

Evidence Discussion (CH 16.1)

Solitary Pulmonary Nodule-Imaging evidence summary

A pulmonary nodule is defined as a well or poorly defined rounded opacity < 3 cm in diameter. Focal pulmonary lesions > 3 cm are considered masses. Nodule measurement is currently determined by standard linear measurement with electronic calipers. Measurements and averages should be expressed to the nearest whole millimeter. The dimension of small pulmonary nodules (<10mm) should be expressed as the average of the maximal long-axis and perpendicular maximal short-axis measurements in the same plane. For larger nodules and masses, both long- and short-axis dimensions should be recorded.(1) Semi-automated nodule volumetry has superior sensitivity for detecting growth and is recommended as the preferred method by the British Thoracic Society (BTS), but it requires dedicated software and is currently not widely used in clinical practice.(1,2) Nodule growth is defined as an increase of > 1.5 mm (> 2 cubic mm) by the Lung-RADS criteria, greater than or equal to 2 mm change in average diameter by the Fleischner criteria or an increase of at least 25% in volume by the BTS.(2,3,4) A number of studies have established the advantage of post-processing 3D CT techniques, such as maximum intensity projection (MIP), minimum intensity projection (MinIP) and volume rendering (VR) in the detection and assessment of pulmonary nodules.(2,5,6)

If an indeterminate nodule is seen on a CR or CT, prior studies should be reviewed to determine possible growth or stability, including comparison with the earliest available study and more recent ones.(3,7,8). If stability of a nodule seen on CR cannot be determined, CT chest is appropriate.(7,8) CT is the modality of choice to evaluate pulmonary nodules.(8) Intravenous contrast is not required to identify or characterize nodules. The size of the nodule is crucial for determining the appropriate timing of follow up surveillance imaging.(3).

For nodules which are detected incidentally on incomplete thoracic CT scans (e.g. cardiac, neck, spine or abdominal CT), the Fleischner society recommends no follow up for most nodules< 6 mm based on the estimated low risk of malignancy. The ACR states that an optional follow up CT may be done at 12 months for nodules < 6 mm with a suspicious morphology and/or upper lobe location.(8) For nodules 6-8 mm, Fleischner and ACR guidelines recommend a CT chest after the appropriate interval (3-12 months, depending on clinical risk). For a nodule> 8 mm or a very suspicious nodule, an immediate CT chest is recommended.(3,8)

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