

Optimising Participation in Lung Cancer Screening of High-Risk Participants: The Irish Lung Health Check

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BACKGROUND

Low Dose CT (LDCT) screening reduces lung cancer (LC) mortality, yet participation remains a major challenge internationally (5–10% in the US; 40–50% in England). The **Beaumont RCSI Irish Cancer Society Lung Health Check (LHC)**, Ireland's flagship lung cancer screening pilot, uses a patient co-designed, community-based model combining primary-care invitation, proactive telephone engagement and local mobile LDCT to improve access and uptake among high-risk individuals. We evaluated whether this primary care-linked, community-hospital integrated model could achieve high uptake and enrolment of high-risk individuals into LDCT screening in Ireland as part of a prospective clinical trial.

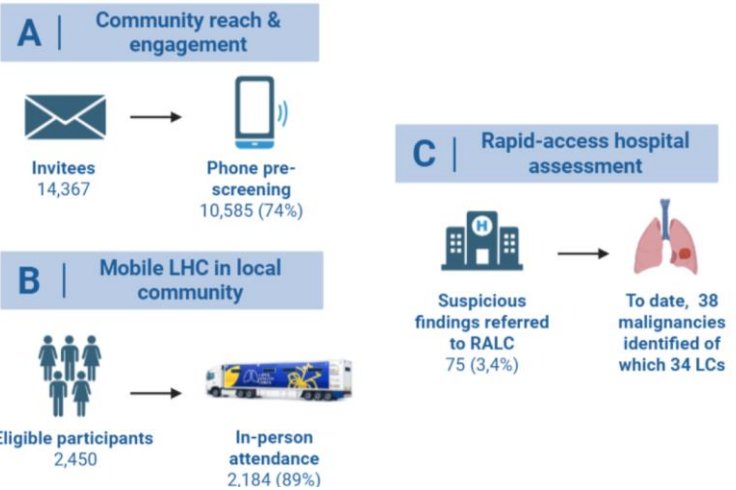


Fig 1. Summary of the LHC pilot pathway: (A) Of 14,367 invitees, 10,583 (74%) completed phone pre-screening, with (B) 2,450 found to be eligible participants. The cohort included 919 women (42%) and 814 (37%) current smokers with a median smoking exposure of 38 pack-years (IQR 25–50). Of those eligible participants, 2,184 (89%) attended in-person. (C) 75 participants (3.4%) were referred to RALC for suspicious finding. 49 diagnostic assessments were completed, identifying 38 malignancies, including 34 LCs.

METHODS

A feasibility clinical trial co-designed with patient advocates to include a population engagement strategy combining community and media outreach, primary care invitations and study ambassadors. Adults aged 55 - 74 years were invited to telephone pre-screening to enroll 2,183 participants. Co-primary endpoints were (i) proportion of individuals who consent to undergo telephone assessment and (ii) proportion of high-risk eligible participants aged 55–74 years who participate in a community-based lung health check. Eligibility required current/former smoking status, and PLCom2012 $\geq 1.51\%$ or LLPv2 $\geq 2.5\%$ (later amended to $\geq 5\%$). LHC included spirometry, respiratory assessment, smoking cessation support and LDCT at a community based mobile unit. LDCT was performed at baseline (T0) and planned at 12 months (T1), with an interval 3-month LDCT (T0+3) for indeterminate findings. Participants with suspected lung cancer were referred to Rapid Access Lung Clinic (RALC). Exploratory analyses assessed PLCom2012 and LLPv2 performance for lung cancer detection. Here, we report currently available T0 and T0+3 LDCT data.

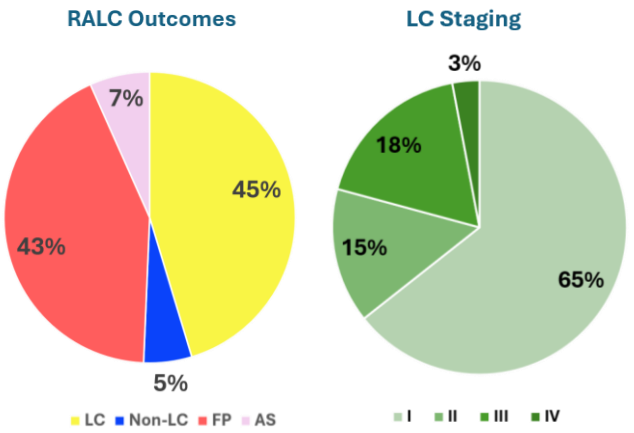


Fig 2a. RALC outcomes (n: 75): 34/75 (45%) LC diagnoses, 4/75 (5%) other cancers (Non-LC) diagnoses, 32/75 (43%) false positives (FP), 5/75 (7%) ongoing assessment (AS).

Fig 2b. LC stage distribution: 22/34 (65%) stage I, 5/34 (15%) stage II, 6/34 (18%) stage III, 1/34 (3%) stage IV.

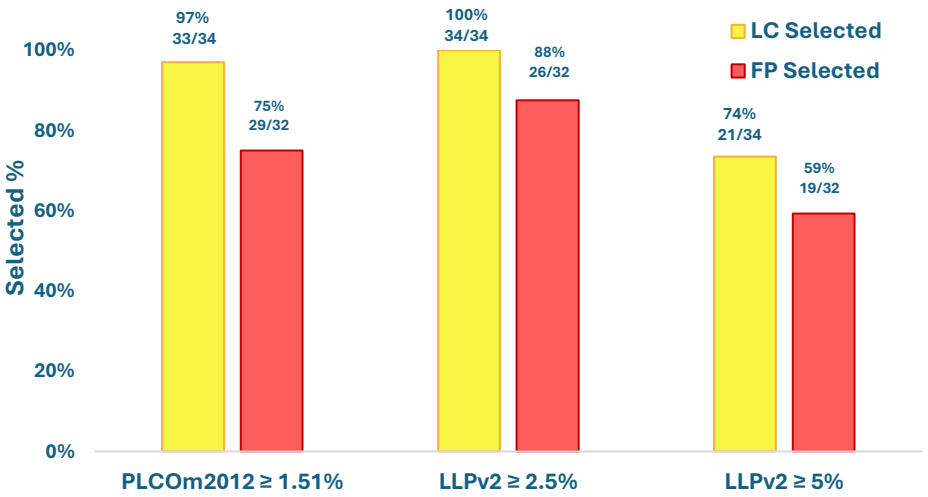


Fig 3. Screening risk-model performance: Among RALC referrals with completed assessment, PLCom2012 $\geq 1.51\%$ selected 33/34 (97%) LCs and 24/32 (75%) FP referrals; LLPv2 $\geq 2.5\%$ selected 34/34 (100%) LCs and 28/32 (88%) FP referrals; LLPv2 $\geq 5\%$ selected 25/34 (74%) LCs and 19/32 (59%) FP referrals.

CONCLUSION

In this primary care-linked clinical trial of community-hospital integrated LC screening, we achieved 74% uptake to pre-assessment for lung cancer screening and 89% in-person attendance. Interim diagnostic outcomes show predominantly stage I/II NSCLC (80%). Preliminary risk-model analysis showed similar case detection with PLCom2012 $\geq 1.51\%$ and LLPv2 $\geq 2.5\%$, with fewer non-cancer participants selected by PLCom2012, while the higher LLPv2 $\geq 5\%$ threshold increased selectivity at the cost of reduced cancer detection. Final analysis of the LHC pilot will include outcomes from all baseline RALC referrals and comprehensive comparison of LLPv2 and PLCom2012 selection criteria

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