Poster# **3093**

Improving the Efficiency of Lung Cancer Screening Through a Blood-based Lung Cancer Screening Test Prior to Low-dose CT

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INTRODUCTION

- Wide scale lung cancer screening (LCS) with low-dose computed tomography (LDCT) can strain already taxed health-systems, including the infracture involved in follow-up and evaluation of LDCT incidental non-malignant actionable findings (NAFs).
- NAF's are common, occurring in 15-25% of scans[1], and can lead to specialist consultations, invasive work-up, repeated follow-up, and consume patient's time.
- We evaluated whether initially screening eligible individuals with a blood based genomic test (BGT) could reduce the burden of LCS without reducing cancer detection.

METHODS

- We adapted the LungPLAN model developed by The FiscalHealth Group, the American Cancer Society, and the National Lung Cancer Roundtable, to a 2021 USPSTF LCS-eligible population with a 0.7% lung cancer(LC) prevalence.
- Three strategies were evaluated to determine the number needed to screen (NNS) to detect a LC and the associated frequency of NAF detection.
  - **Strategy A:** LDCT-Alone, screening 1,000 eligibles
  - **Strategy B1**: BGT-First, matched for 7 LDCT screen-detected LCs
  - **Strategy B2:** BGT-First, matched for 1,000 LDCTs
- LDCT was modeled at 93% sensitivity, 76% specificity[2] (99.9% NPV, 2.2% PPV), with 15% of scans identifying NAFs that required workup.
- The BGT was modeled at 80% sensitivity, 58% specificity (99.8% NPV, 1.3% PPV)[3] with 100% and 0% of BGT positive and negative results followed on to LDCT, respectively.

RESULTS

- **Strategy A:** 1,000 LDCTs identified 7 LCs and 153 NAFs (NNS=143, NAF:LC=22).
- **Strategy B1:** 1,250 BGTs resulted in 525 LDCTs identifying 7 LCs and 77 NAFs (NNS=76, NAF:LC=11).
- **Strategy B2:** 2,381 BGTs resulted in 1,000 LDCTs identifying 13 lung cancers and 147 NAFs (NNS=76, NAF:LC=11).

CONCLUSIONS:

- A BGT-First strategy can screen 2.4x more individuals, drive the same number of LDCTs as an LDCT-only strategy, find 1.9x more cancers and reduce the frequency of NAF detection per LC detected by 2x.
- An initial point of care BGT for LCS has the potential to improve the efficiency of screening, improve false positive to true positive rates of LDCT, and reduce the strain on health-systems.

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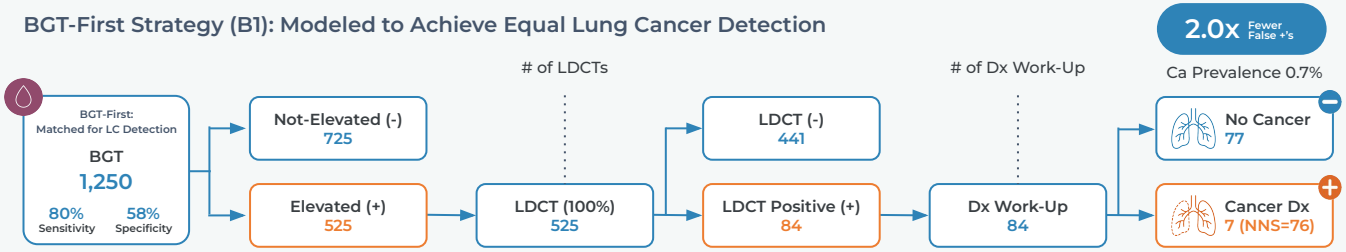
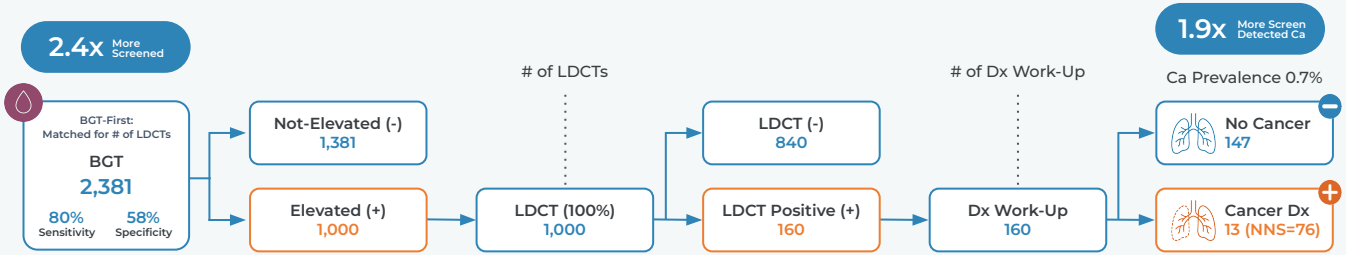
LDCT-Alone Strategy (A)

BGT-First Strategy (B1): Modeled to Achieve Equal Lung Cancer Detection



BGT-First Strategy (B2): Modeled to Achieve Equal Number of LDCTs



#1. Rendle et al. Ann Intern Med. doi:10.7326/M23-0653, 2024 American College of Physicians #2. Pinsky PF, Gierada DS, Nath H, Kazerooni EA, Amorosa J. ROC Curves for Low-Dose CT in the National Lung Screening Trial. J Med Screen. 2013;20(3):165-168. doi:10.1177/0969141313500666 #3. Mazzone et al. Cancer Discovery 2024