

Pyelonephritis (acute): antimicrobial prescribing

DRAFT May 2018

Pyelonephritis (acute)



- Send a midstream urine sample for culture and susceptibility testing
- Offer an antibiotic
- Advise managing symptoms with self-care

Advise:

- possible adverse effects of antibiotics include diarrhoea and nausea
- seeking medical help if symptoms worsen at any time or do not start to improve within 48 hours of taking the antibiotic, or the person becomes systemically very unwell



When results of urine culture available:

- review the choice of antibiotic, and
- change antibiotic according to susceptibility results if bacteria are resistant, using narrow spectrum antibiotics when possible

Reassess at any time if symptoms worsen rapidly or significantly, or do not start to improve within 48 hours of taking the antibiotic, taking account of:

- other possible diagnoses
- any symptoms and signs suggesting a more serious illness or condition, such as sepsis
- previous antibiotic use, which may have led to resistant bacteria



- Refer to hospital if person has a severe systemic infection
Refer children and young people to hospital in line with the NICE guideline on urinary tract infections in under 16s
Consider referring if the person:
- is significantly dehydrated or unable to take fluids or medicines
 - is pregnant
 - has a higher risk of complications



Self-care

- Consider paracetamol for pain
- Advise an adequate intake of fluid



Background

- Pyelonephritis is an infection of one or both kidneys caused by bacteria travelling up from the bladder
- People at higher risk of complications include those with abnormalities of the genitourinary tract or underlying disease (such as diabetes or immunosuppression)



Antibiotics

- When prescribing antibiotics, take account of severity of symptoms, risk of complications, previous urine culture and susceptibility results, previous antibiotic use which may have led to resistant bacteria
- Give oral antibiotics first-line if people can take oral medicines, and the severity of their condition does not require intravenous antibiotics
- Review intravenous antibiotics by 48 hours and consider stepping down to oral antibiotics where possible

NICE uses 'offer' when there is more certainty of benefit and 'consider' when evidence of benefit is less clear.

Pyelonephritis (acute): antimicrobial prescribing

Choice of antibiotic: non-pregnant women and men aged 16 years and over

Antibiotic ¹	Dosage and course length
First choice oral antibiotic ²	
Co-amoxiclav	625 mg three times a day for 7 days
Ciprofloxacin	500 mg twice a day for 7 days
Levofloxacin	500 mg once a day for 7 days
Trimethoprim (only if culture results available and susceptible)	200 mg twice a day for 14 days
First choice intravenous antibiotic (if vomiting, unable to take oral antibiotics, or severely unwell). Antibiotics may be combined if sepsis a concern ^{2,3}	
Co-amoxiclav	1.2 g three times a day
Ciprofloxacin	400 mg twice or three times a day
Ceftriaxone	1 to 2 g once a day
Gentamicin	5 mg/kg to 7 mg/kg once a day
Amikacin	15 mg/kg once a day
Second choice intravenous antibiotic if higher risk of developing resistance ^{2,3}	
Consult local microbiologist	
¹ See BNF for appropriate use and dosing in specific populations, for example, hepatic impairment, renal impairment and breast-feeding. ² Check any previous urine culture and susceptibility results and antibiotic prescribing and choose antibiotics accordingly. ³ Review intravenous antibiotics by 48 hours and consider stepping down to oral antibiotics where possible for a total antibiotic course of 7 days.	

Choice of antibiotic: pregnant women aged 12 years and over

Antibiotic ¹	Dosage and course length
First choice oral antibiotic ²	
Cefalexin	500 mg twice or three times a day for 7 days
First choice intravenous antibiotic (if vomiting, unable to take oral antibiotics, or severely unwell) ^{2,3}	
Cefuroxime	750 mg three or four times a day
Second choice intravenous antibiotic if higher risk of developing resistance ^{2,3}	
Consult local microbiologist	
¹ See BNF for appropriate use and dosing in specific populations, for example, hepatic impairment and renal impairment. ² Check any previous urine culture and susceptibility results and antibiotic prescribing and choose antibiotics accordingly. ³ Review intravenous antibiotics by 48 hours and consider stepping down to oral antibiotics where possible for a total antibiotic course of 7 days.	

Pyelonephritis (acute): antimicrobial prescribing

Choice of antibiotic: children and young people under 16 years

Antibiotic ¹	Dosage and course length ²
Refer children under 3 months to paediatric specialist and treat with intravenous antibiotics in line with the NICE guideline on fever in under 5s	
Children aged 3 months and over - First choice oral antibiotic ³	
Co-amoxiclav	3 to 11 months, 0.25 ml/kg of 125/31 suspension three times a day for 7 to 10 days (dose doubled in severe infection) 1 to 5 years, 5 ml of 125/31 suspension or 0.25 ml/kg of 125/31 suspension three times a day for 7 to 10 days (dose doubled in severe infection) 6 to 11 years, 5 ml of 250/62 suspension or 0.15 ml/kg of 250/62 suspension three times a day for 7 to 10 days (dose doubled in severe infection) 12 to 17 years, 250/125 mg or 500/125 mg three times a day for 7 to 10 days
Cefalexin	3 to 11 months, 125 mg or 12.5 mg/kg twice a day for 7 to 10 days 1 to 4 years, 125 mg three times a day or 12.5 mg/kg twice a day for 7 to 10 days 5 to 11 years, 250 mg three times a day for 7 to 10 days 12 to 17 years, 500 mg twice or three times a day for 7 to 10 days
Children aged 3 months and over - First choice intravenous antibiotic (if vomiting, unable to take oral antibiotics or severely unwell). Antibiotics may be combined if sepsis a concern ^{3,4,5}	
Co-amoxiclav	3 months to 17 years, 30 mg/kg three times a day (maximum 1.2 g three times a day)
Cefotaxime	50 mg/kg twice or three times a day (four times a day for severe infections; maximum 12 g per day)
Ceftriaxone	3 months to 11 years (up to 50 kg), 50 to 80 mg/kg once a day (maximum 4 g per day) 9 to 11 years (50 kg and above), 1 to 2 g once a day 12 to 17 years, 1 to 2 g once a day
Gentamicin	7 mg/kg once a day
Amikacin	15 mg/kg once a day
Children aged 3 months and over - Second choice intravenous antibiotic if higher risk of developing resistance ^{3,4,5}	
Consult local microbiologist	
<p>¹ See BNF for children for appropriate use and dosing in specific populations, for example hepatic and renal impairment. If a young women is pregnant, refer to the prescribing table on choice of antibiotic for pregnant women aged 12 years and over.</p> <p>² The age bands apply to children of average size and, in practice, the prescriber will use the age bands in conjunction with other factors such as the severity of the condition being treated and the child's size in relation to the average size of children of the same age.</p> <p>³ Check any previous urine culture and susceptibility results and antibiotic prescribing and choose antibiotics accordingly.</p> <p>⁴ Review intravenous antibiotics by 48 hours and consider stepping down to oral antibiotics where possible for a total of 10 days.</p> <p>⁵ If intravenous treatment is not possible, consider intramuscular treatment.</p>	

When exercising their judgement, professionals and practitioners are expected to take this guideline fully into account, alongside the individual needs, preferences and values of their patients or the people using their service. It is not mandatory to apply the recommendations, and the guideline does not override the responsibility to make decisions appropriate to the circumstances of the individual, in consultation with them and their families and carers or guardian.