Infectious Diseases Society of America
Emerging Infections Network

Comments for Query: 'Urinary Tract Infections with Multiply Drug-Resistant Organisms'

Comments made by 267 respondents.

State or province of practice shown in brackets, e.g., *[CA]*; Pediatric comments shown in blue

Diagnosis of UTI / Not treating asymptomatic bacteriuria

- No antibiotics / treatment if asymptomatic *[FL, MI, ND, OR, TN]*
- A lot of MDR develop secondary to "treatment of UTIs" when there is no pyuria or when foley is colonized. ID MD's see patients after MDROs develop after primary care MDs run out of oral antibiotic options. A lot of patients get treated without symptoms. *[CA]*
- Only treat if symptomatic. Don't treat the culture. *[NY, WI]*
- Treat only if clinically ill, i.e., no treatment for asymptomatic bacteriuria *[OK]*
- I assume that when the term "UTI" is used, we have made a decision to treat. I see many urine results which DO NOT warrant treatment, even if resistant organisms. *[NH]*
- 1) obtain culture from straight cath (often MDR was from a poorly cultured bedpan specimen). 2) No Rx unless some low-grade fever or leukocytosis in the encephalopathic NH/LTAC patient *[IL]*
- The key issue is determining if this is a true MDRO organism infection vs asymptomatic colonization. The overwhelming majority of MDRO GNR urine culture isolates are from debilitated patients with indwelling catheter, urinary retention, stents or stones serving as a nidus for persisting bacteruria and have been highly experienced with recent or prior abx rx (often inappropriate)and LTCF LTACH settings. The most frequently sited guideline that I use in educating my peers, particularly in the LTACHs I attend, is the SHEA guideline on UTI in LTCF- a great and valuable document in our stewardship endeavors. *[CA]*
- Our most common scenario is an elderly person with ESBL in the urine from a LTCF who is confused. We encourage providers to consider that these 2 things are not related and avoid treating unless clear infection rather than colonization which is more common *[MA]*
- Rarely treat unless symptomatic or granulocytopenic *[WI]*
- No treatment for asymptomatic bacteruria. Many patients do not have a UTI, just a positive urine culture and have asymptomatic bacteruria and do not require treatment with antimicrobial agents. *[GA]*
- Repeat urine c/s, with UA and treat only if symptomatic, if so then combination therapy *[NJ]*
- The biggest problem we have in treatment of MDRO UTI (in my region of Texas) is over-treatment in patients with asymptomatic bacteriuria. Sadly, the majority of hospitals in this region have not implemented antimicrobial stewardship in the recommended format where an ID physician rounds regularly with a clinical pharmacist. This is not because of a lack of "resources" or qualified/interested personnel (physicians or pharmacists). I don't see this changing significantly until these programs are required as conditions of participation by CMS. *[TX]*
- Most important is to root out asymptomatic bacteriuria (and contaminants) and avoid treatment. Unfortunately, we have seen a huge increase in community-acquired ESBLs in the past 2-3 years. *[CA]*

- I try to avoid treating w/ abx unless pyuria or sx, i.e to be sure it IS UTI not bacteriuria. *[CA]*
- Initial decision point is whether or not this urine culture truly warrants treatment. Often the issue is actually asymptomatic bacteriuria, Foley/foreign body, neurogenic/anatomic bladder problem, or collection contaminant. *[CA]*
- Above all, I try very hard to confirm that it is a truly symptomatic UTI that truly requires treatment. I find very often that these are elderly patients being treated presumptively for UTI by PCPs when the DX is very questionable. *[OR]*
- It is often hard to convince both patients and referring physicians not to send urine cultures without signs of infection. It is often difficult to eradicate colonization with the organism, and test for cure cultures are frequently requested. A main portion of the consult is spent on discussion of signs/symptoms of infection along with when to treat. *[KY]*
- First, I try to make sure it's a good specimen. Next, is the patient infected? Next, is there an underlying complication with the urogenital tract? *[SC]*
- Often these infections occur in patients who have chronic SP or foley cath. It can be hard to differentiate colonization from infection. I often will exchange catheter and repeat culture with UA. If patient is doing well, I often observe without antibiotics. *[MI]*
- It is unclear throughout the survey whether you are referring to cystitis or pyelo (ie it was unclear what "uti" meant) *[CA]*

Management of catheters / foreign bodies

[72 individuals made comments on this issue. A sampling of responses are shown below; other responses echo the comments below.]

