Renal Considerations for Empiric Oral Antibiotics Used for Treatment of UTI

Oral Antibiotic	Place in Therapy	Renal Adjustment	Additional Renal Considerations	Other Considerations
Trimethoprim/ Sulfamethoxazole (Bactrim / Septra)	IDSA recommended empiric therapy for **uncomplicated** UTI IDSA recommended alternative for **complicated** UTI	**YES** Dose adjust for CrCl <30 mL/min Use not recommended with CrCl <15 mL/min	**Acute interstitial nephritis**: Crystallization of SMX, Reduce risk with adequate hydration **"False" elevation in SCr:** TMP inhibition of creatinine secretion in the proximal convoluted tubule **Avoid** in chronic renal insufficiency	**Hyperkalemia:** Dose-related effect of TMP, Inhibition of K+ excretion via Na+/K+ pump in the distal tubule, Particularly when used with ACEI, ARB, or potassium-sparing diuretic **Warfarin:** Increased INR
Nitrofurantoin Monohydrate Macrocrystals (Macrobid); **Nitrofurantoin Macrocrystals** (Macrodantin)	IDSA recommended empiric therapy for **uncomplicated** UTI Avoid if **complicated** UTI or if early pyelonephritis is suspected	**NO** Per manufacturer contraindicated with CrCl <60 mL/min, however data exists for use down to CrCl of 40 ml/min	**Avoid** in chronic and acute renal insufficiency	Little resistance in E coli No activity against proteus sp
Ciprofloxacin (Cipro) **Levofloxacin** (Levaquin)	IDSA recommended empiric therapy for **complicated** UTI IDSA recommended alternative for **uncomplicated** UTI; no longer a first line option for uncomplicated cystitis due to resistance and adverse effects	**YES** Dose adjust for CrCl <50 mL/min	**Non-nephrotoxic;** Can be used in acute and chronic renal insufficiency	Moxifloxacin should not be used for UTI due to low urine concentrations **BBW**: Tendon inflammation/rupture (<1%), Increased risk in patients >60 yo on concurrent corticosteroids or with renal disease Potential to prolong QT 2016 labeling revision secondary to review by FDA which showed portential for disabling and potentially permanent side effects involving tendons, muscles, joints, nerves, and CNS
Amoxicillin/ Clavulanate (Augmentin)	IDSA recommended alternative for **uncomplicated** UTI	**YES** Dose adjust for CrCl <30mL/min	**Non-nephrotoxic;** Can be used in acute and chronic renal insufficiency	
Cephalexin (Keflex); 1st gen ceph **Cefuroxime** (Ceftin); 2nd gen ceph	IDSA recommended alternative for **uncomplicated** UTI	**YES** Dose adjust for CrCl <30 mL/min	**Non-nephrotoxic;** Can be used in acute and chronic renal insufficiency	No coverage of *Enterococcus spp.*
Fosfomycin (Monurol)	****Non-Formulary**** IDSA recommended for **uncomplicated** UTI	**NO**	**Non-nephrotoxic;** Can be used in acute and chronic renal insufficiency	Mainly studied in females / limited data for use in complicated UTI Limited systemic absorption precludes use beyond cystitis

Susceptibility of Most Common UTI Pathogens (Miami Valley Hospital 2015)

	Escherichia coli	*Klebsiella pneumoniae*	*Proteus mirabilis*	*Enterococcus faecalis*	*Enterococcus faecium*
Trimethoprim/Sulfamethoxazole	72%	89%	62%	0%	0%
Nitrofurantoin	96%	58%	0%	99%	53%
Levofloxacin (~Ciprofloxacin)	71%	97%	62%	63%	14%
Ampicillin/Sulbactam (~Amoxicillin/Clavulanate)	53%	78%	89%	99% **Ampicillin / Amoxicillin =Drug of choice**	17%
Cefazolin (~Cephalexin)	86%	90%	91%	0%	0%
Cefuroxime	91%	89%	98%	0%	0%

References:

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