Strengthening lung cancer screening in Hong Kong: policy, innovation, and collaborative approaches for early detection and improved outcomes

Herbert HF Loong[1,2], MB, BS, FHKAM (Medicine), **Alan DL Sihoe**[3], MB, BChir, FHKAM (Surgery), **Derek YT Cheung**[4], MPhil, PhD, **YT Cheung**[5], BSc, PhD, **David CL Lam**[6], MD, PhD, **Joseph SK Au**[7], MB, BS, FHKAM (Radiology), **Molly SC Li**[1], MB, BS, FHKAM (Medicine), **Ariel JY Lim**[8], BSc, **Judy YT Li**[8], BSc, MPH, **William Thomas Brown**[8], MEng, **Martin CS Wong**[9,10] *, MD, MPH

[1] *Department of Clinical Oncology, The Chinese University of Hong Kong, Hong Kong SAR, China*
[2] *Editor,* Hong Kong Medical Journal
[3] *CUHK Medical Centre, Hong Kong SAR, China*
[4] *School of Nursing, The University of Hong Kong, Hong Kong SAR, China*
[5] *School of Pharmacy, Faculty of Medicine, The Chinese University of Hong Kong, Hong Kong SAR, China*
[6] *Department of Medicine, The University of Hong Kong, Hong Kong SAR, China*
[7] *Hong Kong Adventist Hospital Oncology Centre, Hong Kong SAR, China*
[8] *Asia Pacific Policy Review and Engagement for Lung Cancer*
[9] *The Jockey Club School of Public Health and Primary Care, Faculty of Medicine, The Chinese University of Hong Kong, Hong Kong SAR, China*
[10] *Editor-in-Chief,* Hong Kong Medical Journal

* Corresponding author: wong_martin@cuhk.edu.hk

Hong Kong Med J 2025;31:12–5
https://doi.org/10.12809/hkmj245173

On 24 September 2024, the Lung Cancer Care Continuum Policy Forum Series convened in Hong Kong, bringing together leading experts from the health system to assess the current state of lung cancer management, enhance collaboration across specialities, and formulate policy recommendations specific to Hong Kong.[1] This inaugural event was the first in a series aimed at evaluating existing research and advancing local lung cancer care practices, with a particular emphasis on improving screening initiatives.

Despite the diversity of specialisations represented, the experts unanimously emphasised a shared goal of reducing lung cancer mortality and alleviating the overall burden of the disease. They highlighted the importance of collaboration, data sharing, and open dialogue for aligning efforts towards this common objective. Reflecting the group's collective perspective, insights and contributions from the presentations and discussions have been consolidated into this editorial.

Lung cancer burden in Hong Kong

Lung cancer remains one of the most common and fatal cancers in Hong Kong; the 5978 new cases reported in 2021 constituted 15.5% of all cancer diagnoses.[2] The age-standardised mortality rates for lung cancer were 29.7 and 14.0 per 100 000 standard population among men and women, respectively.[2] Hong Kong's current strategy mainly targets tobacco use as the primary cause of lung cancer but lacks a comprehensive framework for screening and treatment.

Tobacco control progress is evident in Hong Kong, where the smoking rate was substantially lower than the global average of 22.3%.[3] Through sustained efforts, Hong Kong has achieved a steady decline in smoking rates, from 12.4% in 2000 to 9.1% in 2023.[4] This progress is attributed to the enforcement of comprehensive smoking control measures, including taxation, implementation of pictorial health warnings, expansion of non-smoking areas, and prohibition of alternative smoking products. However, the unique epidemiology of lung cancer in the region, where the majority of cases occur in non-smokers, underscores the need for broader focus beyond smoking cessation.[5]

The experts identified several key challenges, including the absence of centralised guidelines, limited access to screening and precision diagnostics, and gaps in public awareness and healthcare integration. Currently, the Cancer Expert Working Group on Cancer Prevention and Screening of the Centre for Health Protection does not recommend routine screening for lung cancer among asymptomatic individuals with moderate risk.[6] An important barrier remains the lack of a comprehensive lung cancer control plan, resulting in late-stage diagnoses and worse patient

outcomes. Additionally, care is primarily managed by specialists, with minimal involvement from primary care physicians. The experts called for the establishment of a dedicated control plan focusing on prevention, screening, treatment, and enhanced care coordination to improve accessibility and outcomes.

Importance of screening for early detection

Lung cancer screening is recognised as a critical intervention for early detection, particularly in high-risk populations. Authorities in the United Kingdom, Australia, Taiwan, the United States, China, Singapore, Canada, Korea, and Japan have recommended lung cancer screening for individuals aged 50 to 55 years, with cessation at 70 to 74 years.[6] However, Hong Kong has yet to establish a government-funded, population-based screening programme targeting high-risk groups. The Chief Executive's 2024 Policy Address highlighted the need to explore an artificial intelligence (AI)–assisted lung cancer screening programme.[7] The experts strongly supported this initiative, citing the success of the colorectal cancer screening programme for high-risk individuals,[8] which demonstrated the feasibility of translating clinical evidence into real-world practice through a multidisciplinary approach. This model could serve as a framework for developing an effective lung cancer screening programme in Hong Kong.

