

# Evidence Discussion (CH-5.1)

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## Dyspnea/Shortness of Breath evidence summary

There is no standard approach for the evaluation of chronic dyspnea, and data that test diagnostic algorithms against standard clinical care are limited; however, clinical practice algorithms have been proposed and found to be effective.(2,3,4,5) If the diagnosis is not evident after a history and physical exam, initial diagnostic testing with pulse oximetry, spirometry, chest radiography (CR), ECG, and labs is recommended.(Ferry 2019, Sunjaya 2022, Budhwar 2020) While the individual utility of these tests varies for a specific diagnosis, they are commonly available and easy to perform.(6)

Spirometry can identify obstructive lung disease or suggest restrictive lung disease. The flow-volume loop may suggest intra- or extra-thoracic airway obstruction. Some authors recommend full pulmonary function tests as part of the initial investigation, while others consider spirometry an appropriate initial test.(2,4) Diagnostic accuracy is improved when spirometry is done in addition to a clinical assessment.(6)

ECG has a high negative predictive value for cardiac disease but low specificity. Thus, further testing such as echo is often necessary.(6) The recommended timing of echocardiography differs between algorithms but echo is an important test for cardiac causes of dyspnea.(3,6) The American College of Radiology (ACR) states that for dyspnea of suspected cardiac origin, the initial diagnostic imaging should usually be CR followed by transthoracic echo.(7)

CR remains a valuable first line investigation of dyspnea.(3) The ACR states that CR should generally be the first imaging study.(8) It may reveal abnormalities or guide further imaging decisions. Data on the diagnostic utility of chest CT for chronic dyspnea are limited. It is often used following an abnormal CR or if other initial testing is negative. The ACR states that CT may be useful when CR abnormalities require further characterization or clinical findings necessitate additional imaging despite a normal CR.(8) CT without intravenous contrast is usually sufficient unless there is a suspicion for vascular abnormalities. The disadvantage is exposure to ionizing radiation; therefore, CT “requires careful patient selection with consideration given to patient age, risk of diagnostic radiation exposure and estimated diagnostic yield.”(6)

## **References:**

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