



Antibiotic Stewardship Programme in Primary Care Guidance Notes

Community-Acquired Pneumonia

1. In the outpatient setting, the most frequently detected pathogens are *Streptococcus pneumoniae*, *Mycoplasma pneumoniae* and respiratory viruses (e.g. influenza, parainfluenza, respiratory syncytial virus). Less frequent causes include *Haemophilus influenzae* and *Moraxella catarrhalis*.

Group A *Streptococcus* and *Staphylococcus aureus* may cause secondary bacterial pneumonia following influenza.

2. Antibiotic therapy should be started as soon as possible once the diagnosis of CAP is suspected or established.

Table 1. Antibiotic recommendation for treatment of Community-Acquired Pneumonia in adults

Drug (Route)	Dosage and Frequency, Adults (Usual)	Duration (Usual)	Remarks
First line			
Amoxicillin (oral)	500 or 1000 mg three times daily	7-10 days	High-dose amoxicillin is used for coverage of drug-resistant <i>S. pneumoniae</i> (DRSP). Risk factors for DRSP include age > 65 years, beta-lactam therapy within past 3 months, alcoholism, multiple medical comorbidities, and exposure to a child in a day care centre.
Amoxicillin-clavulanate or other BLBLIs# (oral)	1g (875 mg /125 mg) twice daily	7-10 days	For aspiration pneumonia, Amoxicillin-clavulanate (or other BLBLIs) is recommended for anaerobic coverage. If levofloxacin is used, metronidazole should be added (oral 400mg three times daily).
Doxycycline (oral)	100 mg twice daily	7-10 days	As a combination treatment with beta-lactams for atypical pneumonia coverage. Initial empirical therapy that covers <i>M. pneumoniae</i> is considered optional for outpatients with mild CAP.
Second line			
Ceftriaxone (IV or IM)	1-2g/day in 1 to 2 divided doses (maximum: 4000 mg per day)	7-10 days	For failed initial therapy, ill presentation, non-type 1 penicillin allergy. Daily doses greater than 2g are divided into 2 doses.
Levofloxacin (oral)[†]	500 mg once daily	7-10 days	For outpatients who have failed the first line agent, or are allergic to the first line agent, or have documented infection by <i>S. pneumoniae</i> resistant to penicillin.

Table 2. Antibiotic recommendation for treatment of Community-Acquired Pneumonia in children -

Drug (Route)	Dosage and Frequency, Children [^] (Usual)	Duration (Usual)	Remarks
First line			
Amoxicillin (oral)	45 mg/kg/day or 90 mg/kg/day (maximum: 3000 mg/day) in divided doses every 8 or 12 hours	7-10 days	In outpatients without risk factors for DRSP, amoxicillin dosing of 45 mg/kg/day may be used. In outpatients with risk factors for DRSP, amoxicillin dosing of 90 mg/kg/day is required.
Amoxicillin-clavulanate or other BLBLIs# (oral)	45 mg/kg/day or 90 mg/kg/day of the amoxicillin component (maximum: 3000 mg/day) in divided doses every 12 hours	7-10 days	Risk factor for DRSP: antibiotic consumption in recent 3 months. Choose the preparation that could provide the required amoxicillin dose with the least amount of clavulanate to reduce side effects e.g. diarrhea
Azithromycin or other macrolides e.g. clarithromycin (oral)	For children <15 kg (<3 years): 10 mg/kg once daily For children ≥ 15 kg: 15-25 kg (3-7 years): 200 mg once daily; 26-35 kg (8-11 years): 300 mg once daily; 36-45 kg(12-14 years): 400 mg once daily; Over 45 kg: Dose as per adults	3-5 days	As a combination treatment with beta-lactams for atypical pneumonia coverage. Initial empirical therapy that covers <i>M. pneumoniae</i> § is considered optional for outpatients with mild CAP. It may be indicated if the patients have severe CAP or are children ≥ 5 years and adolescents.
Second line			
Ceftriaxone (IV or IM)	50 to 100 mg/kg/ day IV or IM in divided doses every 12 or 24 hours (maximum: 4000 mg per day)	7-10 days	For failed initial therapy, ill presentation, non-type 1 penicillin allergy. Daily doses greater than 2g are divided into 2 doses.
Cefpodoxime (oral)	Infants >3 months of age and Children <12 years of age: Oral: 5 mg/kg/dose (maximum: 200 mg/dose) every 12 hours Children ≥12 years of age and Adolescents: refer to adult dosing	7-10 days	For non-type 1 penicillin allergy.
Cefuroxime (oral)	Infants >3 months of age and Children <40 kg: 15 mg/kg/dose (maximum : 250 mg/dose) every 12 hours; Children ≥40 kg: maximum: 500 mg/dose every 12 hours	7-10 days	Certain <i>S. pneumoniae</i> isolates may not be reliably covered by oral cephalosporins in the local setting.
Clindamycin@ (oral)	30 to 40 mg/kg/day in divided doses every 6 to 8 hours	7-10 days	For empirical treatment of suspected pneumococcal pneumonia with severe (type 1) allergy to penicillin (rare). Certain <i>S. pneumoniae</i> isolates may not be reliably covered by oral clindamycin in the local setting.

[^] Dosages listed are not appropriate for neonates.

§ Doxycycline is recommended for the treatment of macrolide-resistant *M. pneumoniae* (MRMP) associated CAP in children > 8 years old, adolescents and adults.

Doxycycline may be given orally at 2 mg/kg (maximum: 100 mg) twice daily.

¹ Beware of possible serious side effects (e.g. joint or tendon pain, muscle weakness, tingling or pricking sensation, numbness in the arms or legs, confusion, and hallucinations).

Beta-lactam-beta-lactamase inhibitor combinations e.g. ampicillin-sulbactam.

@Only capsule (not syrup) preparation is available locally. The capsule is dosed as 150mg each.

Clinicians should tailor make drug treatment based on clinical judgment. Definitive therapy should be based on microbiological and antibiotic sensitivity results if available.

Management of outpatients with infections should be individualised. Doctors should check, document and get outpatients well informed about antibiotic treatment (e.g. indication, side effect, allergy, contraindication, potential drug-drug interaction, etc.).

Outpatients should be reminded to take antibiotics exactly as prescribed by their family doctors.

Disclaimer:

This guidance notes is intended for medical professionals for reference only and is not intended to be prescriptive or a substitute for clinical judgement on management of individual patient. It is not a complete authoritative diagnostic or treatment guide. Medical professionals are recommended to obtain relevant information from other sources, and provide patient management based on clinical judgement. This guidance notes will be kept updating thereafter. Please visit the website of Centre for Health Protection, Department of Health for the latest update and other information. The Department of Health gratefully acknowledges the invaluable support and contribution of the Advisory Group on Antibiotic Stewardship in Primary Care in the development of this guidance notes.

