

Krebsfrüherkennung: Das Lungenkrebs- Screening des Rauchers

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OSTBAYERISCHE
TECHNISCHE HOCHSCHULE
REGENSBURG

Manser et al. 2013. Screening for lung cancer. Cochrane Review

- 8 RCTs, eine kontrollierte Studie, 453.965 TN
- Röntgen Thorax ineffektiv
PLCO Oken et al. JAMA 2011
- häufigeres Screening scheint die Mortalität zu erhöhen

Annual low-dose CT

- reduction in lung cancer mortality in high-risk smokers
- further data required
- cost effectiveness
- relative harms and benefits across a range of different risk groups and settings

	Random sequence generation (selection bias)	Allocation concealment (selection bias)	Blinding (performance bias and detection bias)	Incomplete outcome data (attrition bias)	Other bias
Czech Study	+	?	?	-	?
Erfurt County Study	-	-	?	+	+
Johns Hopkins Study	+	?	+	?	+
Kaiser Foundation Study	-	?	+	-	?
Mayo Lung Project	+	?	+	+	+
Mem Sloan-Kettering	+	+	+	+	+
North American NLST	+	+	+	+	+
North London Study	+	?	?	+	?
PLCO Trial	+	+	+	+	+

National Lung Screening Trial

Aberle et al.. NEJM 2011

over all three rounds

positive screening tests

CT 24.2%

radiography 6.9%

false positive

CT 96.4%

radiography 94.5%

incidence of lung cancer per 100,000 person-years

CT 645 cases (1060 cancers)

radiography 572 cases (941 cancers)

rate ratio, 1.13 95% CI, 1.03 to 1.23.

deaths from lung cancer per 100,000 person-years

CT 247

radiography 309,

→ relative reduction in mortality from lung cancer of 20.0%

95% CI, 6.8 to 26.7; P=0.004

rate of death from any cause reduced, by 6.7%

95% CI, 1.2 to 13.6; P=0.02

Summary of Recommendation and Evidence

Population

Adults Aged 55-80, with a History of Smoking

Recommendation

The USPSTF recommends **annual screening** for lung cancer with low-dose computed tomography (LDCT) in **adults aged 55 to 80 years** who have a **30 pack-year smoking history and currently smoke or have quit within the past 15 years**. Screening should be discontinued once a person has not smoked for 15 years or develops a health problem that substantially limits life expectancy or the ability or willingness to have curative lung surgery.

Grade B

Definition The USPSTF recommends the service. There is high certainty that the net benefit is moderate or there is moderate certainty that the net benefit is moderate to substantial.

Suggestions for Practice Offer or provide this service.

USPSTF 2013 <http://tinyurl.com/lhksyw>

Implementation of lung cancer screening in the Veterans Health Administration

Kinsinger et al. JAMA Internal Medicine March 2017

Of the **4246 patients** who met the criteria for LCS,

- 2452 (**57.7%**) agreed to undergo screening and
- 2106 (2028 men and 78 women; mean age, 64.9 years) underwent LCS.

Wide variation in processes and patient experiences occurred among the 8 sites.

Of the 2106 patients screened, 1257 (**59.7%**) had nodules;

- 1184 of these patients (**56.2%**) required tracking,
- 42 (2.0%) required further evaluation but the findings were not cancer, and **31 (1.5%) had lung cancer.**

A variety of **incidental findings**, such as emphysema, other pulmonary abnormalities, and coronary artery calcification, were noted on the scans of 857 patients (**40.7%**).

1 Knoten von 40 ist Krebs

Medicare Evidence Development and Coverage Advisory Committee MEDAC

Discussion included concerns about

- (1) the harms of radiation from the CT screening process increasing cancer risk, particularly if the low-dose CT protocol was not followed;
- (2) the high rate of false positives (96%) found by the National Lung Screening Trial (NLST); leading to
- (3) the potential for numerous additional invasive and risky procedures to investigate many noncancerous nodules;
- (4) high variability and low reproducibility of radiology readings of lung nodules; and
- (5) higher morbidity and mortality from operative procedures than the lower-than-average rates in the NLST

Aberle DR, Adams AM, Berg CD, et al; National Lung Screening Trial Research Team. Reduced lung-cancer mortality with low-dose computed tomographic screening. *N Engl J Med*. 2011;365(5):395–409.

Pastorino U, Rossi M, Rosato V, et al. Annual or biennial CT screening versus observation in heavy smokers: 5-year results of the MILD trial. *Eur J Cancer Prev*. 2012;21(3):308-315

Infante M, Cavuto S, Lutman FR, et al; DANTE Study Group. Long-term follow-up results of the DANTE trial, a randomized study of lung cancer screening with spiral computed tomography. *Am J Respir Crit Care Med*. 2015;191(10):1166-1175.

Wille MMW, Dirksen A, Ashraf H, et al. Results of the randomized Danish lung cancer screening trial with focus on high-risk profiling. *Am J Respir Crit Care Med*. 2016;193(5):542-551.

Patient and Physician Guide: National Lung Screening Trial (NLST)

	Low-dose CT 26,722 people		Chest X-ray 26,732 people
Benefit: How did CT scans help compared to chest X-ray, an ineffective screening test?			
4 in 1,000 fewer died from lung cancer	13 in 1,000	<i>versus</i>	17 in 1,000
5 in 1,000 fewer died from all causes	70 in 1,000	<i>versus</i>	75 in 1,000
Harm: What problems did CT scans cause compared to chest X-ray?			
223 in 1,000 more had at least one false alarm	365 in 1,000	<i>versus</i>	142 in 1,000
18 in 1,000 more had a false alarm leading to an invasive procedure , such as bronchoscopy, biopsy, or surgery	25 in 1,000	<i>versus</i>	7 in 1,000
2 in 1,000 more had a major complication from Invasive procedures	3 in 1,000	<i>versus</i>	1 in 1,000



Source: Dahlgren and Whitehead