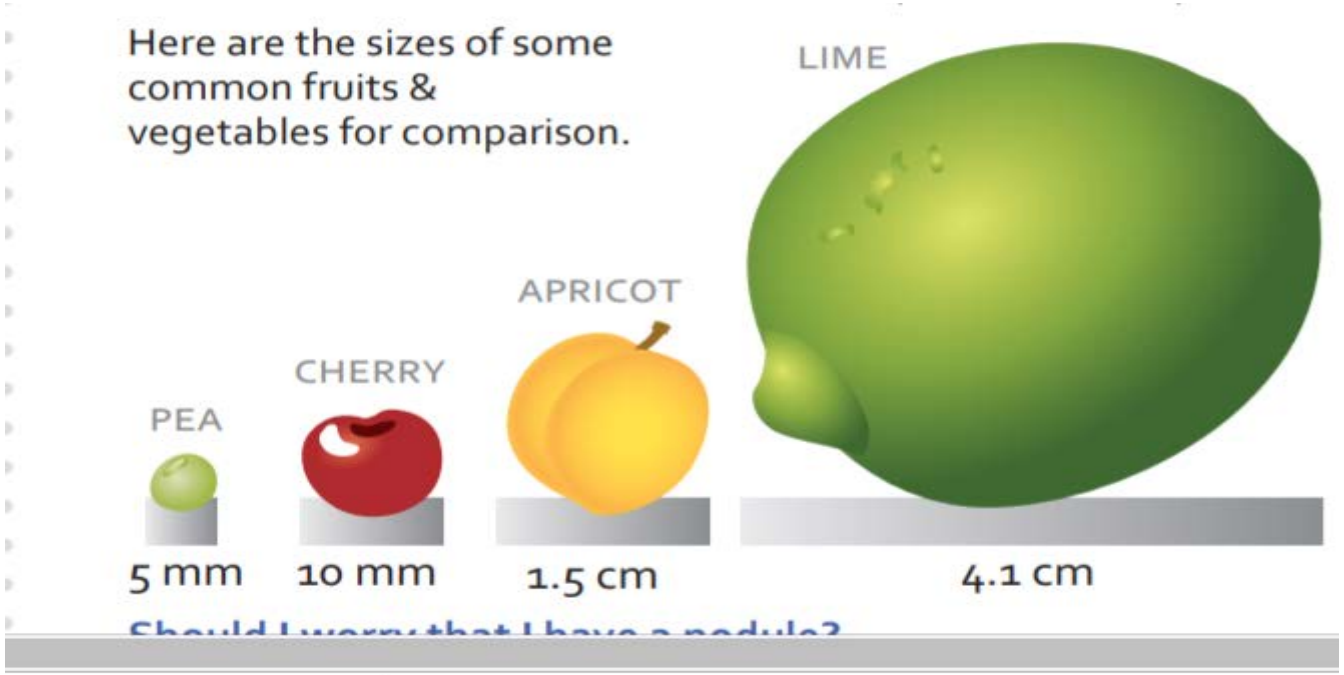
بنام خدا

دکتر اسداله اسدیان

Pulmonary nodule

- commonly called a “spot on the lung” or a “shadow,” a nodule is a
- round area that is more solid than normal lung tissue. It shows up as
- a white spot on a CT scan. Lung nodules are usually caused by scar
- tissue, a healed infection that may never have made you sick, or some
- irritant in the air. Sometimes, a nodule can be an early lung cancer.


Here are the sizes of some common fruits & vegetables for comparison.
LIME
APRICOT
CHERRY
PEA
5 mm
10 mm
1.5 cm
4.1 cm

Probability of Malignancy

Low (<5%)	Intermediate (5-65%)	High (>65%)
Young	Mixture of low and high probability features	Older
Less smoking		Heavy smoking
No prior cancer,		Prior cancer
Small nodule size,		Larger size
Regular margins,		Irregular margin
Non-upper lobe		Upper lobe location

