



Screening for Mesothelioma

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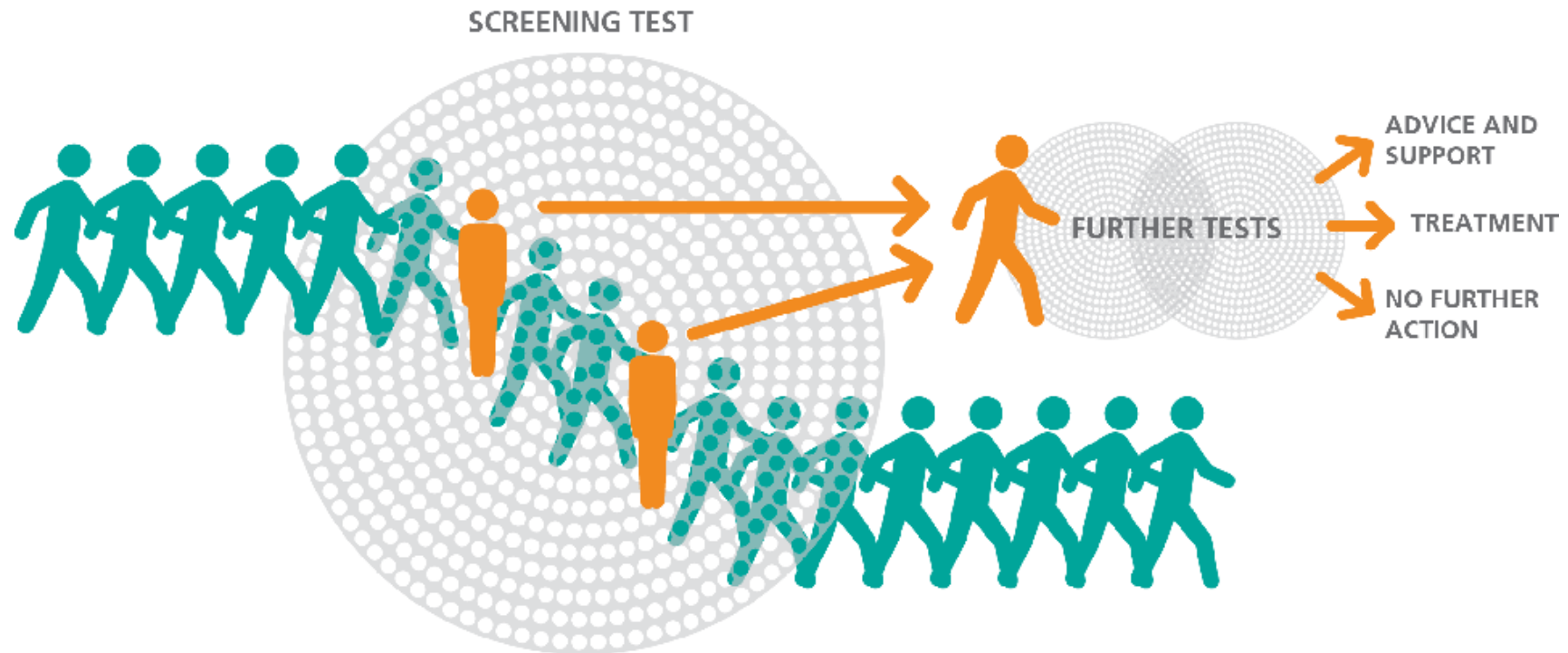
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Disclosures

None

What is screening?

