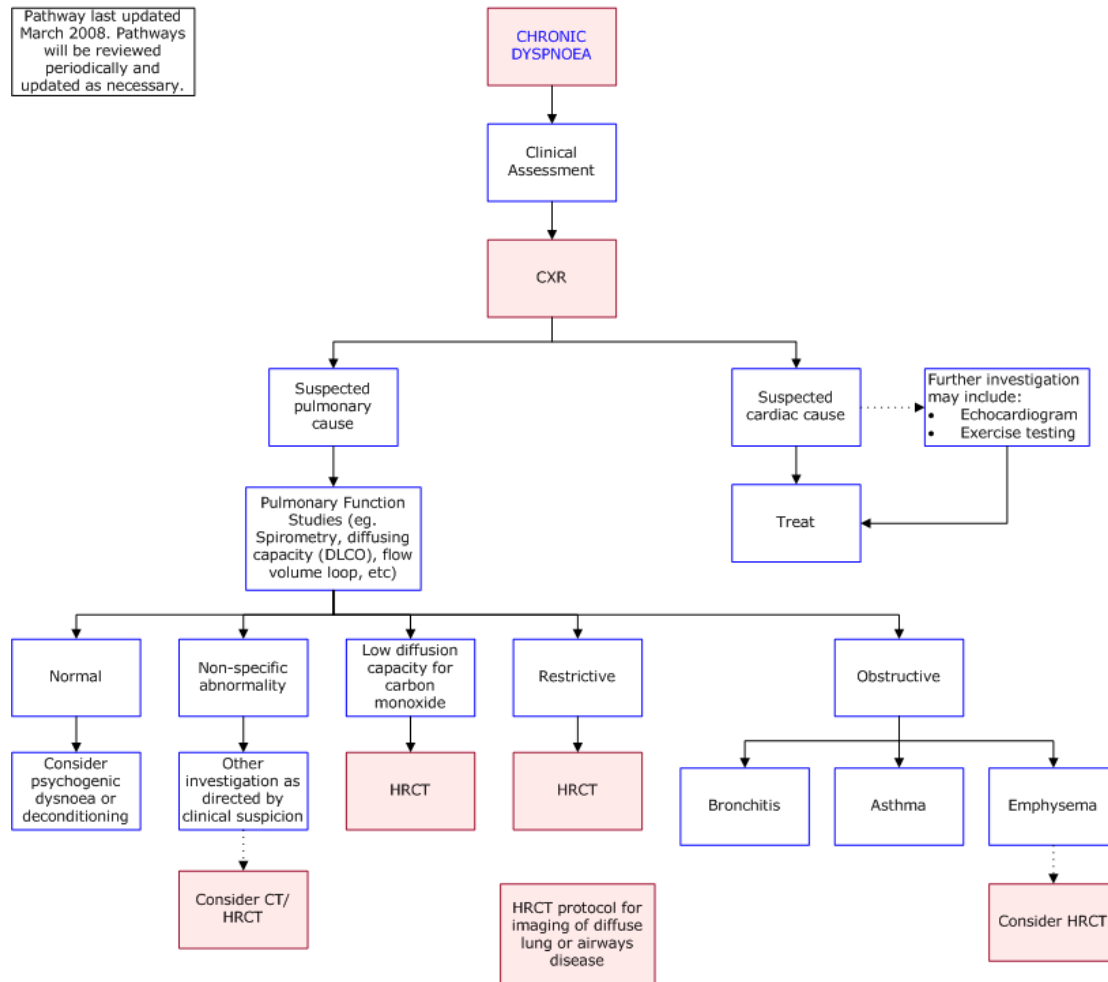




Pathway last updated March 2008. Pathways will be reviewed periodically and updated as necessary.



CHRONIC DYSPNOEA

- Defined as dyspnoea lasting for more than one month and can be caused by a wide range of conditions. [1](#)
- Over two thirds of cases are caused by pulmonary or cardiac aetiology with the most common causes being asthma, interstitial lung disease, COPD and myocardial dysfunction. [2](#)
- The history and examination will usually provide clues to the underlying diagnosis and direct investigation.