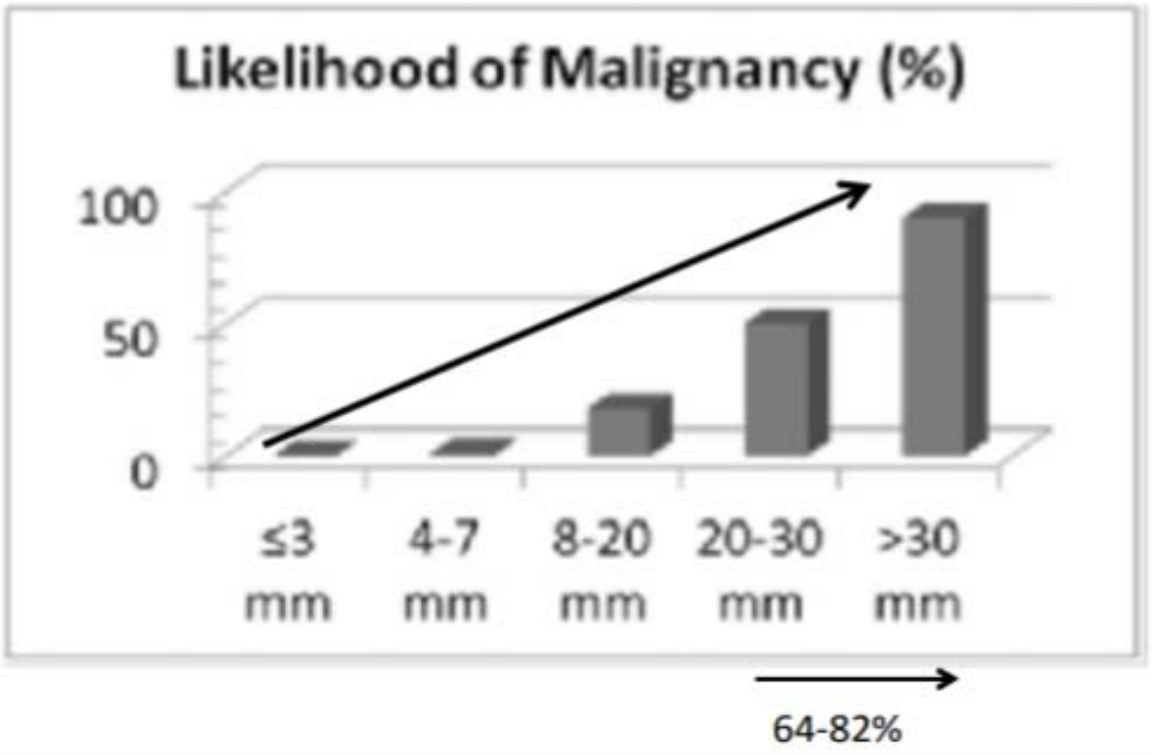
Low Risk of Lung Cancer

- Under age 35
- Nodule is small (less than 3 cm in diameter)
- Patient is a nonsmoker (and has never smoked)
- No exposure to toxins in the workplace
- No history of lung cancer among family members
- No other signs or symptoms of lung cancer
- Nodules are smooth and round in shape
- Nodules are only partly solid
- Nodules do not get bigger over time
- Nodules are calcified (contain calcium deposits)
- Interior of nodule is "cavitary" —darker on x-rays
- Only one or a few nodules are present
- Nodules are located in the right or left lower lobes or the right middle lobes of the lung

High Risk of Lung Cancer

- Over age 50
- Nodule is larger than 3 cm in diameter
- Patient smokes or is a former smoker
- Exposure to occupational toxins such as asbestos or radon
- First- or second-degree relative with lung cancer
- Presence of lung cancer symptoms such as persistent cough or shortness of breath
- Nodules are "spiculated"—have irregular or lobular borders
- Nodules are solid
- Nodules grow rapidly (on average doubling in size in four months)
- Nodules show no signs of calcification
- Nodules are not cavitary
- Presence of multiple nodules (suspicious for cancer metastases to the lungs)
- Nodules are located in left or right upper lobes of the lungs

