Bronchiectasis (acute exacerbation): antimicrobial prescribing

NICE National Institute for Health and Care Excellence

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Bronchiectasis (acute exacerbation)

Send a sputum sample for culture and susceptibility testing

Consider an antibiotic

Advise:

- **possible adverse effects of antibiotics, in particular diarrhoea**
- **seeking medical help if symptoms worsen rapidly or significantly at any time, or the person becomes systemically very unwell**

When results of sputum culture are available:

- review choice of antibiotic
- only change antibiotic according to susceptibility results if bacteria are resistant and symptoms are not already improving, using narrow spectrum antibiotics when possible

Reassess at any time if symptoms worsen rapidly or significantly, taking account of:

- **other possible diagnoses, such as pneumonia**
- **symptoms or signs of something more serious, such as cardiorespiratory failure or sepsis**
- **previous antibiotic use, which may have led to resistant bacteria**

Send another sputum sample for testing if symptoms persist after antibiotic treatment

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Refer to hospital if person has cardiorespiratory failure, a severe systemic infection, or suspected sepsis (in line with the NICE guideline on sepsis)

Seek specialist advice if:

- symptoms do not improve with repeated courses of antibiotics
- bacteria are resistant to oral antibiotics
- the person cannot take oral medicines (to explore giving intravenous antibiotics at home or in the community if appropriate)

Prophylaxis

Do not routinely offer antibiotic prophylaxis

Only consider antibiotic prophylaxis for adults with repeated exacerbations

Do not offer nebulised dornase alfa or inhaled corticosteroids to prevent exacerbations

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

Background

- An acute exacerbation of non-cystic fibrosis bronchiectasis is sustained worsening of symptoms from a person's stable state

Antibiotics - treatment

When considering antibiotics, take account of:

- the limited evidence
- the number and severity of symptoms
- previous exacerbations, hospitalisations and risk of complications
- previous sputum culture and susceptibility results

Give oral antibiotics first line if possible

Antibiotics - prophylaxis

- When considering antibiotic prophylaxis, take account of possible benefits (reduced exacerbations) and harms (increased antimicrobial resistance and adverse effects)
- Before giving antibiotic prophylaxis, give advice about the risk of resistance, adverse effects, interactions of macrolides, and returning for review after 3 months or other agreed time

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Choice of antibiotic for treating an acute exacerbation: adults aged 18 years and over

Antibiotic[1]	Dosage and course length
First choice oral antibiotics[2, 3]	
Amoxicillin	500 mg three times a day for 7 days then review[4]
Clarithromycin	500 mg twice a day for 7 days then review[4]
Erythromycin	500 mg four times a day for 7 days then review[4]
Doxycycline	200 mg on first day, then 100 mg twice a day for 7-day course in total, then review[4]
Second choice oral antibiotics if severely unwell or higher risk of certain bacteria (guided by susceptibilities when available)	
Amoxicillin high-dose (**for** *Haemophilus influenzae* [beta-lactamase negative])	1 g three times a day or 3 g twice a day for 7 days then review[4]
Co-amoxiclav (**not if** *Pseudomonas aeruginosa*)	500/125 mg three times a day for 7 days then review[4]
Ciprofloxacin (**for** *Pseudomonas aeruginosa*)	500 mg or 750 mg twice a day for 7 days then review[4]
First choice intravenous antibiotics (if unable to take oral antibiotics or severely unwell, guided by specialist advice and susceptibilities when available)[5]	
Ceftriaxone (**not if** *Pseudomonas aeruginosa*)	2 g once a day
Co-trimoxazole (**not if** *Pseudomonas aeruginosa*)[6]	960 mg to 1,440 mg twice a day
Ceftazidime	2 g three times a day
Piperacillin with tazobactam	4.5 g three times a day (four times a day if needed)
Ciprofloxacin	400 mg twice or three times a day
Co-amoxiclav	1.2 g three times a day
Second choice intravenous antibiotic or combined therapy - Consult local microbiologist	

[1] See BNF for use and dosing in hepatic and renal impairment, pregnancy and breast-feeding.
[2]Empirical treatment or guided by most recent sputum culture and susceptibility.
[3]Amoxicillin or erythromycin are preferred in women who are pregnant.
[4]Review treatment after 7 days and either stop the antibiotic if clinically stable or continue for a further 7 days as appropriate.
[5]Review intravenous antibiotics by 48 hours and consider stepping down to oral antibiotics where possible for a total antibiotic course of 7 to 14 days.
[6]Co-trimoxazole should only be considered when there is bacteriological evidence of sensitivity and a good reason to prefer this combination (BNF, June 2018).

