

Fleischner Society Guidelines for Solid Nodules



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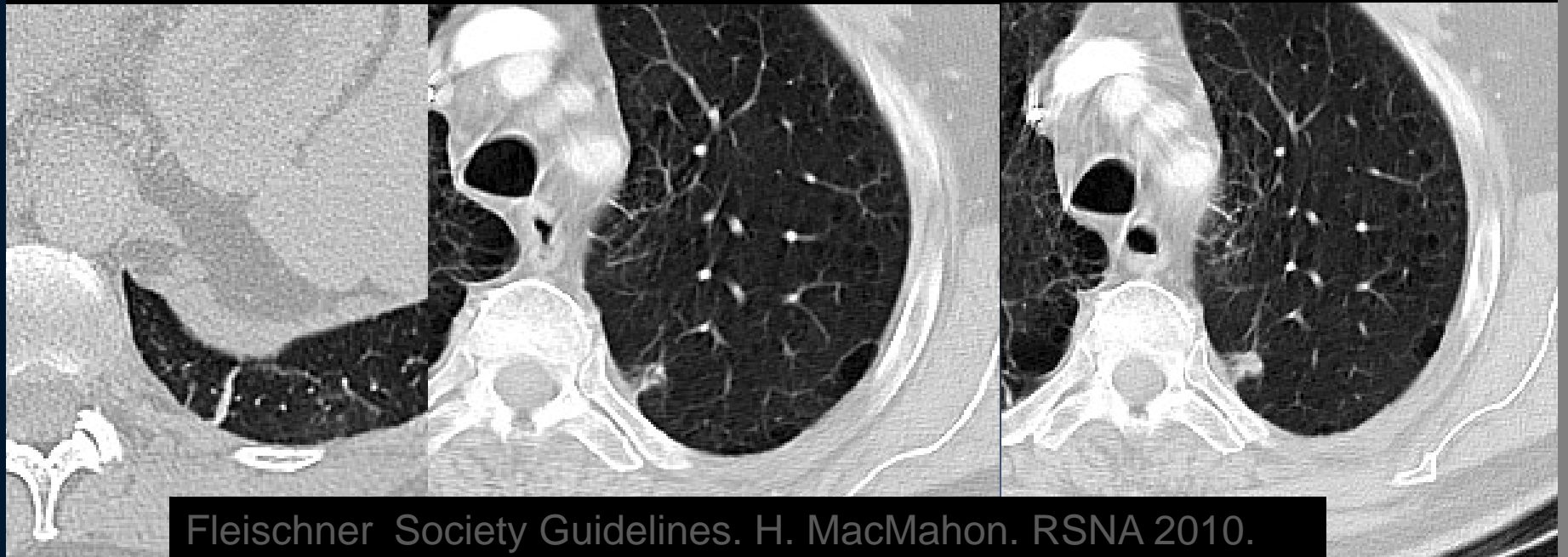


<http://radiology.uchicago.edu/index.php?q=faculty-lectures>

What is a Pulmonary Nodule?

- *Definition: A rounded opacity, well or poorly defined, measuring up to 3 cm in diameter*

What is a Pulmonary Nodule?



Fleischner Society Guidelines. H. MacMahon. RSNA 2010.

