidity, and missed opportunities for early stabilization.

Complicated UTI accounts for significant utilization across emergency departments and inpatient settings when patients who could safely be treated as outpatients are admitted, it does increase cost and exposure to healthcare associated risks.

Conversely, patients who truly need inpatient care, those with systemic illness may deteriorate if they're discharged too early. So, the modern framework of IDSA and EAU centers on systemic versus localized infection. And as we've already discussed, systemic features such as fever, rigors, tachycardia, hypotension, altered mental status can indicate a complicated UTI requiring higher level care. Importantly, comorbidities such as diabetes, BPH, do not automatically classify a UTI as complicated under the new definitions.

Instead, clinical severity is the main determinant. So, this shift aligns classification more closely with pathophysiology and supports better stewardship and site of care decisions.

So common pitfalls in the site of care decisions include admitting clinically stable patients who could be treated as outpatients and equally problematic under-admitting patients with early systemic illness. Additional pitfalls involve failing to reassess after initial ED treatment, which may lead to mis-deterioration and overlooking culture-based optimization.

These lapses can contribute to treatment failure or antimicrobial resistance. So, outpatient cUTI management pathway. So, this pathway outlines four essential outpatient steps. Number one, use appropriate agents for cUTI. If you've determined that it's a complicated infection, you don't want to use ones that are indicated for uncomplicated infections, so avoiding nitrofurantoin and single dose fosfomycin. You want to make sure that you obtain a urine culture before therapy. You want to provide clear return precautions and arrange for follow-up within 48 to 72 hours. So early follow-up is vital as it allows clinicians to confirm improvement or escalate care promptly.

Culture-based adjustments, again, you're treating before the culture comes back, and so you need to make adjustments to support optimal patient outcomes and antimicrobial stewardship.

Kalpana Gupta MD, MPH:

All right. So inpatient management of complicated UTI is something that we've just spent a fair amount of time on through our cases. And I think this table really nicely summarizes the approach. Remember, you want to stabilize the patient and also make sure that you get IV antibiotics on board.

And once you have the patient stabilized and treated, then remember to step down to oral therapy. And I think that how you do that will depend on that four-step algorithm that we've gone through. So important is really the best practices for transitions of care in cUTI, because there is going to be a fair amount of movement of these patients as they come into your hospital, maybe on different levels of care, and then you get them ready to be discharged. So, one is to confirm their clinical stability, make sure they're improving and have stable vital signs.

Two, is finalize their antimicrobial plan, and especially that IV to oral transition. Look at the duration based on the severity and the culture-guided adjustments of your antibiotics based on the cultures that have come back. Three, communicate clearly the final antibiotic regimen and the duration and return for what symptoms the patient needs to watch out for.

And then four, ensure continuity. Make sure that there's follow-up in place in 48 to 72 hours, and that they have continued to improve.

Tamra E. Lewis, MD, URPS:

So, we also should discuss some groups requiring additional attention, being older adults, catheterized patients, and individuals with additional risk factors such as chronic kidney disease or diabetes. So older patients may not present with the typical UTI symptoms. It may be delirium or weakness, and we should have a high suspicion that UTI could be one of the things that could be causing those symptoms. But on the other side, we don't want to assume that every episode of confusion in an older patient is automatically a UTI.

So, we want to use that to help with decision making. Catheterized patients face increased risk of obstruction, biofilm-associated infections and recurrent symptoms, and then patients with chronic kidney disease or diabetes may have slow responses to therapy and require tailored antibiotic dosing based on these factors.

So finally, let's put it all together. The site of care decision framework synthesizes the full decision-making framework. We begin with a patient presenting with symptoms concerning for complicated UTI. First step, are there any systemic features, fevers, rigors, tachycardia, hypotension, altered mental status, or flank pain? If any are present, then the infection would be classified as complicated and more urgent evaluation is required.

Once systemic features are identified or ruled out, then we assess whether the patient can be safely managed as an inpatient or an outpatient. That depends on clinical stability, ability to tolerate oral therapy, reliable support, and access to appropriate follow-up. If these conditions are met, the outpatient pathway would be appropriate. Otherwise, the inpatient pathway would be indicated prioritizing stabilization, IV therapy, evaluation for obstruction, and culture-guided narrowing of antimicrobial choice.

Kalpana Gupta MD, MPH:

All right. So, as we come to a close, it's important to discuss optimal cUTI management involves not only appropriate antimicrobial therapy, but also effective communication, patient engagement, and collaborative care among clinicians. This slide highlights the importance of respectful multidisciplinary patient-centered dialogue.

Tamra E. Lewis, MD, URPS:

And I think that's important to understand. The patient is at the center of this. So, you want to avoid blame, listen carefully to the symptoms that they're describing, take a comprehensive history, promote trust with your patient, and be sure that you have accuracy in your diagnosis. Engaging multiple disciplines such as primary care, urology, infectious disease, nursing, pharmacy does support coordinated decision making. So, our goals for increased professional communication and collaboration include establishing clear communication channels, commitment to evidence-based practices such as those we presented here today and expressing respect for other healthcare professionals' knowledge and contribution to the situation. Assessing collaboration,

competency, and willingness to accept feedback from other healthcare providers, making sure that the patient and caregiver values, preferences, and needs are considered by all healthcare professionals and using frameworks for structured communication.