- **Size:**
  - **SPN size and corresponding likelihood of malignancy**



Differential Diagnosis of Solitary Pulmonary Nodules

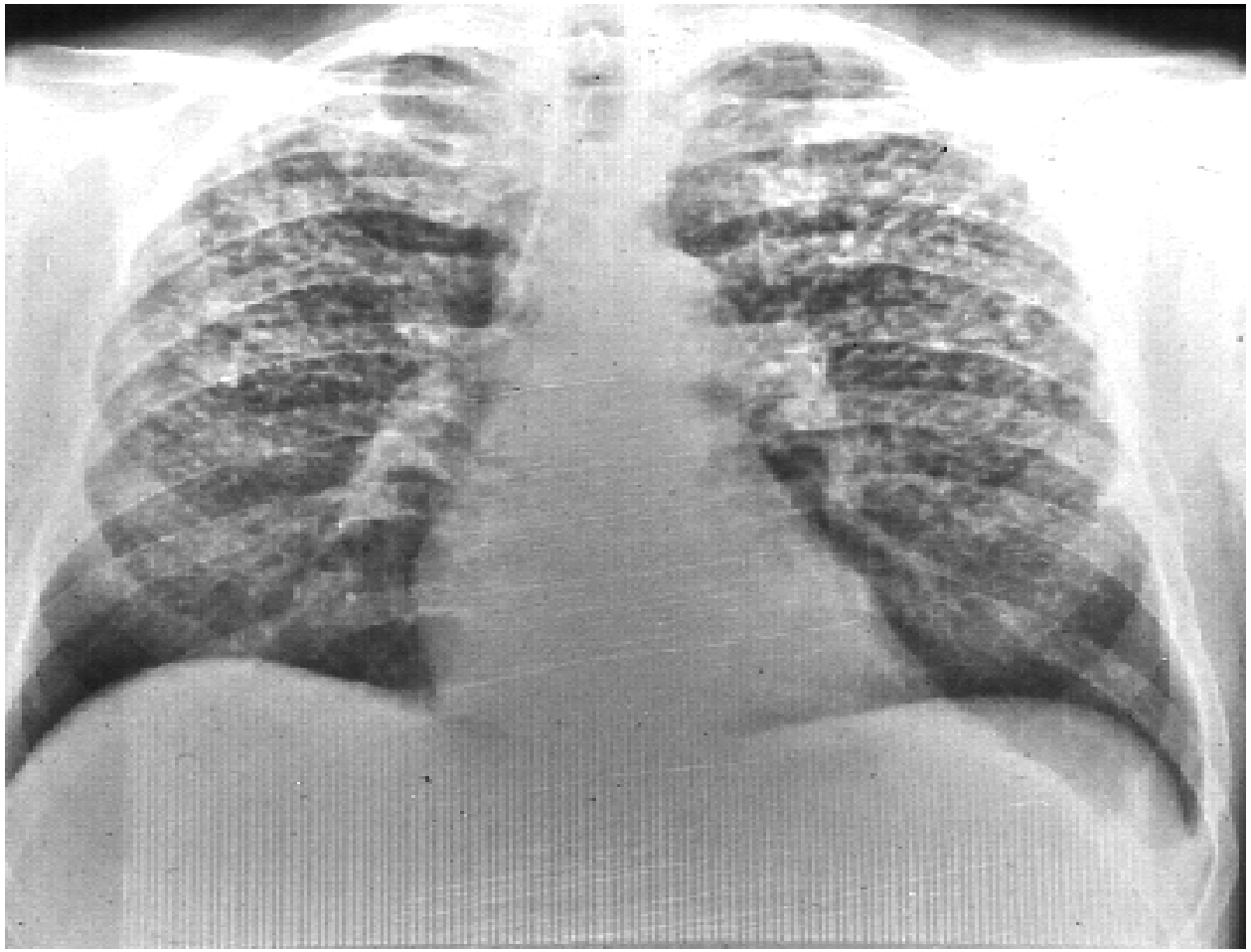
- Vascular
- Arteriovenous malformation
- Pulmonary infarct
- Pulmonary artery aneurysm
- Pulmonary venous varix
- Hematoma

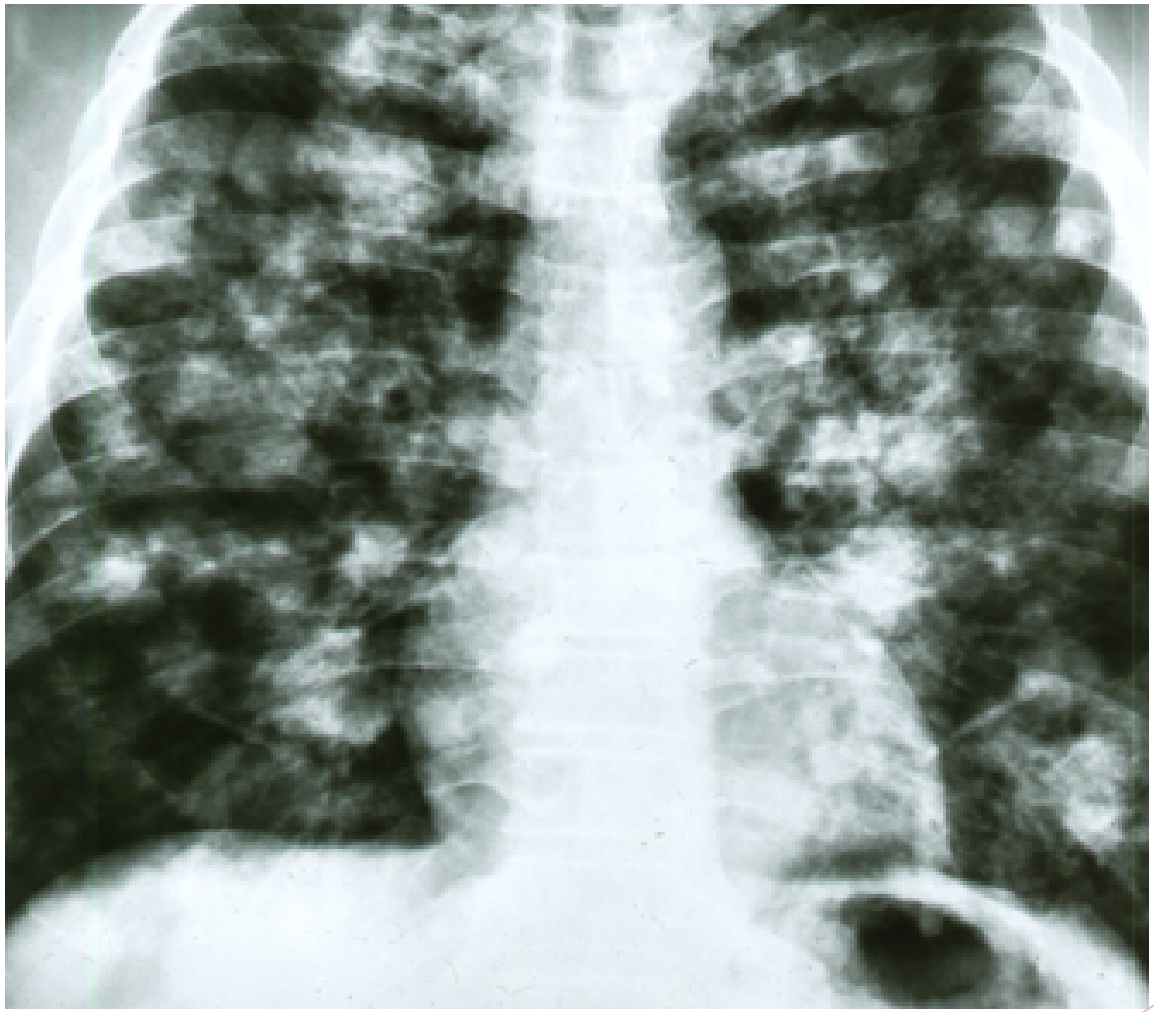
- Congenital
- Bronchogenic cyst
- Lung sequestration
- Bronchial atresia with mucoid impaction

