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.

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 ≥4mm 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 → 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.