

URINARY TRACT INFECTIONS IN CHILDREN

Acute Uncomplicated																																			
Etiology	Preferred regimen	Comments																																	
<p><i>E. coli, Klebsiella, Enterobacter, Enterococcus, Group B Strep</i></p>	<p>Infants < 2 months:</p> <p>Cefotaxime</p> <table border="1"> <thead> <tr> <th>Age</th> <th>Weight</th> <th>Dose</th> </tr> </thead> <tbody> <tr> <td><7 days</td> <td></td> <td>50 mg/kg/dose q 12 hrs</td> </tr> <tr> <td>>7 days</td> <td>< 1200 g</td> <td>50 mg/kg/dose q 12 hrs</td> </tr> <tr> <td>>7 days</td> <td>>1200 g</td> <td>50 mg/kg/dose 8hrs</td> </tr> <tr> <td>>1 month</td> <td></td> <td>100-200 mg/kg/day div q 6 hrs</td> </tr> </tbody> </table> <p>PLUS</p> <p>Amikacin</p> <table border="1"> <thead> <tr> <th>Age</th> <th>Weight</th> <th>Dose</th> </tr> </thead> <tbody> <tr> <td>0-4 weeks</td> <td><1200 g</td> <td>7.5 mg/kg od</td> </tr> <tr> <td><7 days</td> <td>1200-2000 g</td> <td>7.5 mg/kg od</td> </tr> <tr> <td><7 days</td> <td>> 2000 g</td> <td>7.5-10 mg/kg od</td> </tr> <tr> <td>>7 days</td> <td>1200-2000 g</td> <td>7.5 mg/kg od</td> </tr> <tr> <td>> 7 days</td> <td>> 2000 g</td> <td>10 mg/kg od</td> </tr> </tbody> </table> <p>For 10-14 days</p>	Age	Weight	Dose	<7 days		50 mg/kg/dose q 12 hrs	>7 days	< 1200 g	50 mg/kg/dose q 12 hrs	>7 days	>1200 g	50 mg/kg/dose 8hrs	>1 month		100-200 mg/kg/day div q 6 hrs	Age	Weight	Dose	0-4 weeks	<1200 g	7.5 mg/kg od	<7 days	1200-2000 g	7.5 mg/kg od	<7 days	> 2000 g	7.5-10 mg/kg od	>7 days	1200-2000 g	7.5 mg/kg od	> 7 days	> 2000 g	10 mg/kg od	<p>If with signs of sepsis, treat as neonatal sepsis. Adjust therapy based on culture. Early onset usually due to maternal transmission. May use Ceftriaxone if Cefotaxime is not available and the neonate is not jaundiced.</p>
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<p><i>E. coli, Klebsiella, Enterobacter, Citrobacter</i></p> <p>Infants and children who have bacteriuria and fever $\geq 38^{\circ}\text{C}$ OR those presenting with fever $<38^{\circ}\text{C}$ with loin pain/tenderness and bacteriuria Acute pyelonephritis</p> <p>Infants and children who have bacteriuria but no systemic symptoms or signs Acute cystitis Should be considered to have cystitis/lower urinary tract infection</p>	<p>>2 months to X years</p> <p><u>Oral options</u></p> <p>Amoxicillin-Clavulanate <40 kg: 20-40 mg (amoxicillin)/kg/day q 8 hrs or 25-45 mg/kg/day q 12 hrs using the 20 mg/5mL or 400 mg/5mL <40 kg: 25-45 mg (amoxicillin)/kg/day q 8 hrs >40 kg: 500-875 mg q 8 hrs; maximum dose: 2g/day</p> <p>OR</p> <p>Cefuroxime >3 mos - 12 yrs: 20 - 30 mg/kg/day q 12 hrs PO</p>	<p>Oral therapy equally effective to IV therapy.</p> <p>IV therapy preferred for seriously ill children and for those who cannot take oral therapy.</p> <p>Early antibiotic therapy is necessary to prevent renal damage.</p> <p>Switch to oral therapy once patient has been afebrile for 24 hrs and able to take oral medications.</p> <p>Obtain renal ultrasound within 6 weeks for 1st UTI in children <6 months old.</p> <p>Cephalosporins are not useful if <i>Enterococcus</i> is suspected.</p> <p>Nitrofurantoin should NOT be used for pyelonephritis and renal sepsis due to poor serum concentrations.</p> <p>Clinical response is expected in 24-48 hours. Antibiotic</p>																																	