CHEST X-RAY

- Can reveal enough useful information regarding the diagnosis to justify its routine use in the initial investigation of chronic dyspnoea. [3](#)
- Used to exclude or demonstrate obvious chest wall abnormality (eg. severe kyphoscoliosis, pectus excavatum) and/or help direct further investigations.



- One study found a positive predictive value of 75% and negative predictive value of 91% in the diagnosis of all causes of chronic dyspnoea. [2](#)
- Plain radiography had a sensitivity of 97% in diagnosis of symptomatic patients with moderate to severe emphysema based the radiological signs of hyperinflation and vascular alterations. However, its usefulness in diagnosis of mild emphysema is limited with low sensitivity and specificity. [4](#)
- Although CXR may be normal in patients with chronic dyspnoea due to interstitial lung disease, one study found interstitial changes on plain film in all 12 of their patients who had ILD. [2](#)

CHEST COMPUTED TOMOGRAPHY

- Use of helical multi-detector CT with thin collimation instead of conventional high resolution CT has the advantage of contiguous data acquisition, but at a significantly higher radiation dose. However, studies with MDCT for conditions causing chronic dyspnoea have not been widely published in the literature as yet.
- Choice of scanning technique depends on the clinical scenario and the age of the patient. Younger patients (especially females) should have HRCT if clinically acceptable.

Interstitial Lung Disease

- HRCT uses narrow 1-2mm collimation (section thickness) every 10-20mm throughout the thorax. While effectively only 10% of the lung is imaged, this a sufficient sample to detect the diffuse parenchymal abnormalities which characterise ILD and minimises the radiation dose delivered to patients. [5](#)
- HRCT features of usual interstitial pneumonia (the radiopathological pattern associated with idiopathic pulmonary fibrosis) include irregular reticular lines, traction bronchiectasis, irregular lines and honeycombing in a basilar distribution. [5,6](#)
- Overall HRCT has high sensitivity 77-79% and specificity 72-90% with a positive predicted value of 85-88% in diagnosing IPF when compared with histological specimens obtained at lung biopsy as the gold standard. [7,8](#)
- The sensitivity, specificity and PPV of a confident radiological diagnosis of IPF (ie. when uncertain cases are excluded) rises to 87%, 95% and 96% respectively. [7](#)
- The sensitivity and specificity of ILD other than IPF is significantly lower at 59% and 40% respectively. [8](#)
- Based on the studies above, surgical lung biopsy remains the gold standard for accurate diagnosis of ILD when the diagnosis is uncertain, and when the clinical diagnosis is and ILD other than IPF. [5,7,8](#)





Chronic Obstructive Pulmonary Disease

- Superior to plain radiography in showing the presence, distribution and extent of emphysema. [4,9](#)
- Although conventional or spiral CT can detect most cases of emphysema, HRCT is more reliable. [4](#)
- Emphysema is characterised by areas of abnormally low attenuation on HRCT. [4,9](#)
- Mild early emphysematous change may be missed on HRCT (low sensitivity), however it is still superior to pulmonary function testing in detecting the presence of emphysema and correlating with the severity of disease. [9](#)
- The grading of emphysema based on HRCT findings correlated well with pathological severity in several studies and is in the order of 0.7-0.9.4
- The role of CT in the clinical assessment of emphysema is limited by its expense. The main indications for the use of CT in assessing emphysema are:
 - Preoperative assessment of patients who are being referred for lung reduction surgery. [9](#)
 - Patients who have dyspnoea and reduced single-breath diffusing capacity for carbon monoxide without evidence of airflow obstruction. [9-11](#)

Non-specific Abnormalities

- CT scanning should be considered in patients with chronic dyspnoea when the initial evaluation (clinical assessment, CXR and pulmonary testing) is non diagnostic or non revealing. [3](#)
- This should be weighed against the radiation exposure risk, particularly in young patients.

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Website

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