



Lung cancer screening: the preface

With a high incidence, a high mortality and poor prognosis, lung cancer remains an important health care problem worldwide. Lately, progress has been made with advances in treatment options such as targeted therapy and immunotherapy. Unfortunately, the benefit of these treatments is still reserved for a relatively small subgroup of patients. Prevention of lung cancer will be needed to decrease its incidence. The principal approach to primary prevention of lung cancer is tobacco control. Smoking prevention and cessation is crucial in the lung cancer battle, but it is evident that more prevention strategies are needed. Secondary prevention through low-dose computed tomography (CT) allows early detection and early diagnosis of lung cancer at a time point where cure is still possible. In the past decades, a number of randomized controlled trials on both sides of the Atlantic have shown that lung cancer screening with low-dose CT can save lives. After publication of the NELSON trial results, European countries expected that lung cancer screening would move forward at higher speed. Unfortunately, this does not seem to be the case, at least not the way it was expected. For a number of European countries, the lack of European guidelines from the European Commission holds back nationwide implementation.

Implementation of lung cancer screening requires a set of necessary prerequisites. Currently, for a large number of specific entities adequate evidence is available. This includes criteria for selection of participants, a validated screening test, volumetric nodule measurement, specific nodule management protocols, different treatment strategies, etc. Some areas need specific considerations, such as cost-effectiveness, screening interval, the strategy on how to integrate smoking cessation in the screening programme, implementation of quality assurance, etc. One of the biggest challenges is recruitment of participants for lung cancer screening. Those who are most likely to benefit from screening, are those at highest risk of lung cancer. Targeting the so-called “hard to reach” population will not be an easy task, but dedicated recruitment strategies will be vital since the level of participation will define the success of screening.

The implementation of a successful lung cancer screening programme will require close interaction of a multidisciplinary team of stakeholders, including general practitioners, pulmonologists, thoracic oncologists, radiologists, medical physicists, surgeons, radiation oncologists, epidemiologists, smoking cessation counselors, health economists, ... and a computer with adequate software. It is beyond question that artificial intelligence (AI) will play an important role in many different steps of the lung cancer screening process. Upon today, for a number of tasks in the lung cancer screening pathway, the performance of AI is approaching that of radiologists. Its specific role still needs to be defined and prospectively validated. Implementation of large (nationwide population-based) lung cancer screening programmes creates an opportunity to collect “big data”. Large amounts of high-quality, structured data will open numerous doors to further clinical research.

In the scope of lung cancer screening, the focus is often on the more technical aspects of the screening process. One should not forget the participant behind the nodule. When discussing the benefits and harms of lung cancer screening, topics that are discussed mostly focus on the risk of radiation, overdiagnosis, procedure-related morbidity and mortality, etc. The possible psychological impact of participating in screening is a field that definitely warrants more attention. In particular, participants with indeterminate or suspicious findings on their CT report a significant increase in anxiety and short-term lung cancer specific distress.

This special series gives an overview of current evidence and addresses a number of relevant questions related to the implementation of lung cancer screening. We specifically have a close look at the target population, the role of the radiologist in lung cancer screening, diagnosis and management of screen-detected nodules in Asia and Europe, the current role of sublobar resection, implantation of screening programs and finally, the psychological impact of lung cancer screening. We hope you enjoy reading it. We would like to thank the authors for their highly-valued contributions. Many thanks to the editors of *Translational Lung Cancer Research* for giving us the opportunity to publish this series. The road to a lung cancer-free world is long and winding, but we believe that sharing knowledge and expertise on lung cancer screening, is a step forward in the right direction. Every step, even a small one, is important to advance in this fascinating and still evolving field.



Annemiek Snoeckx



Paul E. Van Schil

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Annemiek Snoeckx, MD, PhD

Department of Radiology, Antwerp University Hospital and University of Antwerp, Antwerp, Belgium.

(Email: Annemiek.Snoeckx@uza.be)

Paul E. Van Schil, MD, PhD

*Department of Thoracic and Vascular Surgery,
Antwerp University Hospital and University of Antwerp, Antwerp, Belgium.*

(Email: Paul.VanSchil@uza.be)

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