Testing for a disease before developing symptoms



Principles of screening

1. Characteristics of the disease
2. Suitability of a screening test
3. Effectiveness of early treatment

Principles of screening

- 1. Characteristics of the disease**
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Characteristics of the disease

Malignant mesothelioma is a good candidate for screening

- Target population is well defined
- Associated with high morbidity and mortality
- Motivated patient population

Exposure and risk may be challenging to quantify

Principles of screening

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Suitability of a screening test

- Imaging
- Biomarkers

Suitability of a screening test

- **Imaging**
- Biomarkers

Suitability of a screening test

Imaging

Chest X-ray

Asbestos-exposed nuclear weapons workers, United States. (n=2,760)

	Interstitial Lung Disease, %	Pleural Thickening, %
Positive predictive value	66.7	74.0
Negative predictive value	97.6	91.8
Sensitivity	13.2	19.7
Specificity	99.8	99.2
False positive	0.2	0.7
False negative	2.4	8.0

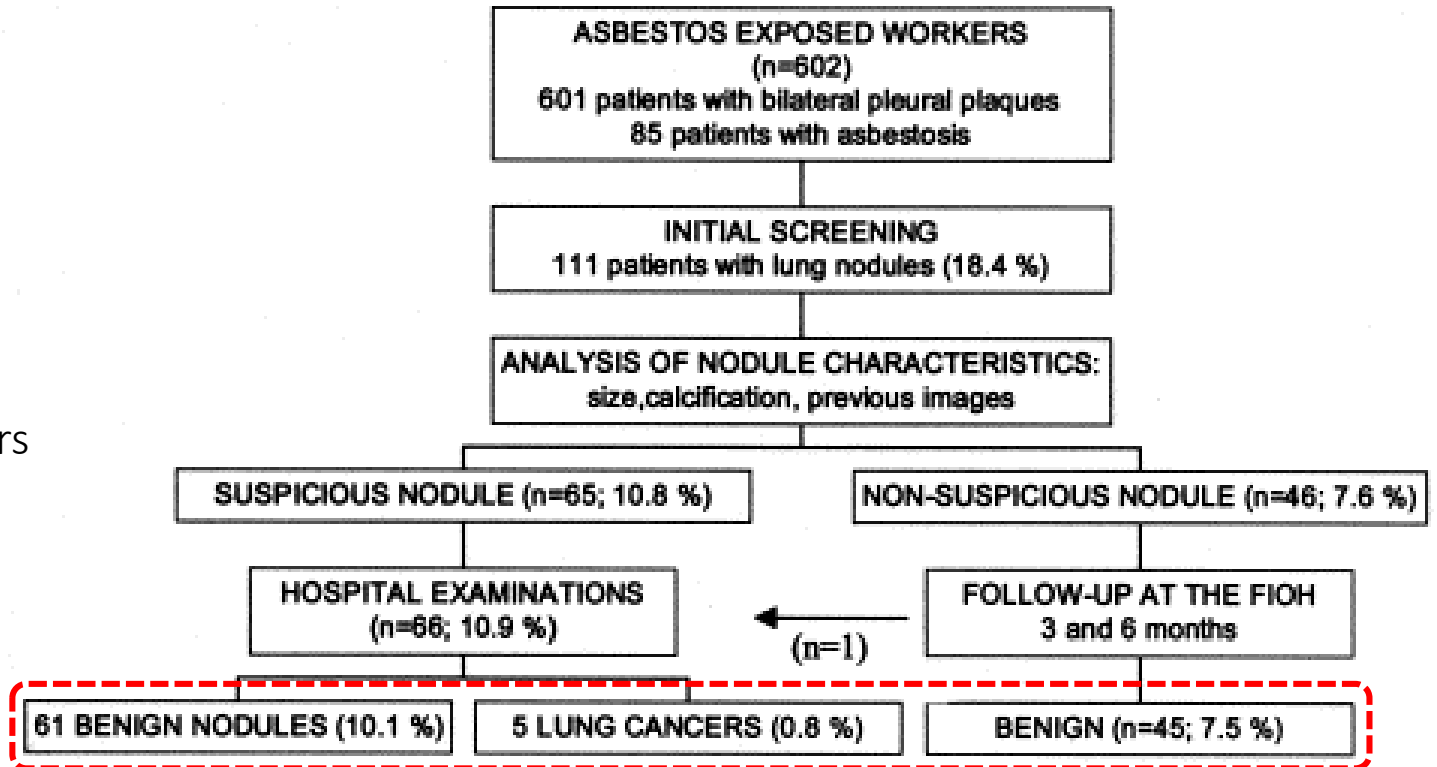
Performance characteristics of chest X-ray compared with CT for detection of ILD and pleural thickening in 2760 nuclear weapons workers