	<p>Adolescents and Adults: Cefuroxime 250-500 mg q 12 hrs PO OR Nitrofurantoin (only for cystitis) 5-7 mg/kg/day q6 hrs; maximum dose: 400 mg/day</p> <p><u>IV options</u> Ampicillin-Sulbactam 100-200 mg/kg/day of ampicillin q 6 hrs IM or IV infusion over 10-15 min OR Cefuroxime 75-150 mg/kg/day q 8 hrs; max dose: 6 g/day</p> <p>Duration of therapy for acute pyelonephritis: 7-14 days Duration of therapy for cystitis: 3 days;</p>	<p>coverage should be re-assessed if still unwell in 24-48 hrs.</p>
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UTI, complicated or catheter related (obstruction, reflux, azotemia, transplant)

Etiology	Preferred regimen	Comments																														
<p><i>Enterobacteriaceae, Pseudomonas aeruginosa, Enterococcus</i></p>	<p>Ceftriaxone</p> <table border="1"> <thead> <tr> <th>Age</th> <th>Weight</th> <th>Dose</th> </tr> </thead> <tbody> <tr> <td><7 days</td> <td></td> <td>50 mg/kg/dose q 24 hrs</td> </tr> <tr> <td>>7 days</td> <td>< 2000 g</td> <td>50 mg/kg/dose q 24 hrs</td> </tr> <tr> <td>>7 days</td> <td>> 2000 g</td> <td>50-75 mg/kg/dose q 24 hrs</td> </tr> </tbody> </table> <p>Infants & children: 50-100 mg/kg/dose q 24 hrs; meningitis: 100 mg/kg/day q 12-24 h IV or IM; max dose: 4 g/day</p> <p>AND/OR</p> <p>Amikacin</p> <table border="1"> <thead> <tr> <th>Age</th> <th>Weight</th> <th>Dose</th> </tr> </thead> <tbody> <tr> <td>0-4 weeks</td> <td><1200 g</td> <td>7.5 mg/kg od</td> </tr> <tr> <td><7 days</td> <td>1200-2000 g</td> <td>7.5 mg/kg od</td> </tr> <tr> <td>≤7 days</td> <td>> 2000 g</td> <td>7.5-10 mg/kg od</td> </tr> <tr> <td>>7 days</td> <td>1200-2000 g</td> <td>7.5 mg/kg od</td> </tr> <tr> <td>> 7 days</td> <td>> 2000 g</td> <td>10 mg/kg od</td> </tr> </tbody> </table> <p>Infants and children: 15-22.5 mg/kg/day as single daily dose or q 8 hrs; max dose: 24 gm/day</p>	Age	Weight	Dose	<7 days		50 mg/kg/dose q 24 hrs	>7 days	< 2000 g	50 mg/kg/dose q 24 hrs	>7 days	> 2000 g	50-75 mg/kg/dose q 24 hrs	Age	Weight	Dose	0-4 weeks	<1200 g	7.5 mg/kg od	<7 days	1200-2000 g	7.5 mg/kg od	≤7 days	> 2000 g	7.5-10 mg/kg od	>7 days	1200-2000 g	7.5 mg/kg od	> 7 days	> 2000 g	10 mg/kg od	<p>Use Cefotaxime instead of Ceftriaxone in jaundiced patients. If <i>Pseudomonas</i> is suspected, use Ceftazidime instead if Cefaxime. Adjust antibiotics depending on results of culture.</p> <p>Cephalosporins are not active against <i>Enterococcus</i>.</p>
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	Treat for 7-14 days depending on response.	
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Perinephric abscess		
Etiology	Preferred regimen	Comments
<i>Enterobacteriaceae, S. aureus</i>	Oxacillin 100-200 mg/kg/day div q 6h PLUS Amikacin 15-22.5 mg/kg/day as single daily dose or q 8 hrs; max dose: 24 gm/day	Use Vancomycin if MRSA is suspected Refer to specialist for drainage.

Hospital acquired UTI		
Etiology	Preferred regimen	Comments
	Ceftazidime 30-50 mg/kg IV q 8 hrs; max dose 6 gm/day OR Amikacin 15mg/kg IV q 24 hrs; max dose	Choice should be based on current antimicrobial susceptibility pattern in the institution

Prophylaxis for Recurrent UTI		
	Nitrofurantoin 1 to 2 mg/kg/day (up to 100 mg/day) orally in 1 to 2 divided doses	Refer to an infectious disease specialist or nephrologist