



PCRS Position Statement

Diagnostic work up of the patient presenting with respiratory symptoms during the COVID-19 pandemic

Work up and diagnosis of patients presenting with respiratory symptoms, including those indicating COVID-19 infection, during the COVID-19 pandemic requires a structured clinical assessment that minimises the risk for cross-infection. Certain testing procedures – including spirometry – used as part of the diagnostic work up for patients presenting with respiratory symptoms have the potential to increase the risk of transmission of viral infections through droplet or aerosol formation. This presents a significant challenge for those administering such tests. There is, however, also an opportunity to restate best practice for making respiratory diagnosis. For patients in whom a diagnosis of asthma is highly probable based on history, examination and presenting symptoms, a monitored trial of treatment with peak flow monitoring is already the PCRS recommended approach, with further investigations including spirometry reserved if the probability of asthma is intermediate or low. Any undifferentiated respiratory symptom should always be evaluated from a comprehensive perspective with airflow tests being just one potential component of the clinical evaluation. Some testing procedures can be done safely at home such as the peak expiratory flow rate (PEFR) diary, though it is important to ensure that the patient is well trained to undertake peak flow readings at home using maximal respiratory effort. This training can take place via video consultation. For people with suspected COPD, PEFr <75% predicted suggests a degree of airflow obstruction and serial measurement over 2 weeks that does not vary but also remains low despite use of salbutamol for symptom relief would suggest fixed airflow obstruction and is suspicious for COPD in the context of supporting clinical history. Confirmatory spirometry should be carried out at a later date when safe and readily available. Prior to the COVID-19 pandemic PCRS was already recommending a network-based approach to respiratory diagnosis in people with chronic symptoms to improve patient experience, safety and effectiveness. This approach is now more valid than ever because of the extra burden of risk to patient and professional and to ensure expertise supports the most rational approach to the diagnosis of respiratory conditions and non-respiratory causes of respiratory-related symptoms.

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Background

Work up and diagnosis of patients presenting with respiratory symptoms, including those indicating COVID-19 infection, during the COVID-19 pandemic requires a structured clinical assessment that minimises the risk for cross-infection by a healthcare professional with suitable training and experience.¹

Certain testing procedures – including spirometry and peak expiratory flow rate (PEFR) – used as part of the diagnostic work up for patients presenting with respiratory symptoms have the potential to increase the risk of transmission of viral infections, including COVID-19, through droplet or even aerosol formation. This presents a significant challenge for those administering such tests and the appropriateness and diagnostic value of such tests should be carefully considered for patients presenting with respiratory symptoms.

Undifferentiated respiratory symptoms

For patients presenting with any undifferentiated respiratory symptom in whom a diagnosis is not clear, including those for whom the probability of asthma is intermediate or low, a structured, logical and context-based approach that does not rely on testing procedures with the potential to increase the transmission of viral infections should be undertaken. Where available this would ideally be through referral to a networked primary care-based respiratory diagnostic service with expertise in the diagnosis of the most common respiratory conditions, asthma and COPD, and of less common respiratory disease and non-respiratory causes of respiratory-related symptoms.² This approach has the potential to avoid the need for referral to hospital-based secondary care services and to ensure maximum safety for patients and healthcare professionals undertaking testing procedures such as spirometry.

Asthma

Diagnosis of patients with suspected asthma can, in many cases, be made on the basis of patient history without the need for testing procedures. A structured clinical assessment should include a detailed history, examination and review of the patient's clinical records including the results of any previously completed investigations such as PEFR, spirometry or blood eosinophils. Patients with a high probability of asthma following a structured clinical assessment can be appropriately managed with a trial of treatment with peak flow monitoring in the home environment.³ Where peak flow monitoring is not possible use of a validated symptom questionnaire is acceptable. Criteria for a high probability of asthma include:

- Recurrent episodes of symptoms
- Wheeze confirmed by a health care professional
- A personal or family history of asthma
- A past record of variable airflow obstruction
- No features to suggest an alternate diagnosis
- Clear and repeated evidence of 20% variability of PEFR collected using a PEFR diary

Spirometry should be reserved for those patients with an intermediate probability of asthma ideally through a networked primary care-based respiratory diagnostic service as described above.⁴ If PEFR evaluation in clinic is considered necessary this can be carried out using the patients own PEF meter and disposable mouthpiece in a room with an open window or outside the building. The risk of aerosol or droplet formation with FeNO testing

¹ Lawlor R. Fit to care: key knowledge skills an training for clinicians providing respiratory care. Available at: <https://www.pcrs-uk.org/sites/pcrs-uk.org/files/resources/2019-FitToCare.pdf>

² Baxter N. PCRS Diagnostic services framework. Available at: <https://www.pcrs-uk.org/resource/pcrs-diagnostic-service-specification>

³ Daines L, et al. Asthma guidelines in practice: A PCRS consensus. Available at: https://www.pcrs-uk.org/sites/pcrs-uk.org/files/AsthmaGuidelinesInPractice_FINAL_0.pdf.