Suitability of a screening test

Imaging

CT scan

Asbestos-exposed construction workers from Helsinki, Finland. (n=602)

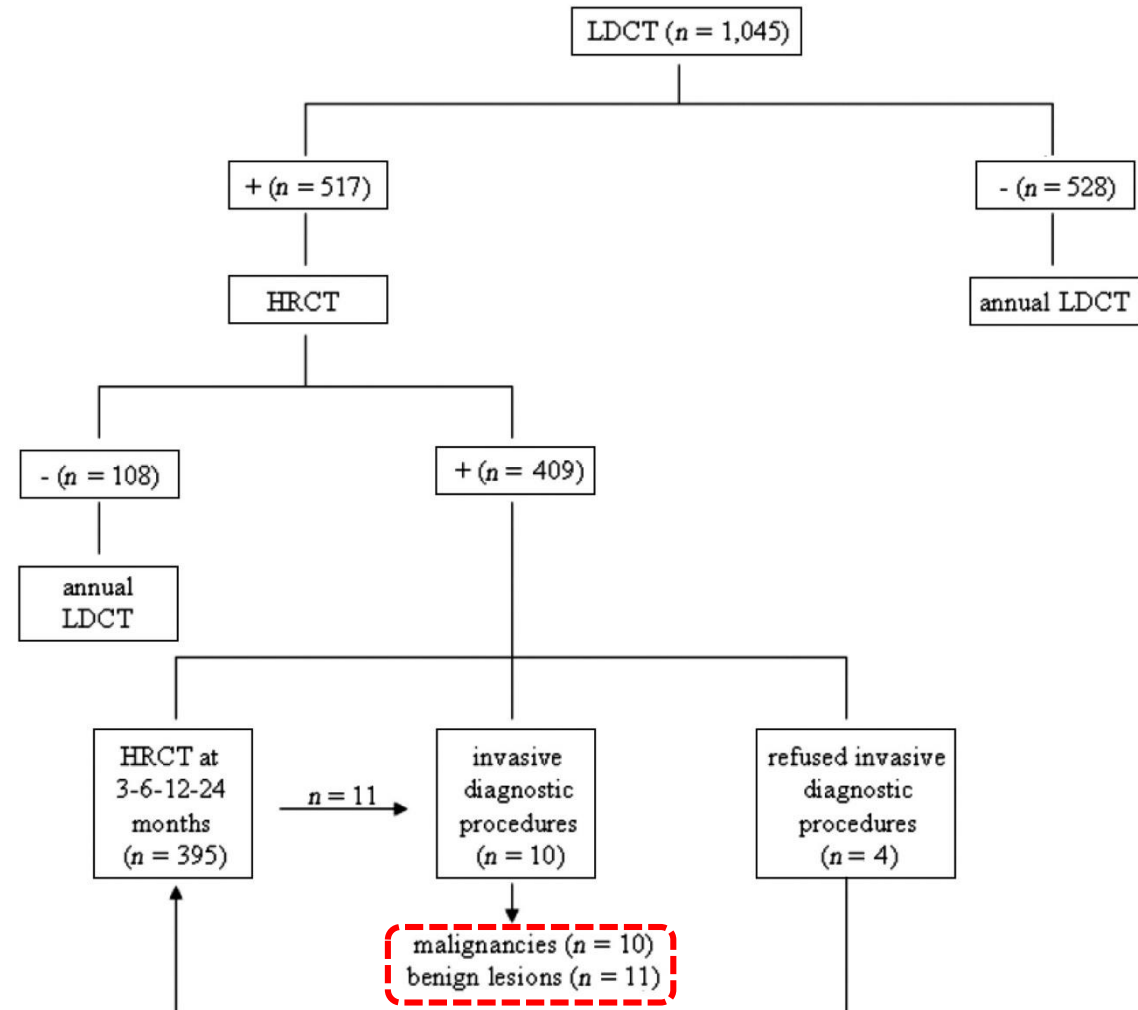


Suitability of a screening test

Imaging

CT scan

Asbestos-exposed shipyard workers
from Monfalcone, Italy. (n=1,045)



