



# Lung cancer screening: are we performing it satisfactorily?

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*“Preventing is better than treating”.*

*“An ounce of prevention is worth a pound of cure”.*

Have we learnt something from these sentences pronounced by Hippocrates and Benjamin Franklin?

Lung cancer represents so far the big killer among cancer patients in 87 countries in men and in 26 countries in women (1). Using the GLOBOCAN statistics, Sung and colleagues estimated approximately 2.2 million new lung cancer patients and 1.8 million lung cancer related deaths occurring worldwide in 2020 (2).

The survival rate of lung cancer patients depends principally on the clinical stage at the time of first diagnosis. Even if recent progresses in surgery with additional adjuvant or neoadjuvant treatments have been improving outcomes, 5-year survival rate remains poor after a delayed diagnosis.

The National Lung Screening Trial demonstrated a decrease in lung-cancer mortality of 20% in former and current heavy smokers who underwent low dose computer tomography (CT), as compared with chest X-ray group (3).

The NELSON trial corroborated in 2020 these results showing a reduction of lung-cancer mortality among male former and current smokers who underwent CT screening when compared with the no screening group (4).

Recently, the United States Preventive Services Task Force (USPSTF) recommended annual low dose CT

in current or past smokers (within 15 years) aged 50 to 80 years who have a 20-pack-year smoking history (5).

The benefit of a lung cancer screening was analyzed also from a different perspective, by shifting the focus to the cost effectiveness of the screening program, a crucial point in an era where the resources for the health care systems are often limited (6-9).

However, an unsolved problem seems to be the optimal selection of eligible subjects who can benefit from a lung cancer screening program (10,11). Several controversies have been emerging regarding the representativity in the published trials of the general population. Patients with previous malignancies, ethnic minorities, women or never smokers are usually underrepresented.

For these reason, broadening the eligibility criteria, despite the complexity, is an issue that should to be addressed.

Aiming to find new chances to expand the eligibility, Soto and his group from Stanford tried to assess the improvement of lung cancer screening rate among patients with head and neck cancer (12). One hundred eighty four patients were included in a retrospective analysis and of those, in only a 2-month period, 8 patients out of the 184 were found it be eligible for screening (9 in total considering expanded guidelines).

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Given that cancer survivors represent a not negligible part of our population (more than 16.9 million Americans had previous cancer in their life in 2019), is it justified to exclude them *a priori* from a lung cancer screening program? (13).

Epidemiological studies showed that a growing percentage of patients have already been diagnosed with 1 cancer before lung cancer diagnosis in their lifetime (14,15).

Despite the impossibility, for obvious reasons, to extend the lung cancer screening for all patients with previous malignancies, the careful identification of high risk patients in this subpopulation could improve the rate of early stage lung cancer detection.

Even more interesting seems to be the fact that after a phone survey, more than half of the patients had a poor knowledge of a lung cancer screening existence. Despite some limitations of the paper, such as the retrospective design of the study, the limited number of patients and short interval of the study time, the message suggested by the authors is clear.

Clinical data and guidelines are crucial to improve lung cancer screening rates but could be not sufficient alone.

Broadening the eligibility comes through a better awareness on the issue by health care providers and patients together. The eligibility assessment should be improved by the clinicians who, at the same time, should spread across the message to the population about the importance of smoking cessation and screening strategies.

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## References

1. de Groot PM, Wu CC, Carter BW, et al. The epidemiology of lung cancer. *Transl Lung Cancer Res* 2018;7:220-33.
2. Sung H, Ferlay J, Siegel RL, et al. Global Cancer Statistics 2020: GLOBOCAN Estimates of Incidence and Mortality Worldwide for 36 Cancers in 185 Countries. *CA Cancer J Clin* 2021;71:209-49.
3. Lung Cancer Incidence and Mortality with Extended Follow-up in the National Lung Screening Trial. *J Thorac Oncol* 2019;14:1732-42.
4. de Koning HJ, van der Aalst CM, de Jong PA, et al. Reduced Lung-Cancer Mortality with Volume CT Screening in a Randomized Trial. *N Engl J Med* 2020;382:503-13.
5. US Preventive Services Task Force; Krist AH, Davidson KW, et al. Screening for Lung Cancer: US Preventive Services Task Force Recommendation Statement. *JAMA* 2021;325:962-70.
6. Minervini F, Scarci M. Lung cancer screening: where do we stand? *Precis Cancer Med* 2019;2:34.
7. Shmueli A, Fraifeld S, Peretz T, et al. Cost-effectiveness of baseline low-dose computed tomography screening for lung cancer: the Israeli experience. *Value Health* 2013;16:922-31.
8. Goffin JR, Flanagan WM, Miller AB, et al. Cost-effectiveness of Lung Cancer Screening in Canada. *JAMA Oncol* 2015;1:807-13.
9. Zeng X, Zhou Z, Luo X, et al. Lung cancer screening with low-dose computed tomography: National expenditures and cost-effectiveness. *Front Public Health* 2022;10:977550.
10. Sands J, Tammemägi MC, Couraud S, et al. Lung Screening Benefits and Challenges: A Review of The Data and Outline for Implementation. *J Thorac Oncol* 2021;16:37-53.
11. Raymakers AJN, Mayo J, Lam S, et al. Cost-Effectiveness

- Analyses of Lung Cancer Screening Strategies Using Low-Dose Computed Tomography: a Systematic Review. *Appl Health Econ Health Policy* 2016;14:409-18.
12. Soto L, Nesbit S, Ramsey M, et al. Improving lung cancer screening rates among patients with head and neck cancer in a radiation oncology clinic. *J Thorac Dis* 2022;14:4633-40.
  13. American Cancer Society. *Cancer Facts & Figures* 2020.
  14. Li F, Zhong WZ, Niu FY, et al. Multiple primary malignancies involving lung cancer. *BMC Cancer* 2015;15:696.
  15. Bertoglio P, Ventura L, Aprile V, et al. Pathological and clinical features of multiple cancers and lung adenocarcinoma: a multicentre study. *Interact Cardiovasc Thorac Surg* 2022;35:ivac047.

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