

## Lung cancer screening

### Optimizing recruitment of the hard-to-reach heavy smoking population – LUNGREACH

Lung cancer is the leading cause of cancer death worldwide [1,2]. Despite improvements in treatment of lung cancer over the last decades, overall survival is still only in the 10–18% range, both in the US and Western Europe [1,2].

Early diagnosis by low dose CT (LDCT) screening has been shown to lead to a significant reduction in lung cancer mortality in the National Lung Screening Trial (NLST), a large American randomized clinical trial [3,4]. In Europe, most randomized trials have been completed [5]. These include the largest NELSON trial in Belgium and the Netherlands [6], and smaller studies from Denmark [7,8], Germany [9], UK [10] and Italy [11–14].

In most European countries, decisions regarding implementation of lung cancer screening have been awaited until mortality results from the largest European screening studies were available. At the IASLC World Conference on Lung Cancer 2018, the NELSON group presented their data. The results showed a significant 26% reduction in lung cancer specific mortality in males and even higher in females (39-61%) [15]. Furthermore, follow-up results from the German and Italian trials have shown reduction of lung cancer deaths.

Currently all international medical societies who are involved in diagnosing and treating lung cancer patients recommends implementation. LDCT screening is already implemented in the U.S [16] and some Asian countries [17]

Even though the screening uptake rates in trial settings were consistently high, the current screening uptake in U.S is unfortunately as low as 4% of eligible population [18]. Low socioeconomic status and current smoking are suggested as some of the important barriers to participate in lung cancer screening trials. Implementation of a successful lung cancer screening program must therefore take these barriers in to serious consideration. Little evidence on optimal recruitment of hard-to-reach smoking population exists, however encouraging results from a pilot study in deprived areas of Manchester show that it is possible to recruit and adhere a screening population with lower socioeconomic status compared to screening trial populations with a one-stop approach located near local shopping centres [19-21].

The purpose of LUNGREACH is to investigate one-stop approach as a recruitment strategy in both urban and rural socioeconomic deprived communities in Denmark. We will investigate the efficiency of initial recruitment by GPs, digital invitation (E-boks), flyers at key areas (pharmacies, libraries, shopping centres, pubs etc.) and media (social, local, TV, radio and newspapers). We will investigate the use of a mobile CT scanner unit located at a central local meeting point and a one-stop risk assessment and screening if eligible according to risk-models and NELSON criteria. The trial is expected to start recruiting in 2020 and will provide valuable information about recruitment of the hard-to-reach heavy smoking population and help optimize the implementation of lung cancer screening in Denmark.

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