

Guideline: Management of Pulmonary Nodules

References:

Guidelines for management of incidental pulmonary nodules detected on CT images: From the Fleischner Society 2017. MacMahon H, et al. *Radiology*. 2017.

Macro name: Guideline lung nodule

Macro last updated: 6/29/17

Note: Sizes refer to average bidimensional measurements on axial images. For part solid nodules, measurements for both the solid and ground glass components should be reported, but management is dictated by the average size of the solid component.

SOLID

<6 mm solid single or multiple: Consensus guidelines for single or multiple solid lung nodules less than 6 mm, not applicable if known malignancy or immunocompromise:

Low risk: No routine follow-up.

High risk without below: Consider CT at 12 months.

High risk AND nodule(s) with suspicious morphology OR in upper lobe: Strongly consider CT at 12 months.

(McMahon, et al. *Radiology* 2017)

6-8 mm solid single: Consensus guidelines for single solid lung nodule 6-8 mm, not applicable if known malignancy or immunocompromise :

Low risk: CT at 6-12 months, then consider CT at 18-24 months if stable.

High risk: CT at 6-12 months, then CT at 18-24 months if stable.

(McMahon, et al. *Radiology* 2017)

>8 mm solid single: Consensus guidelines for single solid lung nodule greater than 8 mm, not applicable if known malignancy or immunocompromise :

Recommend consultation with Pulmonology for consideration of PET/CT, repeat CT at 3 months, and/or tissue sampling.

(McMahon, et al. *Radiology* 2017)

>6 mm solid multiple: Consensus guidelines for multiple solid lung nodules greater than 6 mm, not applicable if known malignancy or immunocompromise :

Low risk: CT at 3-6 months, then consider CT at 18-24 months if stable.

High risk: CT at 3-6 months, then CT at 18-24 months if stable.

(McMahon, et al. *Radiology* 2017)

PART-SOLID & GROUND GLASS

<6 mm ground glass single: Consensus guidelines for single ground glass lung nodule less than 6 mm, not applicable if known malignancy or immunocompromise :

No routine follow up.

(McMahon, et al. *Radiology* 2017)

<6 mm part-solid single: Consensus guidelines for single part-solid lung nodule less than 6 mm, not applicable if known malignancy or immunocompromise :

Low risk: No routine follow up.

High risk: Consider CT at 2 years then 4 years if stable. If solid component grows, consider resection.

(McMahon, et al. *Radiology* 2017)

<6 mm part-solid or ground glass multiple: Consensus guidelines for multiple part-solid or ground glass lung nodules less than 6 mm, not applicable if known malignancy or immunocompromise : CT at 3-6 months to confirm persistence, then at 2 years and 4 years if stable.

(McMahon, et al. Radiology 2017)

>=6 mm ground glass single: Consensus guidelines for single ground glass lung nodule 6 mm or greater, not applicable if known malignancy or immunocompromise :

CT at 6-12 months to confirm persistence, then CT every 2 years to demonstrate 5 years of stability. Consider resection if enlarging or if solid component develops.

(McMahon, et al. Radiology 2017)

>=6 mm part-solid single: Consensus guidelines for single part-solid lung nodule 6 mm or greater, not applicable if known malignancy or immunocompromise : CT at 3-6 months to confirm persistence.

Then:

- If unchanged and solid component remains less than 6 mm, annual CT to demonstrate 5 years of stability.

- If solid component persists and is 6-7 mm, appearance is worrisome for invasive adenocarcinoma. Recommend consultation with Pulmonology for further management.

- If solid component is growing, 8 mm or greater, or lobulated or cystic in morphology, consider PET/CT, tissue sampling and/or resection with Pulmonology guidance.

(McMahon, et al. Radiology 2017)

>=6 mm part-solid or ground glass multiple: Consensus guidelines for multiple part-solid or ground glass lung nodules 6 mm or greater, not applicable if known malignancy or immunocompromise : CT at 3-6 months to confirm persistence. Subsequent management based on most suspicious nodule(s). If persistent after 3-6 months, consider multiple primary adenocarcinomas.

(McMahon, et al. Radiology 2017)

NON-CHEST CT NODULES

<6mm non-chest CT: Consensus guidelines for incidentally detected lung nodule(s) less than 6 mm on incomplete thoracic CT, not applicable if known malignancy or immunocompromise :

Low risk: No routine follow-up.

High risk without below: Consider CT at 12 months.

High risk AND nodule(s) with suspicious morphology OR in upper lobe: Strongly consider CT at 12 months.

(McMahon, et al. Radiology 2017)

>=6mm non-chest CT: Consensus guidelines for incidentally detected lung nodule(s) 6 mm or greater on incomplete thoracic CT, not applicable if known malignancy or immunocompromise :

Low risk, nodule 6-8 mm: CT at 6-12 months, then consider CT at 18-24 months if stable.

High risk, nodule 6-8 mm: CT at 6-12 months, then CT at 18-24 months if stable.

Nodule greater than 8 mm: Further evaluation with full chest CT.

(McMahon, et al. Radiology 2017)

PERIFISSURAL

Perifissural, typical appearance, any size: Consensus guidelines for incidentally detected perifissural nodules with typical imaging appearance: No routine follow up.

(McMahon, et al. Radiology 2017)

Perifissural, atypical morphology, any size: Consensus guidelines for incidentally detected perifissural nodules with atypical imaging appearance:

[Consider follow-up as per size recommendations for solid nodules].

(McMahon, et al. Radiology 2017)

YOUNG PATIENT (<35)

Less than 7 mm: Pulmonary nodules are a common incidental finding on CT. If there is prior imaging such as a chest radiograph or CT available at another facility, this should be compared to assess for stability. Primary lung cancer is rare in persons younger than 35 years of age (i.e., less than 1% of all cases). The risks from radiation exposure are greater than in the older population. Unless there is a known primary cancer, multiple follow-up CT studies for small incidentally detected nodules should be avoided.

If the nodule is less than 7 mm and there is no history of malignancy, no further follow-up is recommended. (Pediatr Radiol 2015. 45:1753-1760)

Greater than 7 mm: Pulmonary nodules are a common incidental finding on CT. If there is prior imaging such as a chest radiograph or CT available at another facility, this should be compared to assess for stability. Primary lung cancer is rare in persons younger than 35 years of age (i.e., less than 1% of all cases). The risks from radiation exposure are greater than in the older population. Unless there is a known primary cancer, multiple follow-up CT studies for small incidentally detected nodules should be avoided.

For larger nodules greater than 7 mm, a single follow-up CT scan in 6-12 months should be considered. (Pediatr Radiol 2015. 45:1753-1760)