- Replacement (if foley clinically indicated) or outright removal of foley catheter (if not clinically indicated) *[NC]*
- Removing all devices and stones from GU tract *[WI]*
- Make sure there are no complicating factors- DM, stones, catheters, etc *[IL]*
- Change or d/c foley if one present. Cystoscopy to search for bladder sediment or stones. *[MO]*
- Follow up urine cultures after treatment, remove foley catheters, consider weeks of treatment for prostatitis, consider suprapubic catheter if long term urinary drainage needed *[CA]*
- Removal or change of catheter; stent, infected stones. If pyelonephritis, longer duration of therapy. *[FL]*
- Evaluating for risk factors such as urinary retention, use of silver coated catheters to prevent recurrence, removing catheters when possible *[TX]*
- Most of our MDRO UTI's are in children with neurologic disorders requiring instrumentation for urination. For these children we work on catheterization techniques and removal of any permanent or semi-permanent catheters *[UT]*
- It is a UTI, needs to be treated as such, we just need to find the antibiotic that will work. Source control is also important, so stents, neph tubes and stones need to be removed if at all possible.

Non-antimicrobial interventions including urology evaluations

- Hydration or increasing fluid intake *[LA, NC, NY, TX, WA]*
- Probiotics (change bowel flora) / yogurt / intravaginal probiotics *[CA, FL, MA, NY, NY, OH]*
- Probiotics with the theoretical idea of shifting the colonization in patients with recurrent UTIs. *[AZ]*
- Cranberry products *[CA, LA. OH, WA]*, suggest cranberry products, with understanding that these have inconsistent evidence supporting them *[TX]*
- Vaginal estrogen creams *[FL, IN, OH, WA]*
- 1) image bladder/kidneys (US); 2) Check PVR w bladder scan; 3) avoid treating asymptomatic bacteriuria *[CO]*
- Bladder emptying maneuvers. *[MA]*

