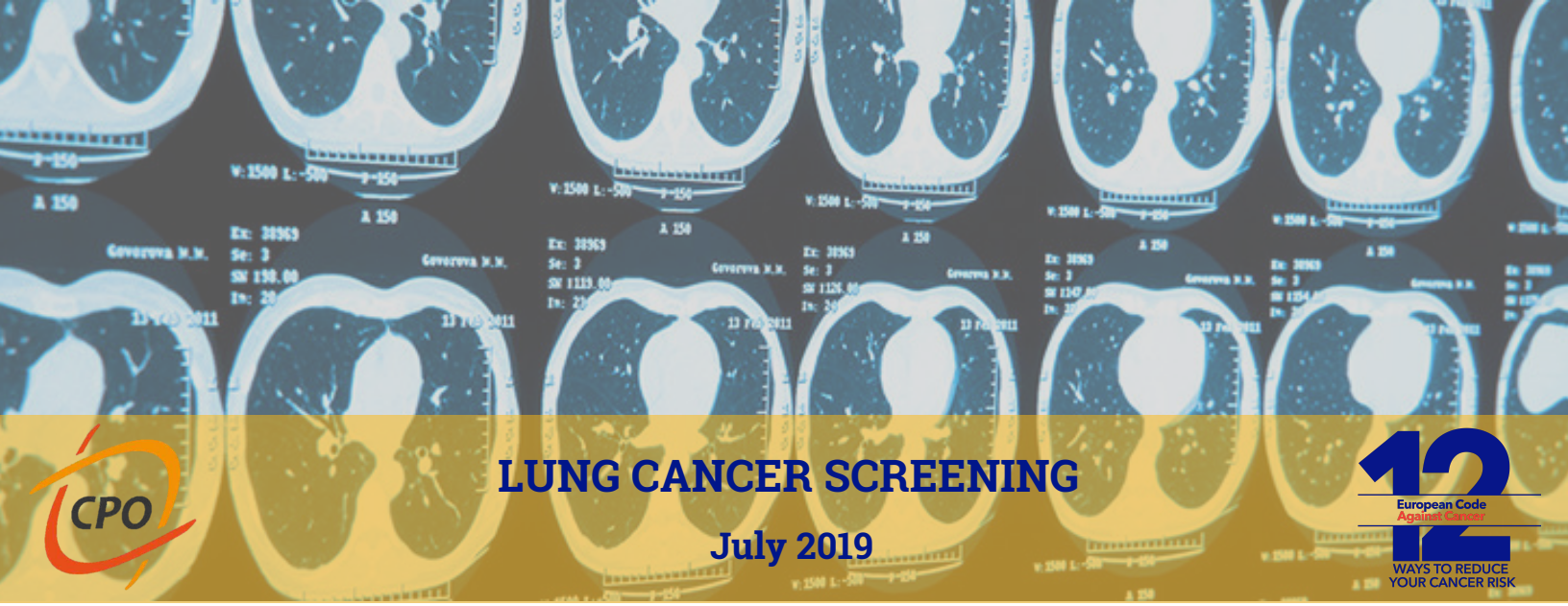

LUNG CANCER SCREENING

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Is the available evidence of lung cancer screening efficacy sufficient to implement a population programme?

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The National Lung Screening Trial (NLST) showed that annual low-dose CT (LDCT) screening for 3 years was associated with a 20% reduction in lung cancer mortality among high-risk smokers (1). The results presented from the recent NELSON trial are consistent with the NLST findings, showing a 26% and 39% reduction in lung cancer mortality among men and women respectively over a 10-year follow-up with annual LDCT screening (2). A reduction in overall mortality was also observed in the NLST, likely attributable to the potential contribution of CT screening for early diagnosis of coronary disease (1).

Issues related to the choice of the screening protocol still require, however, further development and consideration in the planning phase of a population-based intervention. The optimal target age range, as well as the duration of screening, need still to be defined, although the adoption of ultra-low-dose CT might allow a screening offer over a 25-year period. Whilst there is only evidence available for annual screening, results from cost-effectiveness modelling indicate that biennial (LDCT) screening for lung cancer over 20 years might provide similar benefit as annual screening and be more cost-effective than annual screening (3).

Recent research suggests that a risk-tailored approach, modulating screening intervals based on the results of the initial screening rounds, might represent a cost-effective option (4). A validated risk-stratification approach needs to be developed in order to ensure that only smokers at high enough risk are screened, as the cost-effectiveness of screening is a function of the expected disease prevalence (5). The selection of high-risk smokers is a crucial step in the screening process: it represents a novel approach (compared to established cancer screening programmes targeting people based on age only), which poses specific organisational challenges (the identification of smokers and collection of the necessary information for assessing an individual's risk) and will demand that high ethical and communication standards are met.

Smokers deemed non eligible for screening, based on their lung cancer risk score, are in any case at an increased risk of cancer and of other chronic diseases, and could, therefore, be offered the option of alternative preventive interventions. The option of smoking cessation programmes would have a favourable health impact among smokers not eligible for lung cancer screening, while enhancing the impact of a screening programme, as long as offering anti-smoking counselling to subjects enrolled in screening dramatically improves cost-effectiveness of the intervention (3).

The organisation of screening services, as well as diagnostic and treatment units, should ensure a high-quality diagnostic process and therapeutic management. The adherence to minimum technical standards; the adoption of standardised protocols and the involvement of multidisciplinary teams for the diagnostic assessment and management of screen-detected nodules; together with systematic monitoring by quality assurance boards at the national level; all represent prerequisites for the potential implementation of lung cancer screening (4).

Available evidence is suggestive of a strong protective effect of LCDT screening on lung cancer mortality and possibly of an effect on overall mortality. In order to transfer such experimental evidence into a population-based programme, pilot studies conducted in average risk screening settings, should be undertaken to address the many open issues which have a substantial impact on the overall harms-benefit ratio of such an intervention.

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