Suitability of a screening test

Imaging

PET/CT scan

- Good discrimination between benign and malignant disease
- Risk of missing very early disease
- No studies evaluating its role in screening
- Cost, limited access and lack of resources for interpretation likely preclude widespread use

Suitability of a screening test

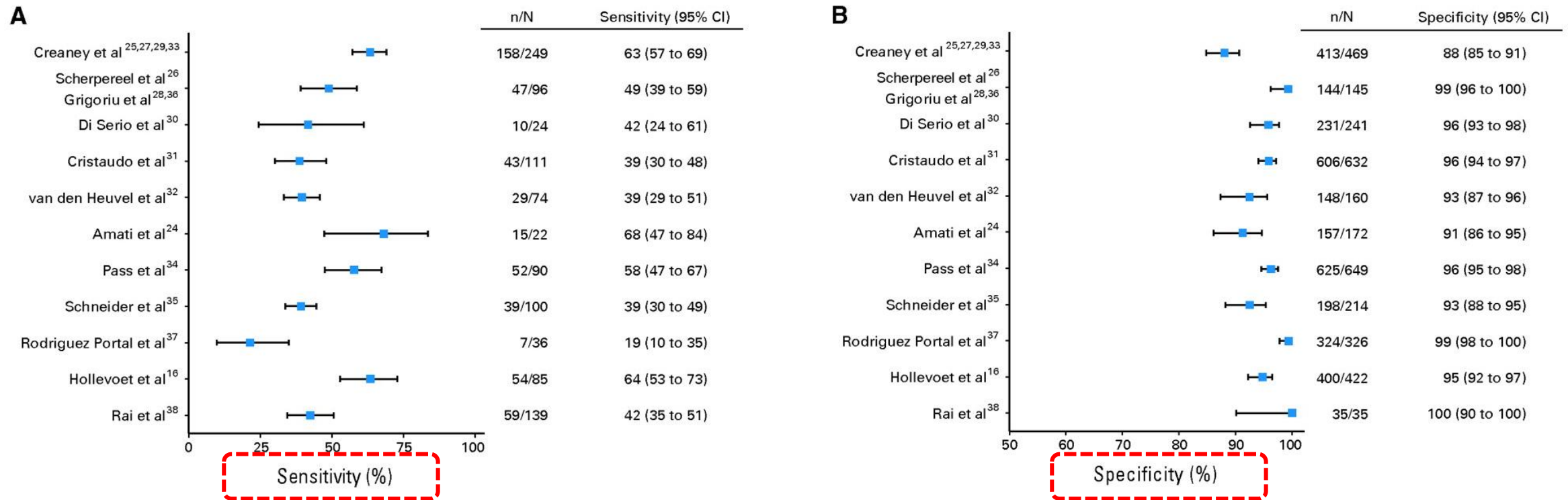
- Radiographic testing
- **Biomarkers**

Suitability of a screening test

Biomarkers

Soluble mesothelin-related peptides

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Suitability of a screening test

Soluble mesothelin-receptor protein

Megakaryocyte potentiating factor

Osteopontin (OPN)