- Evaluating for risk factors such as urinary retention, use of silver coated catheters to prevent recurrence, removing catheters when possible *[TX]*
- Aggressive treatment of constipation as in patients with neurogenic bowel *[IA]* Bowel care *[TX]*
- Our institution has a number of patients with neurogenic bladder or who require catheterization for other reasons. We have a broad approach involving re-education about technique (by patient, staff and other caregivers), review colonization vs. infection, and avoiding treatment of the latter, etc. *[MA]*
- In patients with neurogenic bladder/self-catheterization, we will increase frequency of catheterization and attempt to increase volume of urine by increased enteral intake. *[AZ]*
- Good hygiene, bathing, avoid basins for bath, avoid catheters, proper catheter care. *[MD]*
- Antibiotics are adjunctive treatments of UTI. If the underlying predisposing condition is not treated, the UTI will recur, the patient will require future courses of antibiotics and infections with MDR-pathogens will appear. So antibiotic therapy of inappropriately managed UTI is generally the cause of UTIs with MDR pathogens (excluding the recent reports of community acquired cystitis from ESBL+ Enterobacteriaceae possibly food related). I was unable to answer most of the questions of this survey accurately because primary, non-antimicrobial interventions designed to enhance the likelihood of cure and to reduce the likelihood of recurrence were not offered alongside of antibiotic selection. I am left with the impression that those administering this survey don't recognize the primacy of managing obstruction, retention, fistulae, foreign bodies, neprho/urolithiasis, etc. over antibiotic selection in the treatment of UTI, particularly those caused by MDR pathogens, and are therefore promoting poor patient care as well as the loss of antibiotic effectiveness. The questions in this survey are depressingly similar to those that I receive regularly from Urologists, Gynecologists and Internists who are seeking guidance for antibiotic treatment of the patient with a recurrent UTI that is now a MDR UTI, and who have never bothered to ask why the infection was recurring in the first place. *[FL]*
- Maximize hydration, attempt to lower urine pH with Vitamin C, suggest cranberry products, with understanding that these have inconsistent evidence supporting them. Anything that may help to reduce antibiotic requirements at all in these patients is worth attempting. *[TX]*
- As with the majority of these surveys, there are assumptions about the condition that I appear to differ with from what is implied by the questions. Asymptomatic bacteruria and bacteruria association with indwelling catheters are the conditions that require study. The presence of bacteria is often irrelevant. As long as we use antibiotics we will have drug resistant bacteria. More antibiotics is not the answer to the problem. Understanding why normal physiology breaks down and addressing that issue should replace discussions about bacteria. There should be a thorough study in particular in oliguric patients to identify if pyuria is the normal compensatory mechanism of the bladder in the low/no flow state. As long as we think bacteria are the problem we will always lose the war on the UTI front as bacteria will always be with us (THANKFULLY!) *[MA]*
- If anatomic defect, urology referral *[CA]*
- Urological intervention when appropriate (remove catheter, stones, etc.) and aggressive antimicrobial stewardship. *[PA]*
- Usually requesting work up with imaging to exclude stone dz/ abscess / anomalies. Catheter care, bowel care and hygiene all important. Frequently urology consultation. *[TX]*
- Most of these patients are women. Urge referral or consultation with GYN to look at local factors. Do not try to treat with foley catheters in place or known bladder pathology unless symptomatic. *[CA]*
- Urologic assessment for nephrolithiasis or other nidus of infection if relapse of infection occurs. *[MA]*
- Not treating, giving a course of Pyridium and praying. *[NY]*

Bladder instillation / irrigation *[24 individuals made comments on this issue. A sampling of responses are shown below; other responses echo the comments below.]*

- Bladder irrigation with aminoglycoside *[CA, MI, MS, MN, OH, UT, VA]*

- 1) myelomeningocele patients (or others with neurogenic bladder/recurrent UTI), use of gentamicin or neomycin-polymyxin bladder irrigation (tx and/or prevention), if susceptible; 2) methenamine in one patient (prevention) *[OH]*
- Bladder washout / irrigation with antibiotics *[FL, NJ, NY]*
- Not explicitly MDRO, but w/ Urology colleagues have used clorpactin instillation into bladder q several weeks b/c of alternating recurrent UTI and recurrent C diff for 1 patient. *[IA]*
- Intra-vesicular antibiotics. Increased frequency of catheterization *[LA]*
- Multi-drug therapies with one or more drugs listed as intermediate in susceptibility, intravesicular flushing with amikacin or gentamicin *[MO]*
- Bladder irrigation (no agents mentioned) *[CA, CA, MN, RI, WV]*
- Irrigation with acetic acid *[IL]* For those with Foley catheters, flushing the bladder with dilute acetic acid & saline, to reduce bacterial load *[MS]* Intravesicular hyaluronic acid *[SC]* Dilute acetic acid bladder washes *[SD]*

Methenamine *[13 individuals made comments on this issue]*

- Occasionally have tried to prophylax after treatment with Mandelamine - not much anecdotal success *[WI]*
- When possible, I have attempted acidification and methenamine prophylaxis with modest success. *[FL]*
- Mandelamine / Hiprex *[CA, FL, FL, LA, MN, MO, NJ]*
- If the patient has recurrent UTI's, and is not catheterized chronically, I'll consider methenamine. *[NH]*
- Always check for nitrofurantoin sensitivity. Mandelamine is another possibility if it is only cystitis. *[CA]*
- Mandelamine/ascorbic acid - if pH <=5.5 can be achieved *[NY]*

