

Lung Cancer Screening in High Risk Patients

Question

In patients at high risk for lung cancer, does screening with low-dose computed tomography (CT) reduce lung cancer mortality?

Strategy

Went to Dynamed. Under lung cancer it has the latest ACCP guideline as a headline. Also has prevention/guidelines section. ACCP, American Lung Association and American Cancer Society have all now recommend screening with low dose CT. Why?

The change is due to the National Lung Screening Trial [NLST]

Methods

Design: Randomized controlled trial

Allocation: Unclear allocation concealment.*

Blinding: Blinded

Follow-up period: Median 6.5 years (up to 7.4 y).

Setting: 33 clinical centers in the USA.

Outcomes	LDCT	CXR	RRR	NNT
Lung cancer death	1.30%	1.70%	20%	308
All cause mortality	7%	7.50%	6%	219
Cancer diagnosis	4%	3.50%	13%	224

Patients:

53 454 patients (59% men)

Inclusion Criteria: 1. smokers or former smokers (quit within last 15 years) 2. aged 55-74 years 3. smoking history of ≥ 30 pack years

Exclusion criteria: previous diagnosis of lung cancer, chest CT within 18 months, hemoptysis, and unexplained weight loss > 6.8 kg (15 lb) in the preceding year.

Intervention:

3 annual screenings, beginning shortly after randomization, with low-dose CT (n = 26 722) or single-view PA chest x-ray (n = 26 732). LDCT results in 1.5 mSev radiation compared to 8 mSev for a normal CT

Non calcified nodule ≥ 4 mm was considered positive, also effusion or lymphadenopathy

Outcomes:

Lung cancer mortality

Secondary outcomes included lung-cancer incidence, all-cause mortality, and adverse events.

Patient follow-up:

96% (intention-to-treat analysis).

Results

- Mean follow up 6.5 years and adherence to screening was 95% in LDCT and 93% in CXR
- Lung cancer specific mortality 1.33% in LDCT compared to 1.66% in CXR (deaths from invasive procedures and cancer treatments = cancer death)
- Overall mortality RRR of 6%
- Positive screen for 39% in LDCT and 16% in CXR \rightarrow 95% false positives
- Diagnostic follow-up included 8800 standard CTs, 2500 chest x-rays, 1500 positron-emission tomography scans, 320 percutaneous biopsies, 670 bronchoscopies, and 710 surgeries.
- Major complications of invasive diagnostic procedures occurred in about 12% of patients in whom cancer was eventually diagnosed and in $<1\%$ of patients in whom cancer was not diagnosed.

Conclusion

In patients at high risk for lung cancer, screening with low-dose computed tomography reduced lung cancer mortality compared with radiographic screening. [Mammogram NNT = 1339, Flex Sig NNT = 489]

If we screened 308 people, they would have 985 CT scans, 18 PET scans, 8 bronchoscopies, and 9 surgical procedures to yield 8 diagnoses of lung cancer and prevent 1 additional lung cancer–related death.