LOWER RESPIRATORY TRACT INFECTIONS
Acute Exacerbation of COPD
(CKS Chronic obstructive pulmonary disease)

Clinical features
An acute exacerbation of chronic obstructive pulmonary disease (COPD) is a sustained worsening of a person's symptoms from their usual stable state (beyond normal day-to-day variations) which is acute in onset.
Commonly reported symptoms include:
- Increased breathlessness.
- Increased cough.
- Increased sputum production and change in sputum colour.

Core pathogens
Respiratory viruses (30%), bacterial (30-50%) – *Streptococcus pneumoniae, Haemophilus influenzae* (amoxicillin sensitive and resistant strains), *Moraxella catarrhalis*, and atypical pathogens such as *Mycoplasma pneumoniae* and *Chlamydophilia pneumoniae*.

Management
Nottinghamshire COPD Self-management plan here

Viral infections may cause acute exacerbations, but if purulent sputum is being produced bacterial infection is possible.

If there are no contraindications, consider oral corticosteroids for people with a significant increase in breathlessness that interferes with daily activities.
- Offer 30 mg oral prednisolone once daily for 5 days — discuss adverse effects of prolonged therapy.
- Consider the need for bone protection for people requiring frequent courses of oral corticosteroids (≥3 courses per year).

Antibiotics are most valuable in patients with purulent sputum ***and*** increased shortness of breath **and/or** increased sputum volume.

Consider the need for an antibiotic taking into account:
- Severity of symptoms (particularly sputum colour changes, increase in volume or thickness beyond normal).
- Risk of complications.
- Previous sputum culture and susceptibility results (send sputum sample if possible).
- Risk of antimicrobial resistance and current antibiotic prophylaxis (**treatment should be with an antibiotic from a different class**).

NICE recommend as part of self-management that patients are given a course of antibiotics and oral corticosteroids to keep at home and commence if their sputum becomes purulent (see Nottinghamshire guidance for prescribers on COPD Exacerbation Rescue Medication Pack).

Risk factors for antibiotic resistant organisms include:
- Severe COPD
- Co-morbid disease
- Frequent exacerbations and/or hospital admissions
- Multiple courses of antibiotics, or antibiotics within last 3 months.
- Previous resistant organisms in sputum culture.

Treatment options for adults 18 years and older:

Antibiotic[1]	Dosage	Duration
Empirical treatment guided by most recent sputum culture and susceptibilities		
First line choice (not in penicillin allergy):		
Amoxicillin	**Adult:** 500mg three times a day	5 days
Alternative first line choices (if penicillin contraindicated or not tolerated)		
Doxycycline[2] (Not suitable in pregnancy)	**Adult:** 200mg day one, then 100mg once daily.	5 days
Clarithromycin[3] (if penicillin and doxycycline not suitable). Not in patients taking azithromycin prophylaxis.	**Adult:** 500mg twice a day	5 days
Second line choice – *If there is no improvement in symptoms on first choice taken for at least 2 to 3 days send a sputum sample for culture and susceptibility testing.* Use alternative first line (from a different class) if suitable.		
If higher risk of treatment failure, treat options according to sputum culture: *guided by microbiology sensitivities*		
Co-amoxiclav **Plus** Amoxicillin (**ONLY** If reported sensitivity to Co-amoxiclav is "DS" or "I" **)	**Adult:** 625mg three times a day **Adult:** 500mg three times a day	5 days
Co-trimoxazole	**Adult:** 960mg twice a day	5 days
Levofloxacin **Note:** Fluoroquinolones should only be used when other antibiotics are inappropriate. If a penicillin allergy is recorded, the exact nature of the reaction should be clarified including whether other beta lactams (e.g., cephalosporins) have been previously tolerated. Fluoroquinolones can cause long-lasting (up to months or years), disabling, and potentially irreversible side effects, sometimes affecting multiple systems, organ classes, and senses. Please refer here for further information on MHRA alerts. Increased risk of tendon damage if co-prescribed corticosteroid and fluoroquinolone.	**Adult:** 500mg once a day (**ONLY** Increase frequency to twice a day if reported sensitivity to Levofloxacin is "DS" or "I" **)	5 days
** "DS" or "I" = **dose dependent susceptible**. This means there is a high likelihood of therapeutic success if antibiotic exposure is optimised by using higher doses or increasing dosing frequency. Microbiology interpreting Sensitivity Results		
[1]See BNF and BNFC for appropriate use and dosing in specific populations, e.g., hepatic, renal impairment, pregnancy, breastfeeding. [2]Doxycycline is not suitable for pregnant women. [3]Withhold statins whilst on clarithromycin course. Avoid if the patient is at risk of QTc prolongation.		