Fibulin-3

High-mobility group B1

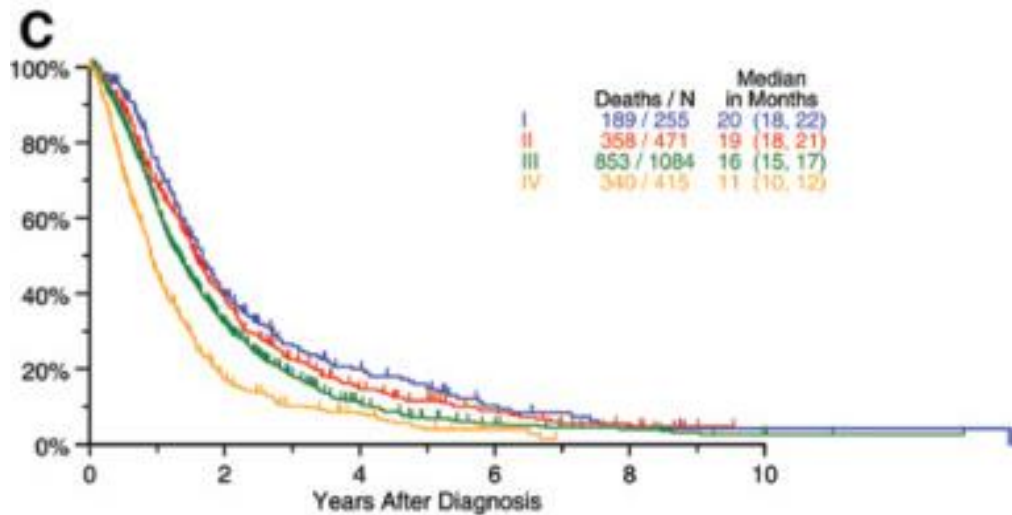
microRNAs

Multiplex protein signatures

Principles of screening

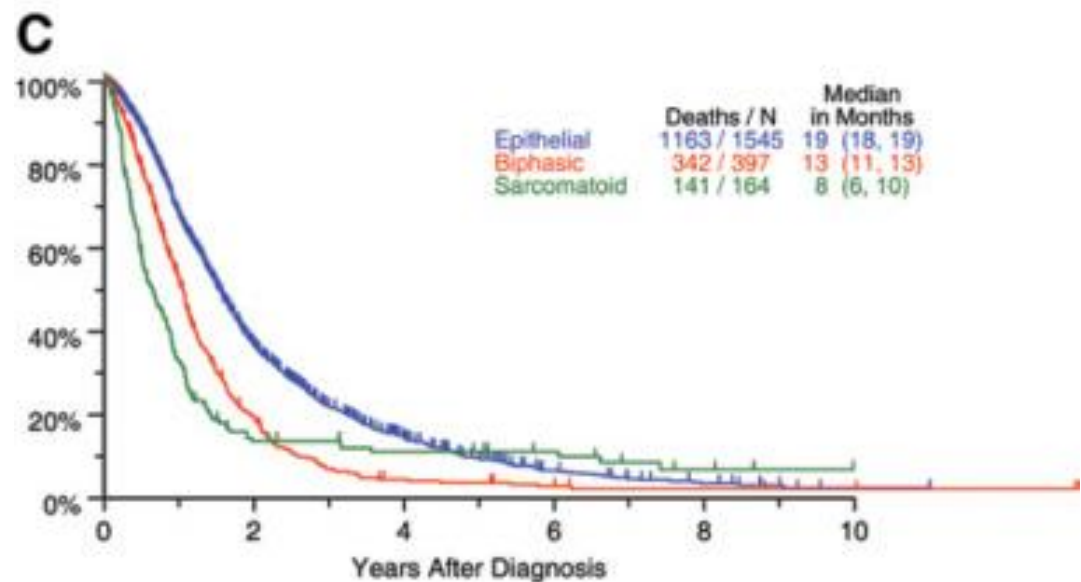
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- 3. Effectiveness of early treatment**

Effectiveness of early treatment



Survival for all patients undergoing any type of surgical procedure by histology

Survival for all patients undergoing any type of surgical procedure by stage



Efficacy of treatment

- Stage at presentation impacts survival only for epithelioid subtype
- Survival mostly impacted by histologic type

Conclusions

- Patients with asbestos exposure at risk for malignant mesothelioma are an appropriate cohort for targeted screening
- Lack of a good screening test that is sensitivity enough to pick up early cancers and specific enough to prevent unnecessary invasive testing
- Benefit of aggressive early treatment across a broad cohort of patients is unclear

The promise of better diagnostic tests and management strategies could make screening an important part of future care



Thank you