Treatment selection and duration issues / Questions 7 & 8

- Q8 - treatment depends on sensitivities; poor question. Fosfomycin is very difficult to obtain. *[CA]*
- Treatment really depends on the susceptibilities *[MI, OK, OR, PA, WI]*
- If it is upper tract disease base treatment on susceptibilities *[GA]*
- Question 8 is difficult: esp for ESBLs because sensis vary. So I cannot lump all ESBLs together and tell you which drug I use the most. May also depend on whether or not the pt is also bacteremic. *[NH]*
- 1. Check susceptibilities to as many drugs as possible. 2. Sometimes you can clear a UTI even if the organism is "resistant" because of exceedingly high levels in the urine. So, if the pt is doing better but the report is "resistant", I will repeat a UC before changing therapy, and if the repeat UC is sterile, I will continue with the original drug. *[IL]*
- You should specify for question 8 if it is upper or lower tract infection. Nitrofurantoin might be a choice if the scenario is lower tract disease. You should indicate if the cases or scenarios indicate >= 18 year of age. Duration and course likely differ for Peds vs. Adults. *[NC]*
- If uncomplicated, may use drug with "resistance" realizing high concentration achieved in bladder *[OR]*
- Short courses initiated by woman at first signs of infection and keeping duration short to reduce risk of acquired resistance, like 3-5 days. *[CT]*
- Treat for minimal time to clear symptoms. Most patients have been referred for recurrent infection, or relapsing infection because of abnormal urinary tract architecture. *[FL]*
- 1. If allowed, and truly MDRO, will try to use two antibiotics at least initially. 2. Often use followup culture after therapy; however follow UAs initially to see if inflammatory response lessening on selected therapy. 3. VRE in urine may still be susceptible to amoxicillin/ampicillin: concentration so high in urine may overcome MIC if low(er) grade resistance. 4. Most of our MDRO gram negatives are in the adult (not pediatric) units. We have had an aggressive antibiotic stewardship program for >8 years, therefore we have not had to deal much with these organisms in the pediatric population. 5. Our largest MDRO issues deal with children with underlying renal anomalies. Frustrating, mostly recurrent

here as well as drug resistant. 6. Length of therapy also depends upon age group and response to therapy. *[NC]*