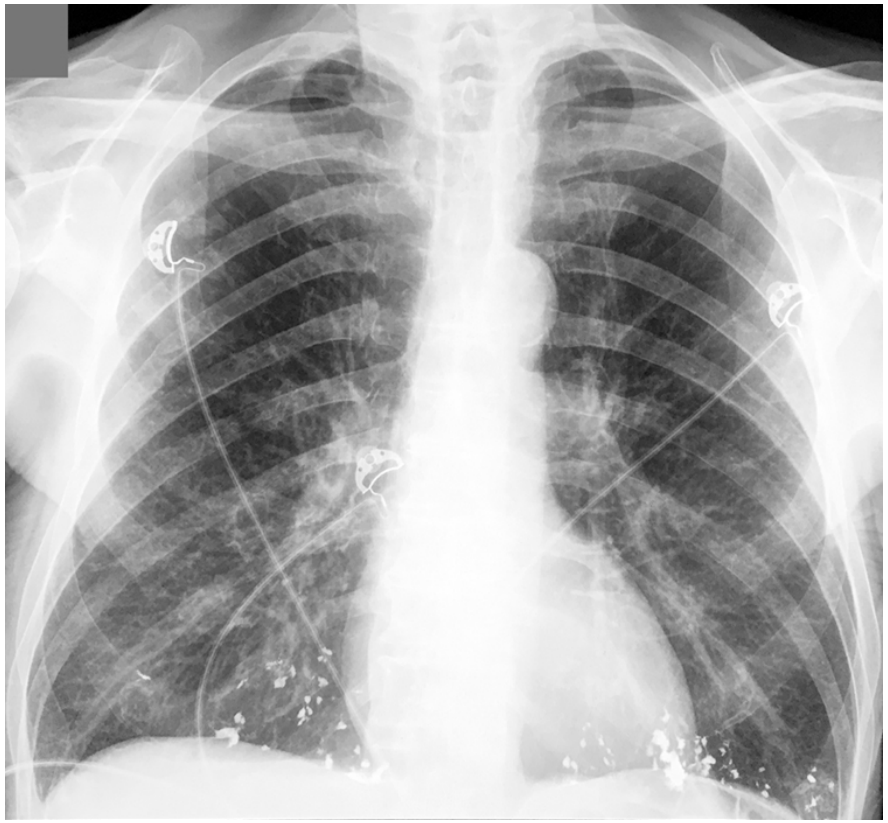
- Inflammatory
- Rheumatoid arthritis
- Granulomatosis with polyangiitis (Wegener)
- Microscopic polyangiitis
- Sarcoidosis

- Lymphatic
- Intrapulmonary or subpleural lymph nod
- Lymphoma

- Outside lung fields
- Skin nodule
- Nipple shadows
- Rib fracture
- Pleural thickening, mass or fl uid (pseudotumor)

