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## Integrated stop smoking interventions are essential to maximise the health benefits from lung cancer screening

3 In the current issue of Thorax, Williams et al., offer timely and much needed evidence regarding the 4 optimal form of smoking cessation intervention in lung cancer screening. In 2022 the UK National 5 Screening Committee (UK NSC) recommended targeted screening for lung cancer for those individuals 6 identified to be at high risk and aged 55 to 74 years. This year the UK Government announced the 7 national roll out of a targeted lung cancer screening programme and within their recommendations, 8 proposed that smoking cessation service provision should be integrated. The roll out of such a 9 programme has the potential to not only improve lung cancer outcomes but prevent or reduce the 10 burden of multiple smoking related diseases, including cardiovascular and respiratory disease as well 11 as multiple cancers through the implementation of co-located smoking cessation support. Evidence 12 suggests that the combination of screening and smoking cessation decreases lung cancer specific and 13 overall mortality (1).

14 Evidence shows that lung cancer screening can offer a 'teachable moment' for smoking cessation, a 15 brief moment in which motivation to stop smoking can be enhanced (2, 3). This unique setting is likely 16 to increase an individual's perceived risk of continued smoking, increase their emotional reaction to 17 smoking and challenge the self-concept of a smoker. Williams et al have provided an important contribution to the evidence for embedding smoking cessation support in lung cancer screening 18 19 through the outcomes of two trials- QuLIT 1 and QuLIT 2. Their findings have demonstrated that the 20 offer of immediate smoking cessation support, including the provision of pharmacotherapy, within the 21 UK targeted lung health check programme is associated with an increase in long term quit rates. QuLIT 22 1 offered an initial stop smoking consultation in person, whereas the Covid-19 pandemic necessitated 23 an entirely telephone-based intervention. Combined data from both the QuLIT1 and QuLIT2 trials 24 reported higher validated 12 month 7-day point prevalent quit rates in the intervention arm compared 25 to usual care (12.1% vs 4.7%; p<0.05). Interestingly, the authors identify that 12 month quit rates were 26 higher in the telephone only intervention (QuLIT2) but do highlight caution in interpretation of results given studies were not directly comparable. These findings add to the increasing evidence base that 27 28 continued, opt-out stop smoking support rather than very brief advice and sign posting to community-29 based services is the most appropriate form of support for those likely to be eligible for lung cancer 30 screening (4) but highlight that optimal intervention design is still unknown.

Integrating evidence-based smoking cessation support within lung cancer screening would be a highly
effective use of limited healthcare resources and has the potential to translate into health benefits for
a variety of smoking-related diseases. However, challenges such as public health budget cuts to stop

smoking services in the UK will likely impact the amount of available smoking cessation services and readily trained smoking cessation practitioners that could be utilised within lung cancer screening (5). Disparities in service provision, including a lack of community stop smoking services to refer smokers to, have been reported within existing Targeted Lung Health Check sites in England and where there are community services there are lengthy waiting times.

6 The degree to which lung cancer screening programmes advise patients around smoking cessation can 7 range widely and data on the effectiveness of specific smoking cessation interventions integrated in 8 lung screening trials is limited. Determining the optimal approach is therefore acknowledged to be a 9 high priority by various health organisations (6, 7). Work from the SCALE collaboration has shown that 10 to help maximise the reach of smoking cessation interventions, it is important to offer a wide range of 11 cessation treatments (8). Furthermore, those who are eligible for lung cancer screening will have a 12 long-term smoking history and will likely have attempted to stop smoking at multiple points in their lives. Outside of a screening setting, a lung screening eligible population may require a more intensive, 13 14 person-centred form of behavioural support due to the complexities of behaviour change for this 15 population (9). Similarly, the need for a more intensive form of intervention (i.e. continued support 16 from a smoking cessation practitioner and immediate provision of pharmacotherapy) within a lung 17 screening setting has been highlighted in a systematic review by Williams et al., 2023 (10).

18 Although we know that those eligible to attend lung screening view the integration of smoking 19 cessation positively (11, 12), more participation-centred research that focuses on understanding what 20 form of intervention works best for a lung-screening eligible population is needed. Ongoing research 21 to assess the feasibility and effectiveness of smoking cessation interventions in LDCT screening (13-15) 22 will shed light on some unanswered questions in this area. What is clear from the growing evidence 23 base, however, is that investing in the integration of a high-intensity stop smoking intervention within 24 lung cancer screening programmes is a vital component of a public health strategy that will positively 25 impact on cancer, respiratory and cardio-vascular disease. Not doing so misses an unprecedented 26 opportunity to capitalise on the widespread implementation of lung cancer screening in the UK.

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