COPD (acute exacerbation): antimicrobial prescribing

NICE National Institute for Health and Care Excellence

Antibiotics for COPD (acute exacerbation)

Some people at risk of exacerbations may have antibiotics to keep at home as part of their exacerbation action plan (see the NICE guideline on COPD in over 16s)

Consider an antibiotic, but only after taking into account prescribing considerations

When no antibiotic given, advise:

- **antibiotic is not currently needed**
- **seeking medical help without delay if symptoms worsen rapidly or significantly, do not improve in an agreed time, or the person is systemically very unwell**

If sputum sample sent for testing, when results available:

- **review antibiotic choice**
- **only change antibiotic if bacteria resistant and symptoms not improving**

When an antibiotic is given, advise:

- **possible adverse effects of antibiotics, particularly diarrhoea**
- **symptoms may not be fully resolved by completion of antibiotic course**
- **seeking medical help if symptoms worsen rapidly or significantly, or do not improve within 2 to 3 days (or other agreed time), or the person becomes systemically very unwell**

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 sputum sample for testing if symptoms have not improved after antibiotics

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Refer to hospital if a severe systemic infection is present or in line with NICE's guidelines on COPD and sepsis

Seek specialist advice if:

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

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

Background

- An acute exacerbation of COPD is a sustained worsening of symptoms from a person's stable state
- A range of factors (including viral infections and smoking) can trigger an exacerbation
- Many exacerbations (including some severe exacerbations) are not caused by bacterial infections so will not respond to antibiotics

Prescribing considerations

When considering antibiotics, take into account:

- the severity of symptoms, particularly sputum colour changes and increases in volume or thickness beyond the person's normal day-to-day variation
- whether they may need to go into hospital for treatment (see the NICE guideline on COPD)
- previous exacerbation and hospital admission history, and the risk of developing complications
- previous sputum culture and susceptibility results
- the risk of antimicrobial resistance with repeated courses of antibiotics

Give oral antibiotics first line if possible

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

Antibiotic[1,2]	Dosage and course length
First choice oral antibiotics (empirical treatment or guided by most recent sputum culture and susceptibilities)	
Amoxicillin	500 mg three times a day for 5 days (see BNF for dosage in severe infections)
Doxycycline	200 mg on first day, then 100 mg once a day for 5-day course in total (see BNF for dosage in severe infections)
Clarithromycin	500 mg twice a day for 5 days (see BNF for dosage in severe infections)
Second choice oral antibiotics (no improvement in symptoms on first choice taken for at least 2 to 3 days; guided by susceptibilities when available)	
Use alternative first choice (from a different class)	As above
Alternative choice oral antibiotics (if person at higher risk of treatment failure[3]; guided by susceptibilities when available)	
Co-amoxiclav	500/125 mg three times a day for 5 days
Levofloxacin[4]	500 mg once a day for 5 days
Co-trimoxazole[5]	960 mg twice a day for 5 days
First choice intravenous antibiotics (if unable to take oral antibiotics or severely unwell; guided by susceptibilities when available)[6]	
Amoxicillin	500 mg three times a day (see BNF for dosage in severe infections)
Co-amoxiclav	1.2 g three times a day
Clarithromycin	500 mg twice a day
Co-trimoxazole[5]	960 mg twice a day (see BNF for dosage in severe infections)
Piperacillin with tazobactam	4.5 g three times a day (see BNF for dosage in severe infections)
Second choice intravenous antibiotics	
Consult local microbiologist (guided by susceptibilities)	

[1]See BNF for appropriate use and dosing in specific populations, for example, hepatic impairment, renal impairment, and for administering intravenous antibiotics.
[2]Where a person is receiving antibiotic prophylaxis, treatment should be with an antibiotic from a different class.
[3]People who may be at higher risk of treatment failure include people who have had repeated courses of antibiotics, a previous or current sputum culture with resistant bacteria, or people at higher risk of developing complications.
[4]The European Medicines Agency's Pharmacovigilance Risk Assessment Committee has recommended restricting the use of fluoroquinolone antibiotics following a review of disabling and potentially long-lasting side effects mainly involving muscles, tendons, bones and the nervous system. This includes a recommendation not to use them for mild or moderately severe infections unless other antibiotics cannot be used (press release October 2018).
[5]Co-trimoxazole should only be considered for use in acute exacerbations of COPD when there is bacteriological evidence of sensitivity and good reason to prefer this combination to a single antibiotic (BNF, October 2018).
[6]Review intravenous antibiotics by 48 hours and consider stepping down to oral antibiotics where possible.