- Reply to question #8 (a, b, c, e, f): choice of antibiotics in those situations depends on the susceptibility pattern of the organism isolated with carbapenems as last choice and fluoroquinolones as one before last. *[AZ]*
- Regarding duration of therapy, in most circumstances much of that decision is based on the host and their underlying anatomy. Many times that is more important than the organism isolated. *[IA]*
- Using an abx that has intermediate susceptibility --if concentrated in urine *[WA]*
- After question #3, this is survey descends into ridiculousness. Management / antibiotic choice / duration / test of cure / etc depends on a number of other factors besides simply what the organism might be. Sure, an MDRO adds additional complexity, but nobody can really answer these questions above based just on the organism. Is the host inpatient or outpatient, immunocompromised or not, have an abnormal urinary tract or not, elderly or not, complexly ill or not, have renal insufficiency or not, showing evidence of pyelo or not, allergic or not, insured or not, etc. etc. -- my answers for 4 - 9 are junk, and your survey answers for questions 4 - 9 will be similarly uninterpretable. I don't want another survey on this, because this one was poorly designed. *[MN]*
- Anatomic GU issues such as incomplete bladder emptying, stones and other anatomic issues. These issues often drive my duration of therapy and other interventions *[CO]*
- Regarding #7 - it depends whether the UTI is complicated or not. Uncomplicated UTI would be <7 days regardless of pathogen, complicated UTI 14 days. Many of the MDRO UTIs I encounter are complicated. *[NY]*
- For question 7, my duration depends on whether there has been previous treatment with an appropriate regimen, and/or whether the UTI is "complicated" or prostatitis is suspect. It does not have to do with the organism itself. *[CA]*
- Ask for disk diffusion (KB) testing and use drugs with some zone size >6 even if resistant by CLSI breakpoints. *[PA]*
- I always confirm infection via u/a and I determine the duration based on whether the infection is complicated by catheter or stents or +blood cultures. *[LA]*
- Assuring solid diagnosis, often including repeat culture with catheterized specimen. Also advise primary care to decrease antibiotic use in the patient as much as possible, and be rigorous for all diagnoses requiring antimicrobials. Our biggest issue is the kids with complicated urinary tracts (stones, urinary tract hardware, etc), who never clear. *[CO]*
- Duration of therapy depends on if it is cystitis or a complicated UTI - less affected by the organism *[MN]*
- Antibiotic restriction after treatment *[IA]*
- Most of the questions about treatment in the survey do not make any sense to me since if you know it is a MDRO you will know what it is or is not sensitive to, and that guides choice of drugs. *[CA]*
- Regarding treatments--length of therapy is dependent on whether the UTI is complicated or not. Initial therapy is parenteral (I see predominantly inpts) then change to oral therapy when possible *[IL]*
- Checkerboard testing *[CA]*
- Your question above for duration of therapy is not a good question. If it's a simple- uncomplicated, not foley related UTI- then i do 3 days usually. If it's foley related- then 7-10 days. Most of these MDRO pathogens are in people with foleys. *[IL]*
- Increasing dose of antibiotic if MICs are only borderline resistant and uncomplicated UTI *[NY]*
- It was hard to answer some of the survey questions. For example, for 7, the duration really depends on the clinical situation, rather than the type of bug; is it a complicated UTI? Immunocompromised host? How sick were they? Or for 3, while our lab doesn't screen for ESBL or KPC, if initial susceptibility testing suggests that those might be present then further testing is done. *[WA]*

- The questionnaire does not address the biggest issue I have with cipro and TMP-SMX resistant isolates - namely very high recurrence rates. There is not a problem getting short term response, but in those predisposed to recurrent infections presumably it persists in the bowel or vagina and reinfects from there. *[BC]*
- I don't understand how question 8 is to be answered in the absence of antimicrobial susceptibility data. If that's what you want to know from us, why not ask? *[FL]*

