The global burden of lung cancer mortality remains the highest of all cancers despite mortality rates in many countries declining after reduction in tobacco consumption. The high mortality rates prompted early trials of screening with chest radiography and sputum analysis in the 1950s to 1970s and then by computed tomography once this technology was developed. The early trials found improvements in survival but did not change mortality rates. Later randomised trials were designed with mortality as the primary outcome measure, which mitigated lead and length time bias and allowed measurement of overdiagnosis. The US National Lung Cancer Screening Trial (NLST) was stopped a year earlier than planned because it had achieved the stop criteria of a 20% reduction in lung cancer mortality rate in the CT arm compared with the chest radiography arm. There was also a 6.7% reduction in all-cause mortality rate, something not seen in breast or bowel cancer screening trials. This was despite NLST was not being adequately powered to detect an all-cause mortality benefit. Since then, many smaller trials have published results, and the only adequately powered trial, the Dutch-Belgian NELSON trial confirmed a greater reduction in lung cancer mortality of 24% in men and 33–44% in women. Meta-analyses of all trials have shown a 16–17% reduction in lung cancer mortality and a 3–4% all-cause reduction.

With most authorities now accepting the evidence for efficacy, the focus has turned to cost effectiveness and here the evidence accumulated through research into all aspects of screening has been hugely informative. Having a collated resource of this evidence is a valuable instrument for those wishing to become fully appraised of the subject. This book brings together a series of articles that comprise individual studies and reviews of key subjects that together constitute the aforementioned resource. The content is relevant to clinicians, scientists, public health, policymakers, and all those who may become involved in the implementation of lung cancer screening, irrespective of the stage of development of the program. The articles in this book allow its readers to decide on how the key elements of lung cancer screening should be addressed in their locality. The book will support the development of protocols necessary to ensure high quality screening that maximises benefit and minimises harm. It will be an important contribution to reducing the number of people who lose their lives to lung cancer.

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