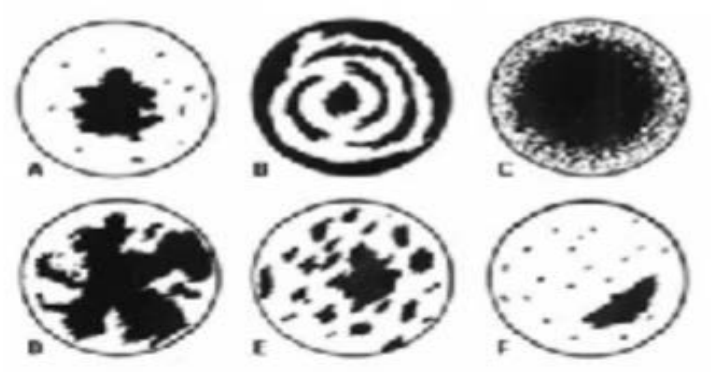






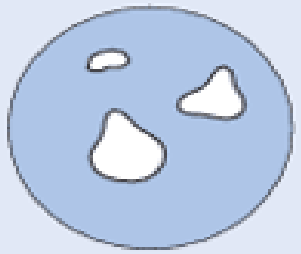
Radiographic Characteristics

- **Calcification**

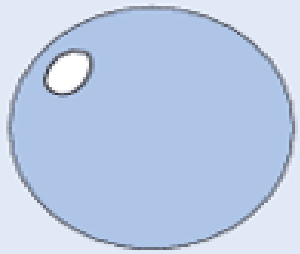


A.	Dense Central Core	Benign
B.	Laminated	Benign
C.	Diffuse	Benign
D.	Popcorn	Hamartoma
E.	Punctate	Malignant
F.	Eccentric	Malignant

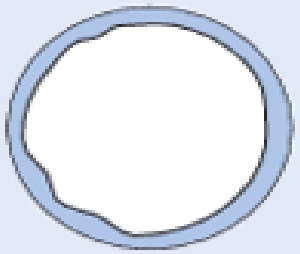
Central cavity



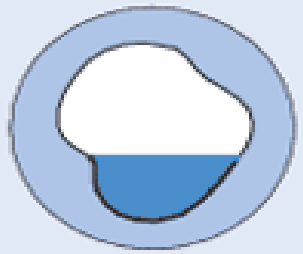
Locular cavity



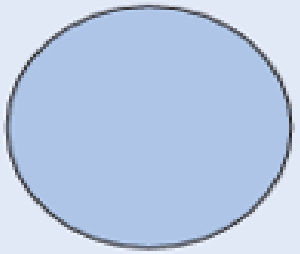
Eccentric cavity



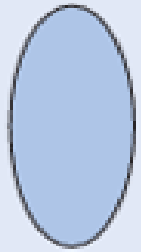
Thin-walled ring structure



Cavity with fluid

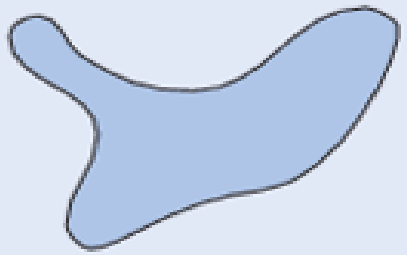


Round



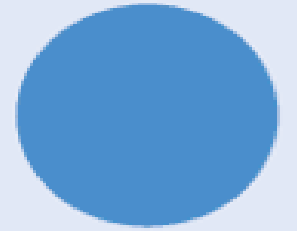
Oval

Spindle-shaped

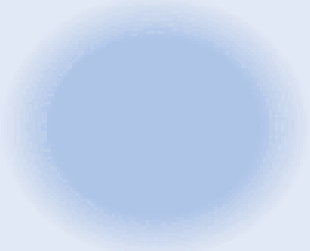


Asymmetric

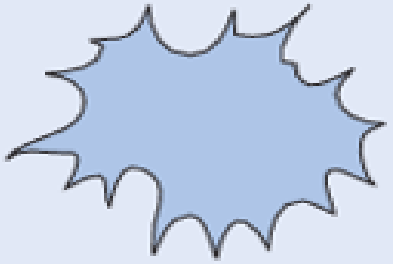
Lobed



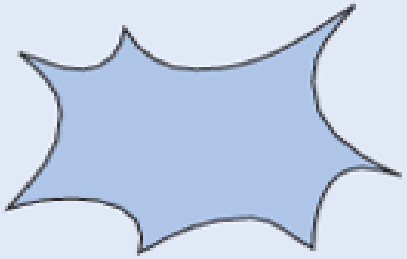
Sharp



Unsharp

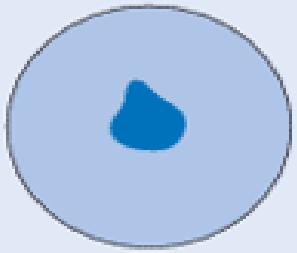


Corona radiata (fine)

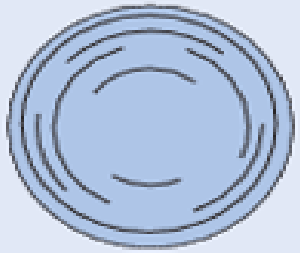


Corona radiata (coarse)