Choice of antibiotic for preventing acute exacerbations (prophylaxis): adults aged 18 years and over

Antibiotic prophylaxis[1, 2]	Dosage and course length[3]
First choice[4]	
Azithromycin	500 mg three times a week or 250 mg daily
Clarithromycin	250 mg twice a day
Erythromycin	500 mg twice a day

[1] See BNF for use and dosing in hepatic and renal impairment, pregnancy and breast-feeding.
[2]Choose antibiotics according to recent sputum culture and susceptibility results when possible. Select a different antibiotic for prophylaxis if treating an acute exacerbation.
[3]Doses are by mouth using immediate-release medicines.
[4]Erythromycin is preferred in women who are pregnant.

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.

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Choice of antibiotic for treating an acute exacerbation: children and young people under 18 years

Antibiotic[1]	Dosage and course length[2]
First choice oral antibiotics[3, 4]	
Amoxicillin	1 to 11 months, 125 mg three times a day for 7 days then review[5]; 1 to 4 years, 250 mg three times a day for 7 days then review[5] 5 to 17 years, 500 mg three times a day for 7 days then review[5]
Clarithromycin	1 month to 11 years: Under 8 kg, 7.5 mg/kg twice a day for 7 days then review[5]; 8 to 11 kg, 62.5 mg twice a day for 7 days then review[5] 12 to 19 kg, 125 mg twice a day for 7 days then review[5]; 20 to 29 kg, 187.5 mg twice a day for 7 days then review[5] 30 to 40 kg, 250 mg twice a day for 7 days then review[5] 12 to 17 years, 250 mg to 500 mg twice a day for 7 days then review[5]
Erythromycin	1 month to 1 year, 125 mg four times a day or 250 mg twice a day for 7 days then review[5] 2 to 7 years, 250 mg four times a day or 500 mg twice a day for 7 days then review[5] 8 to 17 years, 250 mg to 500 mg four times a day or 500 mg to 1,000 mg twice a day for 7 days then review[5]
Doxycycline	12 to 17 years, 200 mg on first day, then 100 mg once a day for 7-day course in total then review[5]
Second choice oral antibiotics if severely unwell or higher risk of certain bacteria (guided by susceptibilities when available)	
Amoxicillin high-dose (**for** *Haemophilus influenzae* [beta-lactamase negative])	1 month to 11 years, 30 mg/kg (maximum 1g per dose) three times a day for 7 days then review[5] 12 to 17 years, 1 g three times a day for 7 days then review[5]
Co-amoxiclav (**not if** *Pseudomonas aeruginosa*)	1 to 11 months, 0.25 ml/kg of 125/31 suspension three times a day for 7 days then review[5] 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 days then review[5] 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 days then review[5] 12 to 17 years, 250/125 mg or 500/125 mg three times a day for 7 days then review[5]
Ciprofloxacin (**for** *Pseudomonas aeruginosa* on specialist advice)	1 to 11 years, 20 mg/kg twice daily (maximum 750 mg per dose) for 7 days then review[5] 12 to 17 years, 500 mg or 750 mg twice a day for 7 days then review[5]
First choice intravenous antibiotics (if unable to take oral antibiotics or severely unwell; guided by specialist advice and susceptibilities when available)[6]	
Ceftriaxone (**not if** *Pseudomonas aeruginosa*)	1 month 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
Co-trimoxazole (**not if** *Pseudomonas aeruginosa*)[7]	6 weeks to 17 years, 18 mg/kg to 27 mg/kg twice a day (maximum 1440 mg per dose)
Ceftazidime	From 1 month, 25 to 50 mg/kg three times a day (maximum 6 g per day)
Piperacillin with tazobactam	1 month to 11 years, 90 mg/kg three or four times a day (maximum 4.5 g four times a day) 12 to 17 years, 4.5 g three times a day (four times a day if needed)
Ciprofloxacin	1 to 11 years, 10 mg/kg three times a day (maximum 400 mg per dose); 12 to 17 years, 400 mg twice or three times a day
Co-amoxiclav	1 to 2 months, 30 mg/kg twice a day; 3 months to 17 years, 30 mg/kg three times a day (maximum 1.2 g three times a day)

[1]See BNF for children for appropriate use and dosing in specific populations, for example hepatic impairment and renal impairment.
[2]The age bands apply to children of average size and, in practice, the prescriber will use them with other factors.
[3]Empirical treatment or guided by most recent sputum culture and susceptibility.
[4]Amoxicillin or Erythromycin are preferred in young women who are pregnant.
[5]Review treatment after 7 days and either stop the antibiotic if clinically stable or continue for a further 7 days as appropriate.
[6]Review intravenous antibiotics by 48 hours and consider stepping down to oral antibiotics where possible for a total antibiotic course of 7 to 14 days.
[7]Co-trimoxazole should only be considered when there is bacteriological evidence of sensitivity and a good reason to prefer this combination (BNF, June 2018).