Letter to the Editor

Biomarkers as a tool to reduce disparities in lung cancer screening and detection

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We thank Pura-Bryant *et al.* for their recent commentary on our narrative review summarising biomarkers of lung cancer with applications in lung cancer screening (LCS) and in never-smokers (1,2). We appreciate in particular the point they raised on the impact that biomarkers of lung cancer will have on individuals who face disparities in LCS.

Pura-Bryant *et al.* importantly highlight the work of Raman *et al.*, which discusses ethnic minorities experiencing a higher risk and higher rates of lung cancer in the US. Disparities in healthcare, including participation in clinical trials, can contribute significantly to the health inequities experienced by minority populations such as ethnic groups (3). When considering women who have never smoked, for instance, Asian women experience a disproportionately increased risk of lung cancer compared to other ethnicities. Biomarkers meant for universal application must be able to account or adjust for such variations.

Thus, risk model-based screening that takes into consideration such factors can improve screening performance and additionally decrease ethnic disparities when compared to strategies solely dependent on age and smoking history (4). Complementing this advancement, artificial intelligence (AI)-driven personalised screening provides a targeted approach to lung cancer detection, which is especially advantageous for minority populations, including never-smokers. Through analyses of an individual's genetics, lifestyle, occupational history and medical background, AI can generate a comprehensive risk profile and recognise diverse genetic susceptibilities and environmental exposures prevalent among different groups (5). Furthermore, socioeconomic factors can also be considered to ensure that screening plans align not only with medical appropriateness, but also feasibility and accessibility for individuals from various backgrounds (6). Tailoring the risk model to the specific needs and preferences of minorities addresses potential disparities in health assessment and well-informed decision making. Nevertheless, it constitutes only a partial solution.

Biomarkers that have the potential to replace traditional lung screening methods (i.e., agnostic to an individual's characteristics) on the other hand may overcome issues related to phenotypes, such as smoking status and ethnicity. Platforms such as multi-cancer early detection (MCED) tests that screen patients for tumour determined biomarkers may have universal screening utility. For example, CancerSEEK employed a multianalyte blood-based MCED test that distinguished patients with eight common cancer types from healthy controls with high sensitivity (70%) and specificity (>99%) (7). MCED tests pose an attractive alternative to single-cancer screening tests, especially in low- and middle-income countries due to increased rates of cancer but decreased access to screening infrastructure.

It is important that we continue acknowledge those facing disparities in LCS and care, and continue to work towards achieving equity in LCS and research. While valuable

progress has been made in recent years, we must ensure ample representation of ethnically diverse populations in biomarker research to ensure those at a higher risk of developing lung cancer are recognised. Finally, accessibility to screening initiatives should remain at the forefront of our considerations to ensure socioeconomically disadvantaged people also have access to lung and other cancer screening where available.

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