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Title: Changes in smoking behaviour in the Early Cancer Detection Test Lung Cancer Scotland (ECLS) study

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Background

Lung cancer screening might be a 'teachable moment' for smoking cessation or conversely could provide a 'license to smoke'. Such effects should be considered in the overall benefits and harms of screening. Existing evidence of the impact of screening on smoking is mixed.

Methods

A randomised controlled trial of a blood autoantibody test (EarlyCDT-Lung) for the early detection of lung cancer was conducted in 12,210 smokers and ex-smokers in Scotland, UK. The test allowed risk stratification for targeting of a chest X-ray and repeat CT scans. Sub-samples of positive test (n = 321), negative test (n = 361) and control (n = 350) participants completed questionnaires before screening, after receipt of blood test results and at 3, 6 and 12 months post-screening. They self-reported smoking point prevalence, attempts to quit, number of cigarettes smoked per day and the Heaviness of Smoking Index. Multi-level regression analyses, adjusted for confounders, explored differences in smoking over time between screened and control arms and between positive test, negative test and control groups.

Results

Preliminary results show no statistically significant differences in smoking prevalence between the screened and control arms over time. There was a reduction in smoking prevalence of borderline statistical significance in the positive test group versus controls across all time points (OR 0.46, 95%

CI 0.21-1.03). This difference reduced when assuming non-responding smokers were still smoking (OR 0.73, 95% CI 0.38-1.42). Significantly more smokers in the positive test group had recently attempted to stop smoking at 3 months compared to controls (OR 2.29, 95% CI 1.04-5.04). Positive test group smokers were significantly less likely to report smoking 20 or more cigarettes a day than controls across all time points (OR 0.32, 95% CI 0.14-0.69). Negative test group smokers were more likely to score moderate/high/very high on the Heaviness of Smoking Index compared to controls at 6 months. This difference was statistically significant before adjusting for confounders but the adjusted model was no longer significant (OR 2.51, 95% CI 0.90-6.97).

Conclusion

There was no effect of lung cancer screening on smoking prevalence. The findings indicate a positive test result can be a teachable moment for smoking cessation. They also highlight the short term risk of heavier smoking after a negative test result. This is an important area for further research to ensure negative lung cancer screening test results do not inadvertently promote continued and heavier smoking.