Antibiotic-specific comments

- Fosfomycin as outpatient is very expensive but works *[CA]*
- Combination of amoxicillin/clavulanate and cefpodoxime *[CA]*
- Colistin for Acinetobacter, ampicillin for any VRE UTI that is susceptible *[FL]*
- TIME for low UTI; tigecycline for upper urinary tract *[KY]*
- Tigecycline *[FL, IN, NJ, NY, NY, NY, OH]* even though achievable levels aren't good *[OH]*
- Colistin *[AL, CA, CA, IA, IL, IN, LA, NJ, NJ, NY, OH, OK. PA, SC, TN, TX, TX, WI, WI]*
- IV aminoglycoside with fosfomycin *[IN]*
- I use fosfomycin with carbapenem (R) and often another agent to try to bring a cure. *[KS]*
- Medicare has labeled Macrodantin a dangerous drug which makes getting Rxs for this Rx complicated. I have also used Mandelamine as suppressive therapy. *[LA]*
- Colistin or amikacin for MDR-GNR. Ertapenem for ESBL-E coli. Daptomycin for VRE *[TN]*
- Antibiotics concentrated in urine may be effective even if "resistant" by serum levels. *[VT]*
- Combo of tigecycline and carbapenem for carbapenemase producer cleared blood but not the urine *[CA]*
- IM Amikacin *[MA]* IM aminoglycoside if the patient does not need to remain in the hospital for other reasons. [TX]
- Home therapy: IV cefepime (renal adjusted dosing) via PICC line once daily as outpt x 1 4-21 days *[MD]*
- High dose (Knightingale protocol) aminoglycoside *[NJ]*
- Colistin parenterally; considered (could not acquire) fosfomycin; antibiotic bladder washes *[FL]*
- Nitrofurantoin, if limited to a cystitis (if susceptible, in the absence of fever or either clinical signs of an upper tract infection) *[NY]*
- For MDRO E. coli, consider combinations of cephalosporins with beta-lactam+ betalactamase inhibitors. *[CA]*
- When MDRO resistance is suspected, we have added gentamycin in patients with SIR criteria. *[CA]*
- Repeat UA w micro, ertapenem, amoxicillin for VRE when suscep, a lot of Keflex for pan suscep E coli *[OH]*
- If patient doesn't want IV antibiotics, not all that sick, I use fosfomycin instead of a carbapenem for ESBL. *[CA]*
- I try to use fosfomycin whenever possible. *[MA]*
- I have used a combination of a 3rd generation cephalosporin with Augmentin for oral therapy for ESBL producing Enterobacteriaceae. *[MI]*
- Fosfomycin is often not covered by insurance, so pricing as well as availability often limits its use. *[KY]*
- Continuous infusion of certain agents, such as meropenem for CRE near the breakpoint. Doxycycline if child old enough *[MB]*
- For systemic infections: combination with aminoglycoside/FQ only if organism susceptible/sometimes colistin *[TN]*
- Cephalosporin + BL inhibitor (Augmentin); doxycycline, nitrofurantoin *[CA]*
- I want to point out that I only use fosfomycin for UPPER UTIs, not for lower UTIs because generally I can use nitrofurantoin for lower UTIs. If I was to use fosfo for a lower UTI, I would give only 1 dose, per the package insert. *[CA]*
- Cefpodoxime/amox-clav for ESBL, methenamine. *[CA]*

- I have not found any MDRO gram negatives to be susceptible to fosfomycin *[MD]*
- Nitrofurantoin, aminoglycosides and colistin work well in most cases. *[IL]*
- Cephalosporin if clinical resolution--concentrates in urine and, despite MICs, patients often improve *[DC]*
- PICC and ertapenem *[MA]*
- The biggest challenges are distinguishing symptomatic infections from asymptomatic bacteruria especially in debilitated patients. For ESBLs have used some oral cephalosporins depending on susceptibility profiles. Have used low dose aminoglycosides for susceptible isolates. Have used combination Rx for XDR isolates *[NJ]*
- Colistin, tigecycline, pharmacokinetic manipulation of antibiotics in the carbapenem class, combination therapy *[OH]*
- If organism is not susceptible to fosfomycin, would tx with aminoglycoside or carbapenem depending on susceptibility panel. For resistant Acinetobacter we have been able to use Unasyn. *[FL]*
- Occasional ampicillin or carbapenem for VRE *[NJ]*
- Treatment with combinations of drugs, such as carbapenem and aminoglycoside; using colistin. *[DE]*
- If uncomplicated lower UTI will try nitrofurantoin, IM ertapenem prior to going to IV *[CA]*
- Some VRE strains are ampi - gentamicin susceptible, in the patient with NO penicillin allergy. *[MA]*
- Combination therapy with aminoglycoside or colistin with carbapenem or pip/tazo has been somewhat effective in my experience. *[NC]*
- Combination therapy for pseudomonas *[MA]*
- In renal transplant patient with pyelo, if fosfomycin fails we go to colistin/carbapenem combination if aminoglycoside is not an option. *[PA]*
- Colistimethate, prolonged infusion of carbapenems, combination carbapenems with aminoglycosides, *[IA]*
- Combination tigecycline with rifampin for CRE *[NC]*
- Double coverage with aminoglycoside *[WV]*