

Reply to: Improving Lung Cancer Screening Uptake

Samantha L Quaife¹ PhD, Mamta Ruparel² PhD, Jennifer L Dickson² MBBS, Rebecca J Beeken^{1,3} PhD, Andy McEwen⁴ PhD, David R Baldwin⁵ MD, Angshu Bhowmik⁶ MD, Neal Navani⁷ PhD, Karen Sennett⁸ FRCGP, Stephen W Duffy⁹ PhD, Jo Waller^{1,10} PhD, Samuel M Janes² PhD.

Affiliations: ¹Research Department of Behavioural Science and Health, University College London, London, UK; ²Lungs for Living Research Centre, UCL Respiratory, Division of Medicine, University College London, UK; ³Leeds Institute of Health Sciences, University of Leeds, Leeds, UK; ⁴National Centre for Smoking Cessation and Training (NCSCT), Dorchester, UK; ⁵Respiratory Medicine Unit, David Evans Research Centre, Nottingham University Hospitals, Nottingham, UK; ⁶Department of Thoracic Medicine, Homerton University Hospital, London, UK; ⁷Department of Thoracic Medicine, University College London Hospital, London, UK; ⁸Killick Street Health Centre, London, UK; ⁹Wolfson Institute of Preventive Medicine, Barts and the London School of Medicine and Dentistry, Queen Mary University of London, London, UK; ¹⁰School of Cancer and Pharmaceutical Sciences, King's College London, London, UK

Corresponding Author: Samantha L Quaife, samantha.quaife@ucl.ac.uk, Research Department of Behavioural Science and Health, University College London, Gower Street, WC1E 6BT, UK.

To the editor,

We read Wilson's response letter to both our Lung Screen Uptake trial (LSUT, 1) and accompanying editorial by Burnett-Hartman and Wiener (2), with great interest and value the insightful discussion they raise. Together we share in the challenge of achieving both equitable *and informed* uptake of LDCT lung cancer screening by high-risk individuals, but the differences between the UK and US that Wilson raises are important for how we intervene. The UK benefits from a coordinated and universal primary care system and we appreciate that sending postal invitations directly from the individual's PCP is a strategy that may not translate directly to the US context. We also note the requirement by the Centers for Medicare and Medicaid for a separate shared decision-making session prior to the screening intervention in the US. However, evidence suggests that the behavioural components of LSUT's strategy (healthcare professional endorsement and proactively inviting and arranging appointments) are the 'active ingredients' which could be implemented in different ways in the US context.

We also share Wilson's interest in broadening LSUT's 'Lung Health Check' approach to screening to include other aspects of lung and heart health in the future. Framing lung cancer screening as one optional test within a 'Lung Health Check' was intended to improve engagement by minimising fear (that could lead to information avoidance and uninformed non-participation) and to provide an in-person supportive environment where shared decision-making about the screening offer could be achieved. Through this we found potential for other lung and heart health interventions – the key focus of Wilson's point. This includes parallels with the Pittsburgh Lung Cancer Screening Study (PLuSS, 3) which found prevalence of emphysema and airway obstruction increased with individual lung

cancer risk. For example, work led by Ruparel found a significant proportion of undiagnosed COPD (4) and untreated coronary artery calcification (5) within our LSUT cohort, suggesting opportunities for early diagnosis of COPD, instigating cardiovascular risk assessment and primary prevention. The UK taxpayer's universal healthcare system may in the future fund LDCT screening scans and so we would not have the financial disincentives as the US in this respect. However, the UK does have limited resource for subsequent health care provision for incidental findings. This makes the feasibility of delivering a holistic health assessment challenging and policy decision-makers would (rightly) first require evidence for the public health benefit and cost-effectiveness of such an approach.

References

- 1) Quaife SL, Ruparel M, Dickson JL, Beeken RJ, McEwen A, Baldwin DR, Bhowmik A, Navani N, Sennett K, Duffy SW, Wardle J, Waller J, Janes SM. Lung Screen Uptake Trial (LSUT): Randomized Controlled Trial Testing Targeted Invitation Materials. *Am J Resp Crit Care Med* 2020;201:965-975.
- 2) Burnett-Hartman AN, Wiener RS. Lessons Learned to Promote Lung Cancer Screening and Preempt Worsening Lung Cancer Disparities. [editorial] *Am J Resp Crit Care Med* 2020;201:892-893.
- 3) Wilson D, Weissfeld J, Fuhrman C, Fisher S, Balogh P, Landreneau R, Luketich J, Siegfried J. The Pittsburgh Lung Cancer Screening Study (PLuSS): Outcomes within 3 years of prevalence CT scan. *American Journal of Respiratory and Critical Care Medicine* 2008;178:956-961.
- 4) Ruparel M, Quaife SL, Dickson JL, Horst C, Tisi S, Hall H, Taylor MN, Ahmed A, Shaw PJ, Burke S, Soo M, Nair A, Devaraj A, Sennett K, Hurst JR, Duffy SW, Navani N, Bhowmik A, Baldwin DR, Janes SM. Prevalence, Symptom Burden and Under-Diagnosis of Chronic Obstructive Pulmonary Disease in a Lung Cancer Screening Cohort. *Annals of the American Thoracic Society* 2020. DOI: 10.1513/AnnalsATS.201911-857OC
- 5) Ruparel M, Quaife SL, Dickson JL, Horst C, Burke S, Taylor M, Ahmed A, Shaw P, Soo M, Nair A, Devaraj A, O'Dowd EL, Bhowmik A, Navani N, Sennett K, Duffy SW, Baldwin DR, Sofat R, Patel RS, Hingorani A, Janes SM. Evaluation of cardiovascular risk in a lung cancer screening cohort. *Thorax* 2019;74:1140-1146.