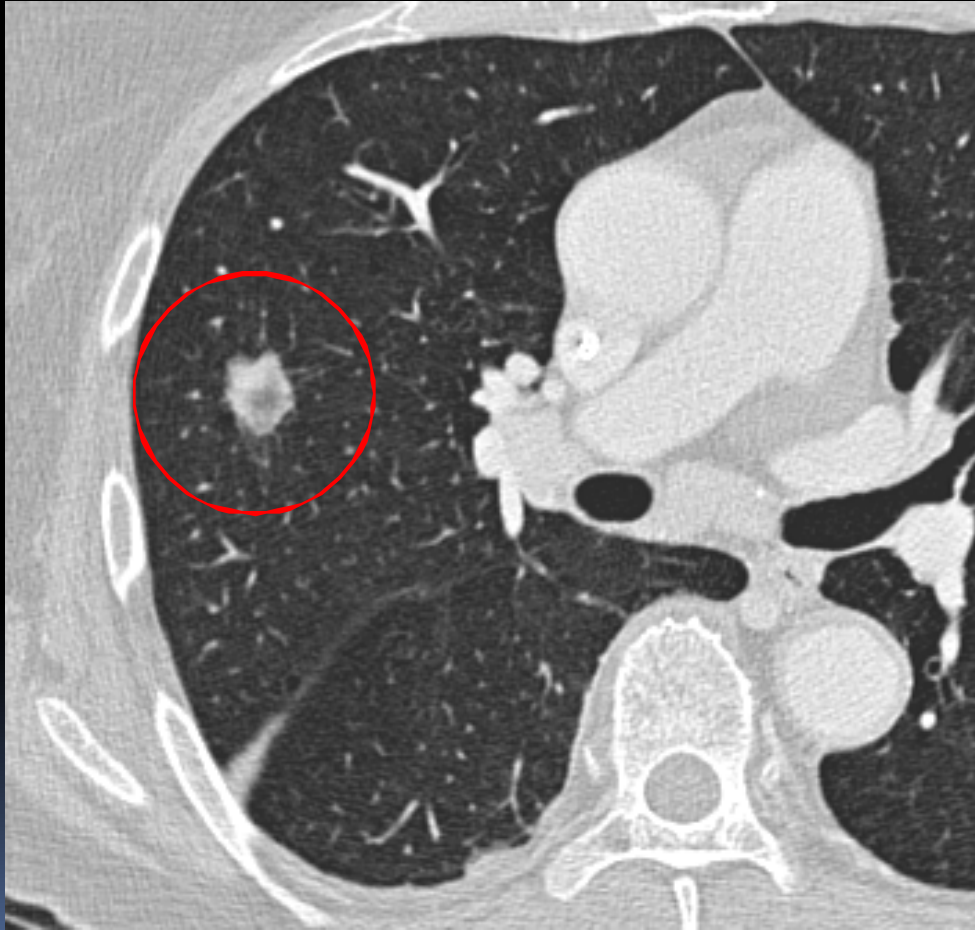
MIP

1mm thin section

Zoom



Fleischner Society Guidelines. H. MacMahon. RSNA 2010.



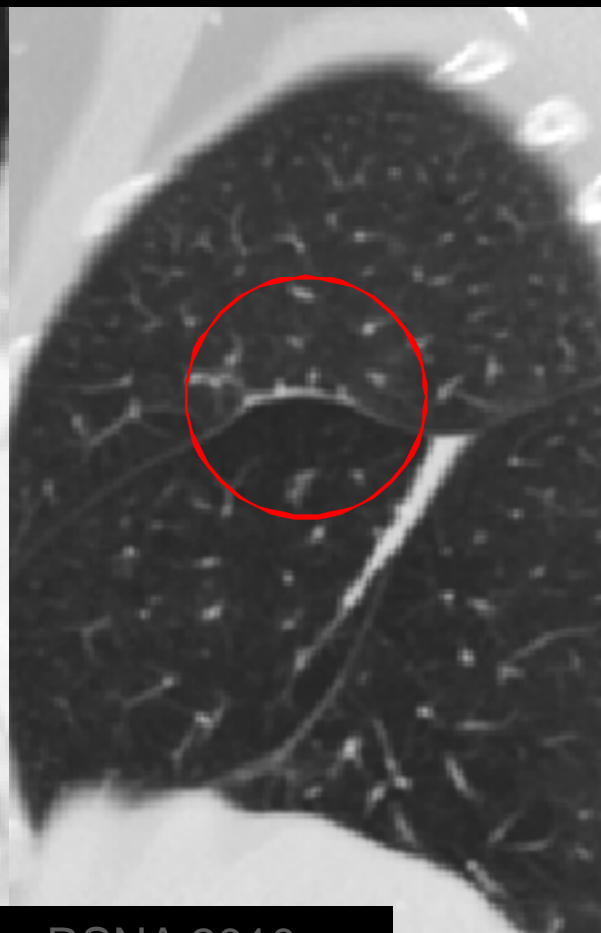
? Nodule

Fleischner Society Guidelines. H. MacMahon. RSNA 2010.