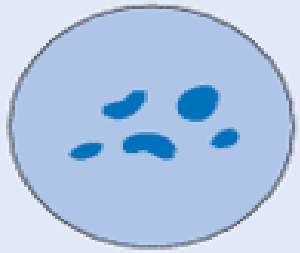
Extension towards the pleura



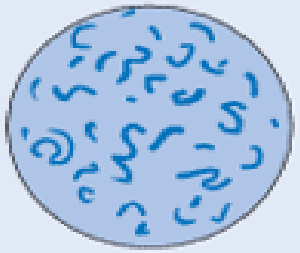
Central



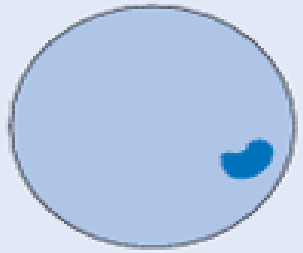
Concentric



Clumped, popcorn-like

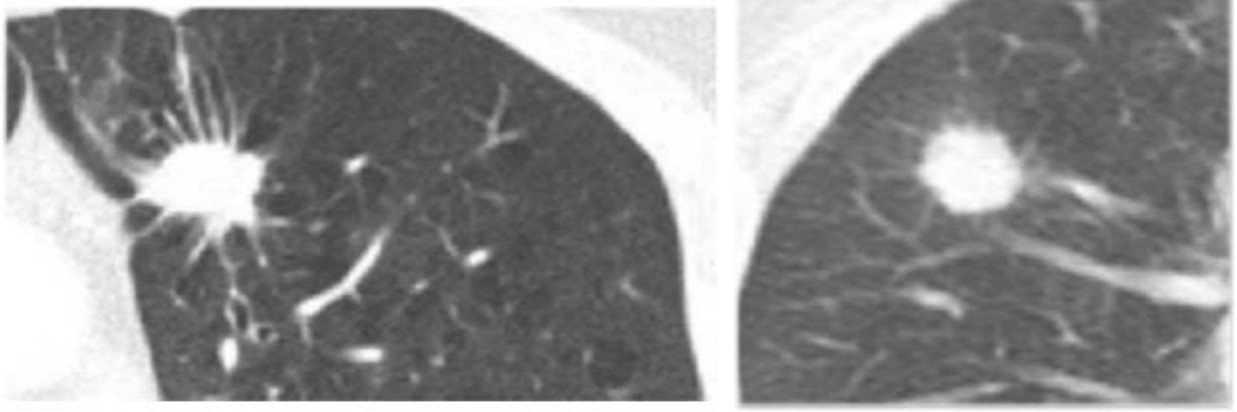


Diffuse



Eccentric

