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Managing bronchiectasis in adults in primary care:

a clinical update

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WHY SHOULD GPS BE CONCERNED ABOUT BRONCHIECTASIS?

Bronchiectasis is a condition where patients have symptoms of persistent or recurrent bronchial sepsis related to irreversibly damaged and dilated bronchi.[1] The prevalence of bronchiectasis has risen by about 60% between 1994 and 2013 so that a GP practice population of 10 000 will have around 50 patients with the condition.[2] Many patients with stable bronchiectasis and acute flare-ups can be managed in primary care.

HOW DO I MAKE A DIAGNOSIS OF BRONCHIECTASIS?

A diagnosis of bronchiectasis should be suspected when a patient presents with a recurrent or persistent (>8 weeks) cough with production of purulent or mucopurulent sputum.[1]

There should be a higher index of suspicion if there are coexistent factors, as outlined in Box 1. A full history and examination should be carried out to exclude other causes of chronic cough, such as chronic obstructive pulmonary disease (COPD), asthma, or lung cancer. Box 2 shows red-flag symptoms suggesting alternative serious pathology.

Examination of the chest may be normal or can reveal the presence of persistent coarse inspiratory crackles. The upper airway should be examined for the presence of chronic rhinosinusitis.

Investigations should include a chest X-ray (which may be normal), diagnostic spirometry (which may be normal, restrictive, or obstructive), and sputum sent for culture to identify persistent pathogens, such as *Pseudomonas aeruginosa* (indicating a worse prognosis) and to guide future antibiotic therapy. Definitive diagnosis of bronchiectasis is carried out by thin-section CT scanning of the chest. This may be arranged by direct access or via specialist referral.

Box 1. Coexistent conditions raising the probability of bronchiectasis in patients presenting with chronic productive cough[1]

- Chronic obstructive pulmonary disease (especially with a history of frequent exacerbations, lower FEV1, and persistent sputum pathogens).
- Difficult-to-treat asthma.
- Rheumatoid arthritis.
- Inflammatory bowel disease.
- Chronic rhinosinusitis.
- Presence of persistent pathogenic organisms (especially *P. Aeruginosa*) in sputum.

WHEN SHOULD PATIENTS BE REFERRED TO SECONDARY CARE?

It is recommended that all patients with a new diagnosis of bronchiectasis are assessed by a specialist team in order to elucidate any underlying causes, assess comorbid conditions, and formulate a joint management plan. This should include details of routine treatment, place of routine review, action to take in case of flare-up (including the use of standby antibiotics), and relevant contact details.[3]

Referral to secondary care is also appropriate for patients with established bronchiectasis who have:

- ≥3 exacerbations per year;
- chronic colonisation with *P aeruginosa*, methicillin-resistant *Staphylococcus aureus* (MRSA), or non-tuberculous mycobacteria (NTM);
- allergic bronchopulmonary aspergillosis (ABPA);
- associated inflammatory bowel disease, rheumatoid arthritis, primary ciliary dyskinesia, immune deficiency, and/or

Box 2. Red-flag features for chronic cough

- Haemoptysis.
- Smoker >45 years with new cough, or change in cough.
- Persistent dyspnoea especially at rest/night.
- Hoarseness.
- Systemic symptoms (fever, weight loss, or peripheral oedema).
- Trouble swallowing.
- Vomiting.
- Recurrent pneumonia.

advanced disease; and
- deterioration in lung function.

HOW SHOULD I CARRY OUT A ROUTINE REVIEW IN PRIMARY CARE?[3]

Patients will have been assessed by the specialist team as being suitable for review in primary care, and the frequency of review to be stated in the management plan (but at least annually). The key elements of such a review are to:

- check spirometry (for evidence of disease deterioration and comorbid airways disease) and pulse oximetry;
- ensure that there is a recent sputum culture;
- assess comorbidities such as asthma and COPD, and check that pneumococcal, annual influenza, and COVID-19 vaccinations have been given;
- record exacerbation history and check compliance with airway clearance techniques (if in doubt re-refer to physiotherapy); and
- review action plan.

WHAT ARE THE KEY PRINCIPLES OF MANAGEMENT?

The overall aims of management are to prevent further lung damage, maximise quality of life, and prevent and treat exacerbation. Initially it is important to treat any underlying cause. Physiotherapy is a cornerstone of management. The aim is to mobilise secretions, aid effective expectoration, and improve function via pulmonary rehabilitation where a patient is functionally limited by breathlessness (Medical Research Council [MRC] dyspnoea score ≥2).[4] The website www.bronchiectasis.scot.nhs.uk/physiotherapy has some excellent downloadable videos on chest clearance technique.

A trial of a mucoactive agent (for example, carbocisteine) should be considered in patients who have difficulty with sputum expectoration. Routine vaccinations provide essential protection, and prompt treatment of acute exacerbations is important.

Long-term antibiotic therapy, such as oral azithromycin 250 mg three times weekly for a year, can significantly reduce the rate of exacerbations[5] and should be considered for patients with three or more exacerbations per year (initiated and monitored in secondary care only so referral will be needed). Other options are regular inhaled (such as gentamicin or colomycin) or intravenous antibiotics.

HOW DO I MANAGE AN ACUTE FLARE-UP OF BRONCHIECTASIS IN PRIMARY CARE?

Initial assessment should determine if a patient needs urgent hospital admission. This should be considered if there is respiratory distress, features of sepsis, or if there are significant comorbidities. Patients who are managed in primary care should ideally have a sputum sample taken prior to antibiotic treatment. Suitable patients should have antibiotics to keep at home.

Choice of antibiotics will be determined by culture and local sensitivities. However, if not known previously while awaiting the results of the sputum culture, empirical treatment should be started with amoxicillin 500 mg t.d.s. (doxycycline 100 mg b.d. if penicillin allergic) or ciprofloxacin 500 mg b.d. if *P. aeruginosa* infection has been identified (750 mg b.d. for severe infection). Most patients with moderate and severe bronchiectasis should have 14 days of antibiotic therapy, although in patients with mild bronchiectasis a 7-day course may suffice. Advice to aid expectoration should be reinforced and the treatment plan reviewed, including the need for physiotherapy or secondary care re-referral.

WHAT IS THE PROGNOSIS FOR PATIENTS WITH BRONCHIECTASIS?

The age-adjusted mortality of patients with bronchiectasis is just over double that of the general population.[2] Patients with mild disease should have a normal life expectancy, but patents with more advanced disease and/or colonisation with *P. aeruginosa* have an increased risk of recurrent exacerbations, vascular disease, and increased mortality.[4]

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Competing interests

Kevin Gruffydd-Jones, has spoken on behalf of AstraZeneca, GSK, Chiesi, Napp, Boehringer Ingelheim.

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