⁴ Stonham C, Baxter N. FeNO testing for asthma diagnosis – A PCRS consensus. Available at: <https://www.pcrs-uk.org/sites/pcrs-uk.org/files/pcru/articles/2019-Autumn-Issue-18-FeNo-testing-asthma-diagnosis.pdf>

appears to be lower than for spirometry or PEFr.⁵ However, the availability of FeNO testing equipment remains limited in the primary care setting and this test remains informative only for those patients for whom the likelihood of a diagnosis of asthma is considered intermediate or who fail to respond to a trial of treatment.

Some testing procedures can be done safely at home such as the PEFr, and PEFr diaries can be a useful tool to demonstrate variability and support a diagnosis of asthma, though it is important to ensure that the patient is well trained to undertake peak flow readings at home using maximal respiratory effort and in accurately recording the measurements.⁶ This training can take place via video consultation. Spirometry, whilst useful in safer times, could be put on hold for now because of the shift in balance of risk and benefit.

COPD

The diagnosis of chronic obstructive pulmonary disease (COPD) relies heavily on history⁷ but can only be formally diagnosed if fixed airflow obstruction without reversibility is demonstrated, unless diagnosed as emphysema on a computerised tomographic (CT) scan. However, in the absence of spirometry, obstruction can also be suspected using peak flow measurement:

- PEFr <75% predicted suggests a degree of airflow obstruction.
- When trying to assess whether this is COPD, a serial measurement over 2 weeks that does not vary but also remains low despite use of salbutamol for symptom relief would suggest fixed airflow obstruction and is suspicious for COPD in the context of supporting clinical history.
- Patients who do not have variation in peak flow should have an empirical trial of dual bronchodilator therapy.⁸
- Any tentative diagnosis of COPD should be confirmed with spirometry when readily available and a clear record should be made in the patients notes that spirometric confirmation of obstruction without reversibility is required at a later date.
- If any doubt, refer for whatever specialist advice is available locally.

For patients in whom COPD is suspected and a PEFr test is considered necessary this can be carried out using the patient's own PEF meter and disposable mouthpiece in a room with an open window or outside the building.

It is also as important in people suspected to have COPD to rule it out because of other causes with common symptoms who require very different treatments. If a necessary investigation such as spirometry has been deferred this should be clearly flagged in the patient record and the patient informed that this test will be carried out at a later date.

⁵ ARTP Guidelines for recommencing physiological services during the Coronavirus Disease 2019 (COVID-19) endemic phase. Available at: https://www.artp.org.uk/write/MediaUploads/Standards/COVID19/ARTP_COVID-19_endemic_guidance_Vers_5.6_final.pdf. Accessed September 2020

⁶ Asthma UK. Use your peak flow diary to stay confident with your asthma. Available at: <https://www.asthma.org.uk/86e2a328/globalassets/health-advice/resources/adults/your-peak-flow-diary.pdf>

⁷ NICE. Chronic obstructive pulmonary disease in over 16s: diagnosis and management. Available at: [nice.org.uk/guidance/ng115](https://www.nice.org.uk/guidance/ng115)

⁸ NICE. Chronic obstructive pulmonary disease in over 16s: diagnosis and management. Available at: [nice.org.uk/guidance/ng115](https://www.nice.org.uk/guidance/ng115)

PCRS position

- Work up and diagnosis of patients presenting with respiratory symptoms, including those indicating COVID-19 infection, during the COVID-19 pandemic requires a structured clinical assessment that minimises the risk for cross-infection by a healthcare professional with suitable training and experience.
- Any **undifferentiated respiratory symptom** should always be evaluated from a comprehensive perspective with airflow tests being just one potential component of the clinical evaluation.
 - Where testing procedures are required to reach a diagnosis, the patient should ideally be referred to a networked respiratory diagnostic service to maximise safety and ensure expertise in the diagnosis of respiratory conditions and non-respiratory causes of respiratory-related symptoms.
- For patients for whom a diagnosis of **asthma** is highly likely, a trial of treatment with PEFR monitoring at home (or with a validated symptom questionnaire if PEFR monitoring is not possible) is recommended.
 - Only patients with an intermediate probability of asthma should be considered for further investigations. PEFR diary measurements can be carried out safely at home and so should be used in preference, ensuring patients are well trained to use maximum respiratory effort. This can take place via video consultation.
 - The variable nature of asthma means that spirometry will show airways obstruction less than half the time despite the person being subsequently diagnosed with asthma. Given the potential for droplet formation and therefore viral transmission, spirometry should not be used for asthma diagnosis under current circumstances. It is frequently normal in patients with asthma unless they are experiencing a current worsening of their asthma symptoms.
 - FeNO is still not widely available or established in the majority of primary care health settings but, where available, may be informative for the evaluation of patients for whom a diagnosis of asthma is intermediate.
- For some people, testing procedures such as spirometry will be essential at a later date. **COPD**, for example, can only be formally diagnosed if fixed airflow obstruction is demonstrated. For those with suspected COPD:
 - PEFR <75% predicted suggests a degree of airflow obstruction.
 - When trying to assess whether this is COPD, a serial measurement over 2 weeks that does not vary but also remains low despite use of salbutamol for symptom relief would suggest fixed airflow obstruction and is suspicious for COPD in the context of supporting clinical history.
 - It is also as important in people suspected to have COPD to rule it out because of other causes with common symptoms who require very different treatments.

Approved by PCRS Executive policy lead on committee 17 September 2020