Margins

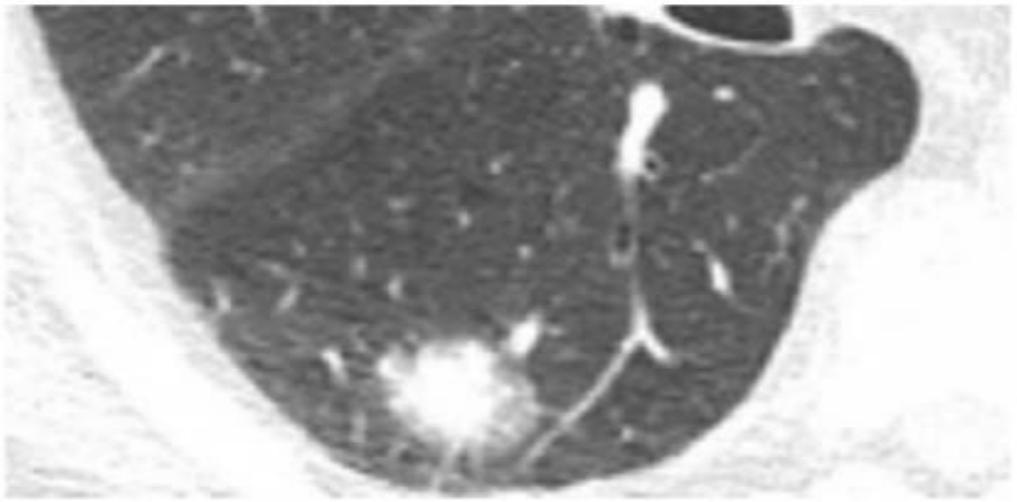


Spiculated

Ragged

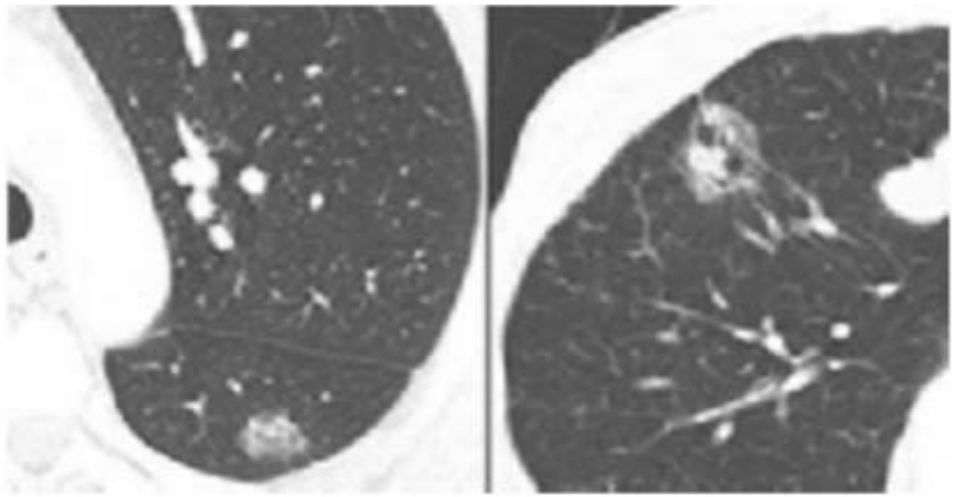
Determining Probability

Attenuation



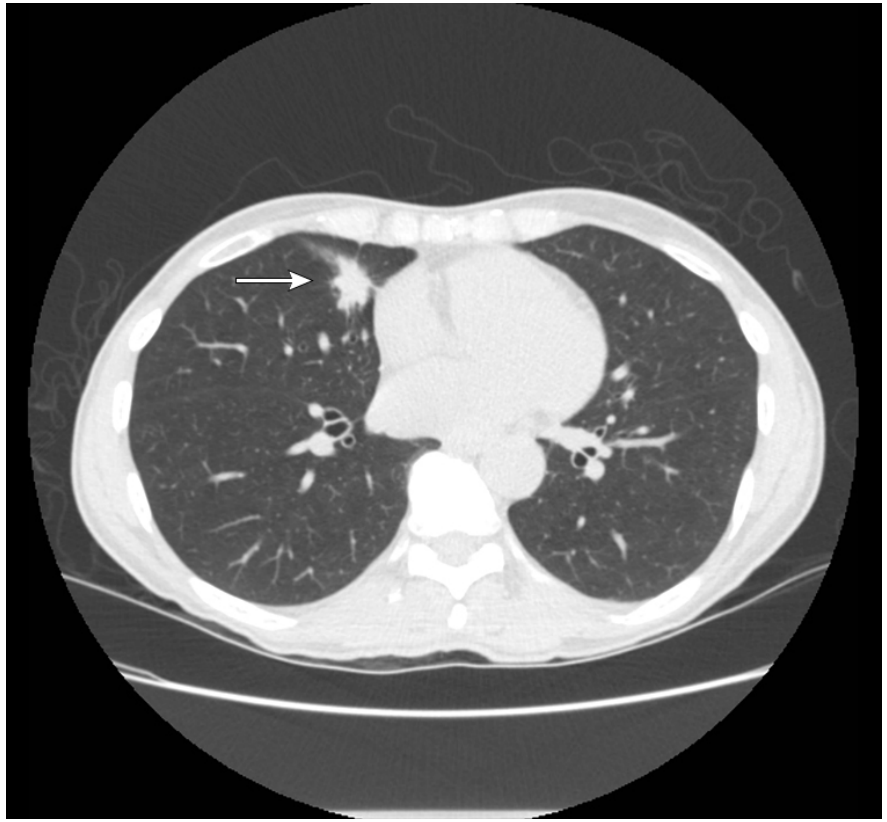
Partly solid nodule containing Ground glass. High likelihood of being malignant