Axial

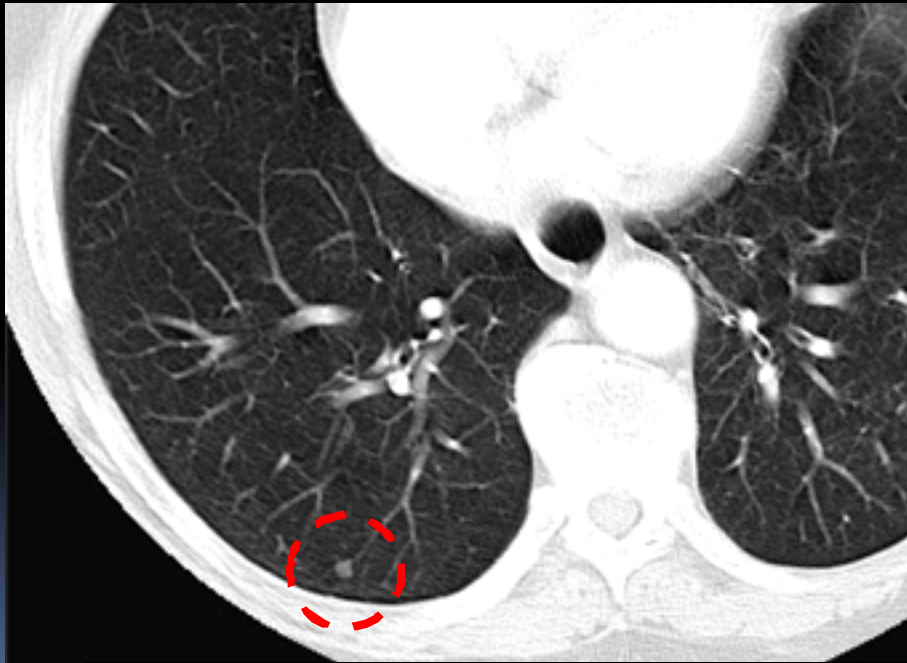
Coronal

Sagittal



Fleischner Society Guidelines. H. MacMahon. RSNA 2010.

Recommendations for Management of Patients with Lung Nodules



? Ignore

? Follow

? Intervene

Fleischner Society Guidelines. H. MacMahon. RSNA 2010.

Guidelines for Management of Patients with Lung Nodules

- *ACCP Guidelines 2003*

Tan et al. Chest 2003;123(Suppl 1):89S-96S

Follow-up CT for ALL indeterminate nodules recommended at 3,6,12 and 24 months

Fleischner Society Guidelines 2005

- *Data from Lung Cancer Screening programs revealed that majority of smokers over 60 yrs old have lung nodules*
- *Multidisciplinary committee charged with developing new guidelines*

Factors Influencing Risk

Clinical Data

- Age
- Smoking
- Symptoms
- Known cancer
- Immune status

Factors Influencing Risk

Imaging Features

- Size
- Growth rate
- Location
- Morphology
- Calcium/fat content

Fleischner Society Guidelines. H. MacMahon. RSNA 2010.

Relevant Parameters

Imaging Features

- Size
- Growth rate
- Location
- Morphology
- Calcium/fat content

Nodule Size and Probability of Malignancy

<i>Size</i>	<i>ELCAP</i>	<i>Mayo</i>
$\leq 3\text{mm}$		0.1%
2-5mm	1%	
4-7mm		0.7%
6-10mm	24%	
8-20mm		18.7%
21-30mm		33.3%
21-45mm	80%	

Fleischner Society Guidelines. H. MacMahon. RSNA 2010.

