

Lung Cancer Screening in India: A Long Way To Go

*“A pessimist sees the difficulty in every opportunity;
an optimist sees the opportunity in every difficulty”*

–Winston Churchill

Despite rapid advancements in the field of oncology over the last few decades, lung cancer mortality continues to be high with an estimated 1.5 million deaths in 2010.¹ Though notable preventive measures, such as smoking cessation, have attained remarkable reductions in mortality from lung cancer further reductions can be achieved through innovative therapeutic modalities including targeted therapy for specific molecules. Substantial improvement can be achieved with effective screening programme by diagnosing the disease at an early stage, thus, increasing the prospects of a cure.

Among the well-established screening programmes for cervical and breast cancers, the debate for lung cancer screening is a recent one in India. Global perspective was also blurred about the benefits of lung cancer screening until the US National Lung Screening Trial (NLST) in 2011 showed a 20% decrease in mortality from lung cancer.² The NLST researchers compared low-dose computed tomography (CT) at baseline, at 1 year, and at 2 years, with chest radiography used as the control arm. Selected people in the trial were aged between 55 to 74 years with a smoking history of 30 or more pack-years and history of smoking in the previous 15 years. In Europe too, seven randomised controlled trials are on-going for the use of low-dose CT screening as a lung cancer screening modality. These European trials, although individually enrolling substantially fewer persons as compared to the NLST, together will contribute valuable information regarding the utility of screening programmes. Out of these trials, preliminary results of NELSON, the Dutch–Belgian randomised lung cancer multi-slice CT screening trial are comparable to NLST with a reduction in lung cancer mortality of at least 25 percent.³ To add more, Prostate, Lung, Colorectal and Ovarian (PLCO) cancer screening trial showed that annual screening with chest radiograph did not substantially reduce the lung cancer mortality compared to the usual care.⁴ Based on the observations of these various trials, several professional organisations in USA have recommended screening of people who match the NLST entry criteria. Although, screening based on individual risk estimation is considered as cost effective as compared to universal screening, still concern exists regarding the financial burden of screening programmes. Further, ambiguity still exists as to the harms of screening and the ability to

reproduce results of these trials in the general population.⁵ Another vital issue is the follow-up of the patients which is usually perfect in these trials as participants are actively involved but in routine clinical practice patients are usually lost to follow-up leading to possible failure of such screening programmes.

Therefore, international discussions are on-going about whether the screening may be implemented. An international review of lung cancer screening was undertaken by a workshop convened by the International Association for the Study of Lung Cancer (IASLC)⁶ and six recommendations were made for future priorities: (1) identify high-risk individuals for lung cancer CT screening programmes; (2) develop radiological guidelines for use in developing national screening programmes; (3) create guidelines for the clinical work-up of indeterminate nodules resulting from CT screening programmes; (4) develop guidelines for pathology reporting of nodules from lung cancer CT screening programmes; (5) make recommendations for surgical and therapeutic interventions of suspicious nodules identified through lung cancer CT screening programmes; and (6) integrate smoking cessation practices into future national lung cancer CT screening programmes.

These are vital issues that should be resolved before implementation of these screening programmes in clinical practice. Due to additional harm associated with CT scanning, screening protocols cannot be targeted towards general population, and therefore, selection of high-risk populations is essential. Various risk prediction models are available that cover age, smoking history and other socio-demographic factors.

Technical considerations to keep the radiation dose lowest while obtaining diagnostically adequate images simultaneously along with expertise of radiologist is also crucial. Furthermore, while making decisions about the nodule size cut-off and screening interval, balance must exist to improve cost effectiveness.

As the absolute effect of screening is dependent on the baseline risk, the screening interval and the nodule work-up threshold may be tailored to individual risk. Personalised screening interval in future screening programmes can be provided by incorporating baseline CT characteristics. Considering various trials and studies, screening would be reasonable from age 60 to 74 years, based on risk assessment, with a nodule cut-off of 65–115 mm³ (5mm–6 mm diameter) and screening

interval of two years.⁷ Before deciding the appropriate therapeutic modality, discussion about the available options with the individual would be a better approach. Therefore, planning further strategies for work-up of the nodules would require interventions that may be personalised to calculate the risk of the nodule being malignant or otherwise.

Importance of public awareness and smoking cessation education cannot be undermined for an efficient programme of lung cancer screening and incorporation of these attributes can definitely improve the cost effectiveness. In addition, accurate information about the benefits and possible harms associated with low-dose CT screening should be communicated in an understandable form to eligible candidates considering radiation hazards of screening protocol.

As the developed and affluent countries are also concerned about the financial burden of the screening programmes in existing health-care system and trying hard to improve the efficiency; major hindrance in India is definitely the overall high costs of screening along with poor infrastructure limiting accessibility of diagnostic modalities in remote areas. In addition, the rising trend of tobacco smoking specifically in younger generation with a rapid socio-economic transition is further expanding the at risk population.

Implementation of screening, even if not feasible at present, should get sufficient attention of clinicians, policy makers and beneficiaries. Public awareness with incorporation of smoking cessation education and individualised screening in high risk cases may save few more lives. Yet, effective screening programme in future is desirable for the betterment of mankind. Moreover, before the actual implementation of a screening protocol in practice, a pilot project is suggested in the Indian scenario. Ambitious efforts integrated with optimistic attitude and affordable

strategy will be crucial in the long journey to achieve the goal.

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