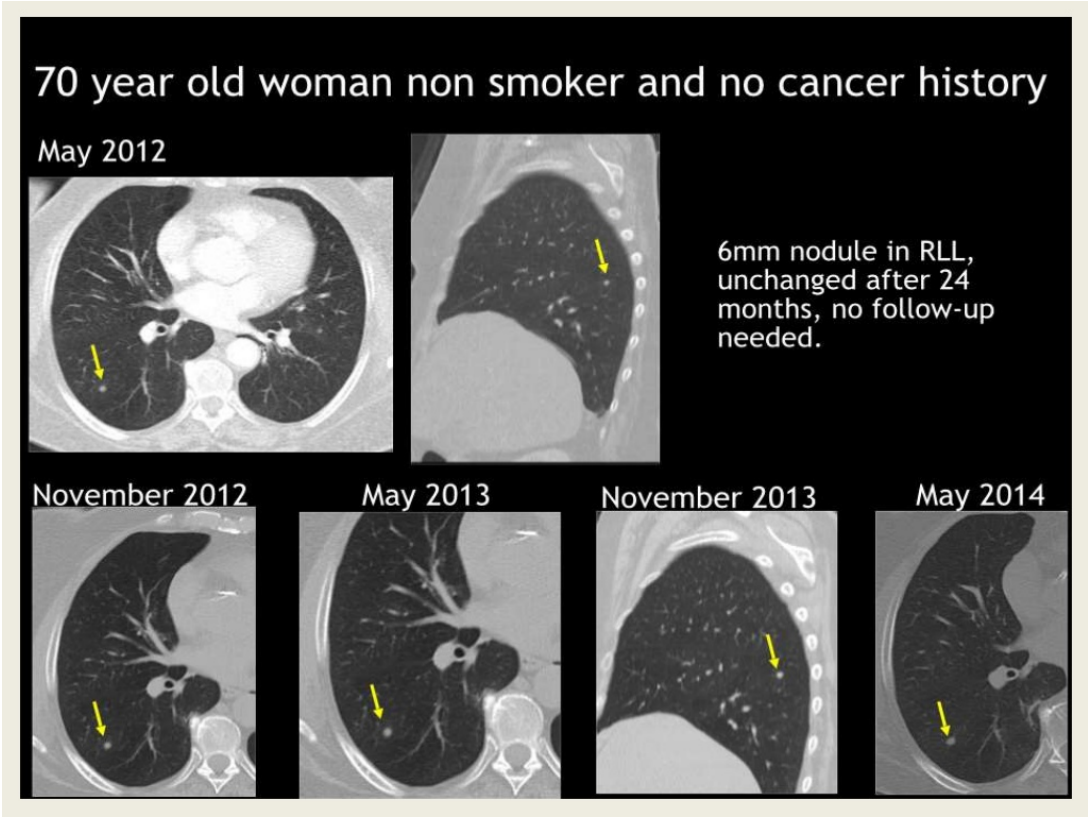
Attenuation

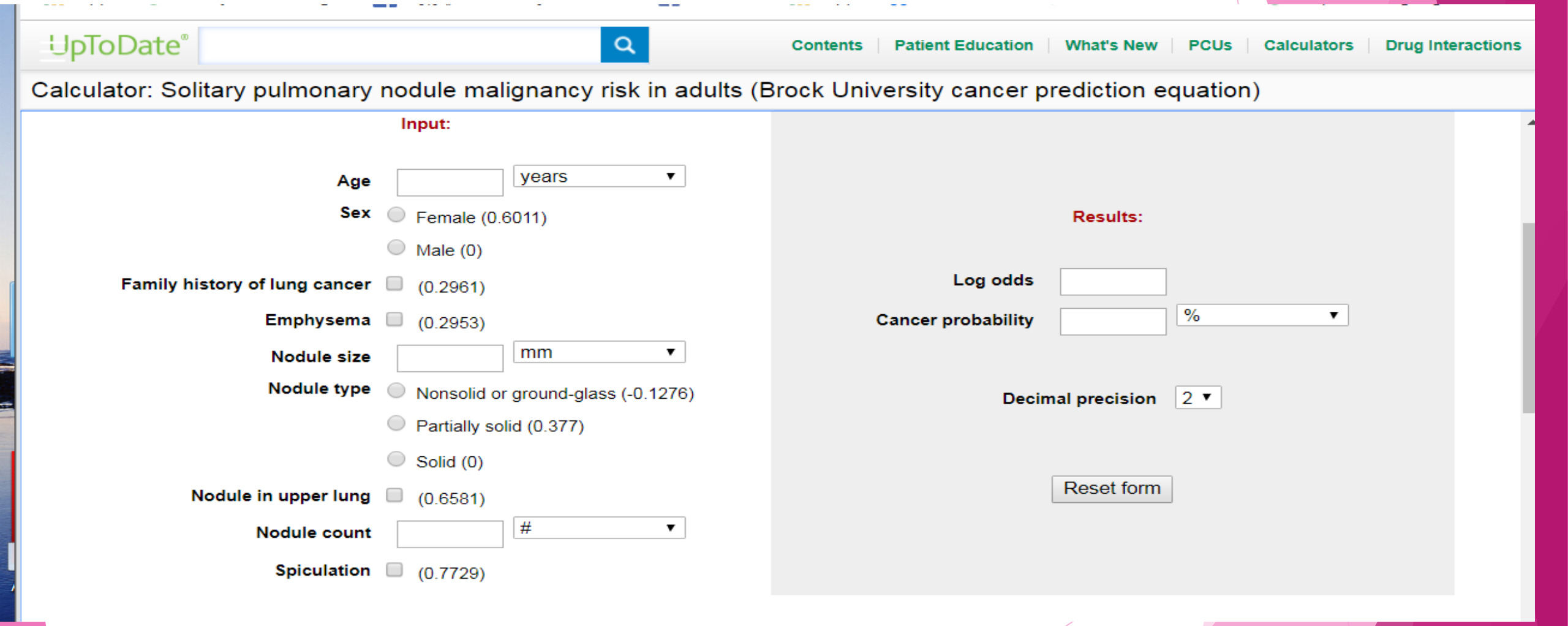


Ground glass lesion

Semi-solid lesion




70 year old woman non smoker and no cancer history
May 2012
6mm nodule in RLL, unchanged after 24 months, no follow-up needed.
November 2012
May 2013
November 2013
May 2014


UpToDate
Contents
Patient Education
What's New
PCUs
Calculators
Drug Interactions
Calculator: Solitary pulmonary nodule malignancy risk in adults (Brock University cancer prediction equation)
Input:
Age
years
Sex
Female (0.6011)
Male (0)
Family history of lung cancer
(0.2961)
Emphysema
(0.2953)
Nodule size
mm
Nodule type
Nonsolid or ground-glass (-0.1276)
Partially solid (0.377)
Solid (0)
Nodule in upper lung
(0.6581)
Nodule count
#
Spiculation
(0.7729)
Results:
Log odds
Cancer probability
%
Decimal precision
2
Reset form


تشکر از توجه
وتحمل شما