Growth rate of Nodules

- *Volume doubling time (VDT):*
26% diameter increase = One volume doubling
- *Typical lung Ca VDT = 100 – 200 days*
Range = 30 – 1000+ days

Mean Doubling Times According to CT Features

(M.Hasegawa et al. B.J.R. 12/2000)

<i>HRCT Type</i>	<i>n</i>	<i>Mean VDT \pm SD</i>
<i>Type G</i>	<i>19</i>	<i>813 \pm 375</i>
<i>Type GS</i>	<i>19</i>	<i>457 \pm 260</i>
<i>Type S</i>	<i>23</i>	<i>149 \pm 125</i>

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Mean Doubling Times According to CT Features

(M.Hasegawa et al. B.J.R. 12/2000)

Size (mm)	n	Mean VDT \pm SD
<10	22	536 \pm 283
10-15	23	466 \pm 481
16-20	9	325 \pm 353
>20	7	299 \pm 273

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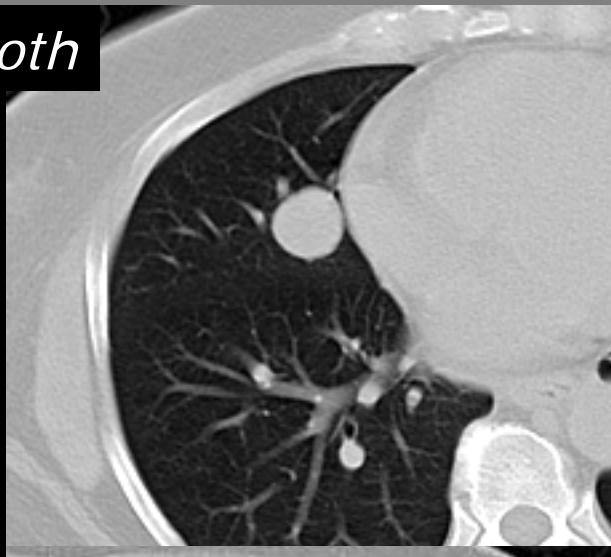
Factors Influencing Risk