Kalpana Gupta MD, MPH:

All right. This brings us to our final moments of what I think has been an excellent presentation on a very important topic. I'd like to thank Dr. Lewis for her expertise throughout this informative discussion, and of course, Paula, for sharing her story and her helpful insights. It also leads us to think about SMART goals that you may want to try in your practice as appropriate over the next three months, specific, measurable, attainable, relevant, and timely. Implement routine use of the 2025 IDSA EAU presentation-based classification within 60 days, incorporate the four-step empiric therapy algorithm into your clinical decision-making over the next 90 days, integrate guideline-based management pathways for high-risk cUTI populations within four months. And now we have time to go to our Q&A session. So, I will look at the questions and we will all try to answer them for you.

Tamra E. Lewis, MD, URPS:

I see a couple there that I could tackle right away because it kind of goes more on prevention. So, one of the questions, I have patients ask about D-mannose supplements. So, what is the data on that? So, for this, I'm going to go to the AUA guidelines on UTI prevention. D-mannose is actually not one of the agents that's listed on there. There have been a couple of recent studies that just have not really supported its use. Anecdotally, and again, this is my experience here. Anecdotally, I have patients who use it and they have good results with it, but the evidence does not support its use.

One of the second questions on here, can a patient on HRT, estrogen and testosterone use vaginal estrogen? Absolutely 100%. So, when you're doing a supplemental dose of estrogen or testosterone, that's basically to bring you up to a level state.

It's not enough estrogen to support the vaginal tissues. And so, for treatment of what now has a new name, genitourinary syndrome of menopause, vaginal estrogen is recommended and that is also actually on the guidelines for UTI prevention.

Kalpana Gupta MD, MPH:

Great. And I can answer some of the therapy questions. One question, tebipenem is oral and would be a good option for a patient with complicated UTI that does not require hospitalization and IV therapy. When do you think this drug will be available? Again, this drug is not yet FDA-approved, so that's a process that needs to go through an FDA approval and then rolling out into the clinical space. But it will be an option, again, a good oral option. It will be something that, as with all of these newer agents, should be used for patients in whom really an expanded spectrum antibiotic is needed as opposed to the standard spectrum antibiotics that also work for complicated UTI. So, there will be some education and additional algorithms to take into place when we do get this antibiotic available for us. Do we have evidence yet that the newer agents improve long-term outcomes like recurrence, not just short-term cure?

That's a really great question. And recurrent UTI is certainly one of those things that plagues our patients. Right now, the therapies are really used for treatment of the acute event, and it's really the preventive strategies that we've talked about a bit that you put into place after therapy of the acute infection that really can then try and quiet down the number of recurrences that your patient's going to be dealing with.

Tamra E. Lewis, MD, URPS:

So, there's a question on here. "A patient who reports UTI after intercourse regularly has history of Bactrim PRN from PCP, best way to treat now as she presents looking for preventative options." So, treatment and preventative options are two different things. So, if someone is looking for UTI prevention, I think that's where you go through some of the behavioral aspects. Are they hydrating well, emptying the bladder efficiently? For a postmenopausal female, has vaginal estrogen been considered? Are there some non-antibiotic prevention strategies?

Cranberry supplementation is one thing that is recommended in the guidelines as being an alternative to antibiotic use. And I personally have patients who use that as a preventative after intercourse. And the other question I would say is, if patients are having symptoms after intercourse, are those symptoms leading to culture proven infections? It's very possible to have some burning urgency, things like that.

Antibiotics treat bacteria. Antibiotics don't treat burning urgency frequency. And so, if there's some other causes for those symptoms, we want to be open to discussing those other causes. Do they need to use lubricant or is it a pelvic floor issue or are there some other factors in place? So that involves just having an open, honest discussion with your practitioner about the symptoms that you're having and also thinking outside the box. Antibiotics are not just a blanket that you put on all of those symptoms, but I'm glad we have them when we need them.

Kalpana Gupta MD, MPH:

Excellent. Another therapy question, given how common fluoroquinolone exposure is, should we be avoiding them almost entirely for complicated UTI or is that an overcorrection? And I think it's important to know that fluoroquinolones are excellent agents for complicated UTI when your organism is susceptible or strongly suspected to be susceptible. And that's where you use your four-step approach to discern that.

And if you do feel the patient's appropriate for outpatient oral therapy, then fluoroquinolones are certainly very much in the box of recommended therapies. Again, looking at whether or not that patient has risk factors for fluoroquinolone resistance as the guide to whether or not that will be your empiric therapy of choice, but I would not avoid them just automatically in every patient.

So, if you have two therapeutic options that are guideline concordant, how do you personally choose between them? That's an excellent question. Really, this is becoming more patient-centric. So, it's not so much that you're going to make a choice based on your own level of comfort. You're going to look at the patient and say, "What do I know about their previous microbiology? What have they tolerated? What potential drug-drug interactions would there be?" And that's how you will narrow down to the best choices. And then again, also looking at whether or not it's going to be oral or IV. But typically, if you're left really with a complete draw, then what we know is that providers tend to use the antibiotic that they're most familiar with. But if so, I would go through those four steps and go ahead and use the agent that seems most appropriate.

Thank you so much for joining us today. The excellent questions. It was a great program and thank you to my co-speakers.

Tamra E. Lewis, MD, URPS:

Thank you. Thanks everyone for joining.

Paula Cobb:

Yes, thank you. I appreciate it.