Imaging Features

- Size
- Growth rate
- Location
- Morphology
- Calcium/fat content

*Overall Shape
Solid/Non-solid
Edge features*

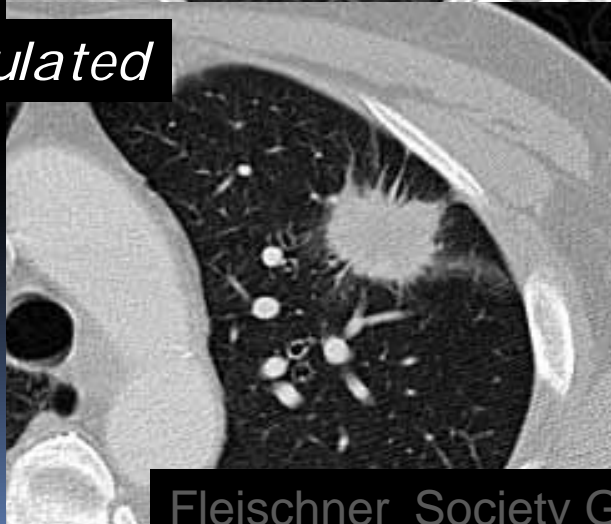
Smooth



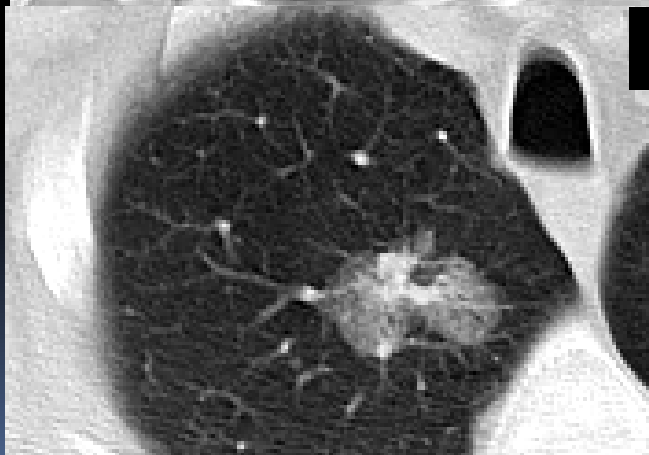
Lobulated



Spiculated



Part-Solid



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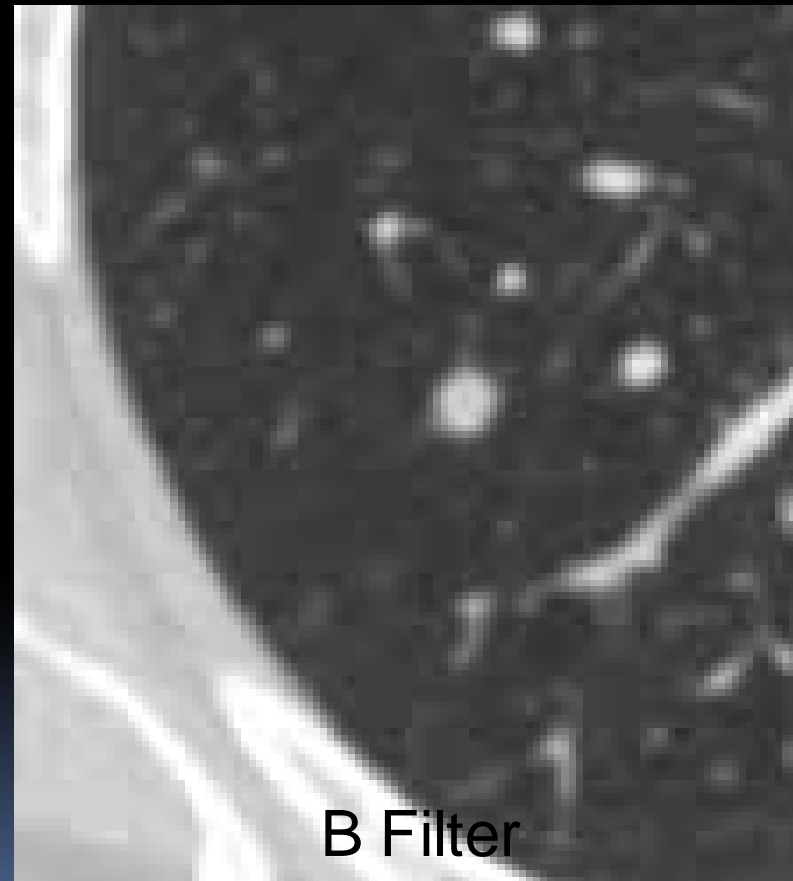
Factors Influencing Risk

Imaging Features

- Size
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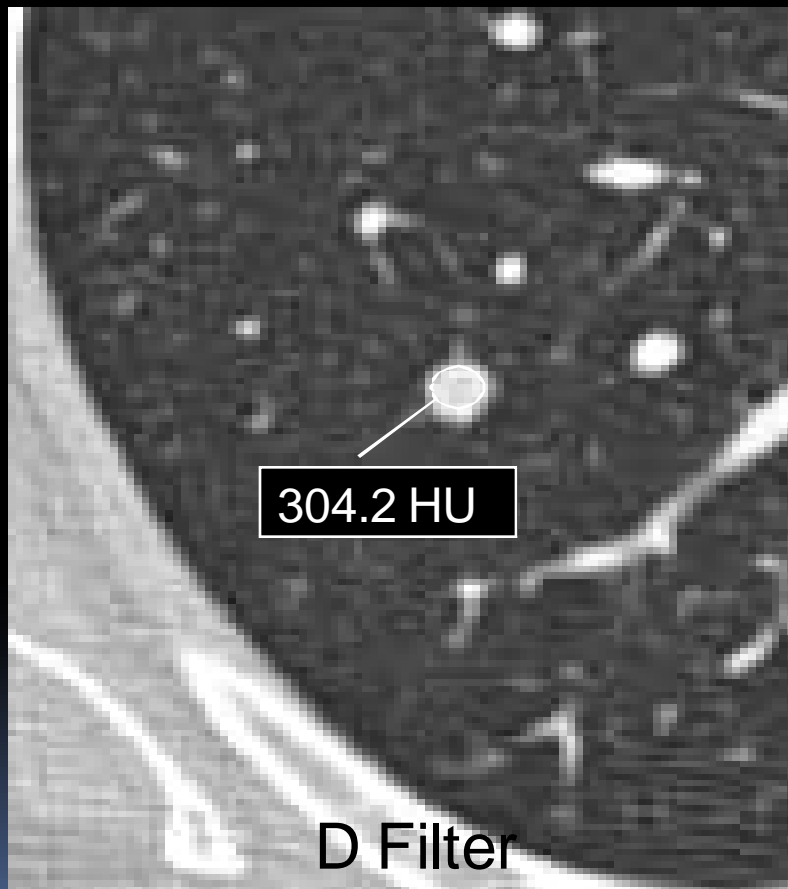


D Filter



B Filter

Fleischner Society Guidelines. H. MacMahon. RSNA 2010.



Fleischner Society Guidelines. H. MacMahon. RSNA 2010.

Guidelines for Management of Small Pulmonary Nodules detected on CT Scans:

MacMahon et al. Radiology 2005; 237:395-400

- ***Incidental Nodules***

In persons of 35 years of age or older with chest CT scans performed for reasons unrelated to cancer or opportunistic infection, such as to evaluate for pulmonary embolism.

Fleischner Society Recommendations for Follow-up and Management of Small Nodules

<i>Nodule Size</i>	<i>Low risk patient</i>	<i>High risk patient</i>
<i>\leq 4 mm</i>	<i>No follow-up needed</i>	<i>CT follow-up CT at 12 months; if unchanged, no further follow-up</i>
<i>> 4-6 mm</i>	<i>CT follow-up at 12 months; if unchanged, no further follow-up</i>	<i>Initial CT follow-up at 6 to 12 months, then at 18-24 months if no change</i>
<i>> 6-8 mm</i>	<i>Initial CT follow-up at 6 to 12 months, then at 18 to 24 months if no change</i>	<i>Initial CT follow-up at 3 to 6 months, then at 12 and 24 months if no change.</i>
<i>> 8 mm</i>	<i>One or more of the following: CT follow-up at 3, 9, 24 months/ Dynamic CT / PET scan / Biopsy</i>	

Compliance with Fleischner Society Guidelines for Management of Small Lung Nodules:

A Survey of 834 Radiologists

Ronald L. Eisenberg, et al. Radiology June 2010 (255) 3

- Of 834 respondents 649 (77.8%) were aware of the Fleischner Society guidelines and 490 (58.8%) worked in practices that employed them or similar guidelines.
- Management selections were consistent with the Fleischner guidelines in 34.7%–60.8% of responses for the three scenarios.

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Provider Reference Guide

CareCore National Radiology Management Program
for Excellus BlueCross BlueShield Members

(Please refer to this updated document and discard the prior version.)

Extended authorizations are available via the CareCore National Web site. Requests for extended authorizations are *initially* available for:

- Solitary pulmonary nodule based on the **Fleischner Society guidelines**
- Follow-up of endovascular abdominal aorta grafts and/or stents
- Multiple sclerosis in active treatment (e.g., natalizumab)
- Surveillance testing in patients with underlying malignant conditions for which the ASCO or NCCN guidelines support follow-up testing for that stage of disease

Fleischner Society Guidelines. H. MacMahon. RSNA 2010.

IMPACT OF IMPLEMENTATION OF FLEISCHNER SOCIETY PULMONARY NODULE SURVEILLANCE CRITERIA WITHIN THE MADIGAN ARMY MEDICAL CENTER

William T. Lewis, DO* and Mohammed Naeem, MD

Prior to use of Guidelines, 1091/2377(48)% of all chest CTs were for nodule surveillance

After Guidelines chest CTs for nodule surveillance reduced 31% (15% of total workload)

Saved 90 staff man-hours & 113 technologist man-hours

Cost reduction of \$135,300

Patient dose reduction of 1579 mGy

Fleischner Society Guidelines. H. MacMahon. RSNA 2010.

Updates

- New information from NLST trial results
- Guidelines for non-solid/part-solid nodules

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