Economic implications

The economic implications of lung cancer care were also discussed. The experts emphasised the cost-effectiveness of low-dose computed tomography (LDCT) screening for high-risk smokers and non-smokers. Evidence was presented indicating that, over a lifetime, the incremental cost-effectiveness ratios of LDCT screening are well within the affordability range for Hong Kong's healthcare expenditures, based on prior experiences with willingness-to-pay thresholds.[9,10] Consequently, there is robust justification for the initiation of LDCT-based lung cancer screening among all high-risk individuals.[11] This approach has the potential to greatly reduce the lung cancer burden and improve population-level outcomes. A report from regions that have adopted lung cancer screening, including Taiwan[12]—where the lung cancer epidemiology closely resembles that of Hong Kong—demonstrated a substantial shift towards earlier-stage diagnoses. The ability to detect lung cancer at an earlier stage, combined with timely and appropriate management, can lead to reduced mortality and improved treatment outcomes.

Artificial intelligence and innovation

Innovative approaches to lung cancer screening were also presented. The ongoing LC-SHIELD study (Lung Cancer Screening in High-risk Non-smokers by Artificial Intelligence Device) utilises AI to screen high-risk non-smokers, a critical subpopulation considering that >50% of lung cancer cases in East Asia occur in non-smokers.[13] The application of AI may enhance the sensitivity and specificity of screening, particularly for individuals with unique risk profiles, such as those with a family history of lung cancer or genetic predisposition. The experts noted the limitations of conventional tools (eg, chest X-rays), which lack the sensitivity of LDCT for detecting early-stage lung cancer.[14] There was support for the adoption of innovative methods, including liquid biopsy and AI-enhanced LDCT interpretation, which improve early detection rates but reduce costs by minimising false positives and optimising the screening process. Such innovations offer promising opportunities to enhance lung cancer care in Hong Kong, making screening more efficient and accessible.

Expansion and integration of screening into routine care

Lung cancer care in Hong Kong is primarily managed by tertiary care specialists, with limited integration across different levels of the healthcare system. The experts highlighted the success of a community-based charity programme designed to increase public awareness of lung cancer screening. This programme provided a single round of LDCT screening of the thorax to 99 asymptomatic adults with a family history of lung cancer and/or a history of smoking. Positive LDCT results were observed in 47 participants (47%), and lung cancer (all adenocarcinomas) was ultimately diagnosed in six participants (6%).[12] This detection rate in Hong Kong appears higher than those reported in recent international trials of LDCT for lung cancer screening,[15-17] indicating a need to revise eligibility criteria for greater emphasis on family history and to leverage local clinical expertise for lesion assessment. The findings from the programme were subsequently published in an international peer-reviewed medical journal and presented at the 2024 World Conference on Lung Cancer.[18]

The published results underscore the potential for adoption of similar programmes and highlight the benefits of incorporating LDCT screening into routine health checks for high-risk individuals. These findings strengthen the case for enhancing access to screening, supporting early detection efforts, and improving lung cancer outcomes in Hong Kong.

Management of incidental findings during low-dose computed tomography screening

Although LDCT is a promising tool, its effectiveness depends on collaboration among multidisciplinary healthcare teams.[19] The experts noted the challenge posed by incidental pulmonary nodules, which are frequently detected during LDCT screening but are often benign. These findings can increase patient anxiety and place additional strain on healthcare systems due to unnecessary invasive procedures.[20] The experts also emphasised adherence to updated guidelines, such as those from the Fleischner Society, for appropriate management of incidental pulmonary nodules.[21] Shared decision-making between patients and healthcare providers was considered essential to ensure that individuals understand the risks and benefits of screening.

Resolution of psychosocial barriers

The implementation of lung cancer screening presents challenges related to the psychosocial impact, particularly 'scanxiety'—the anticipatory anxiety associated with screening preparation, procedures, and results.[22,23] The experts highlighted the importance of incorporating psychological support into screening programmes to enhance patient participation and adherence, especially among younger individuals who may avoid screening due to fear.

Key recommendations for lung cancer screening in Hong Kong

Based on insights shared during the session, the experts formulated five key recommendations to address critical challenges in lung cancer screening and care in Hong Kong. These recommendations reflect collective expertise and propose a holistic approach to advancing early detection, improving healthcare integration, and enhancing accessibility and outcomes for patients.

1. Develop a comprehensive lung cancer control plan: Establish a detailed, government-funded plan covering the entire patient care continuum to standardise clinical practices throughout the health system.
2. Implement system-wide screening programmes: Introduce lung cancer screening initiatives targeting high-risk populations, such as smokers and individuals with genetic predisposition, ensuring that these programmes are accessible and tailored to local needs.
3. Improve healthcare integration: Strengthen collaboration between primary care providers and specialists to streamline the patient care continuum, particularly in the management of follow-up care for individuals with incidental findings.
4. Address psychosocial barriers: Incorporate psychological support and patient education into lung cancer screening and management programmes to reduce anxiety and improve participation.
5. Expand screening programmes using AI technology: Promote research and application of AI-enhanced LDCT screening programmes to enhance early detection and cost-effectiveness.

The first session of the Lung Cancer Care Continuum Policy Forum Series concluded with an emphasis on adopting a multipronged approach that involves research, policy advocacy, and patient education. During future sessions that more fully explore the patient care continuum for lung cancer care, the aim will be to achieve consensus regarding a unified strategy that aligns local clinical and policy efforts for lung cancer management. The outcomes of these discussions will play a central role in shaping the future of lung cancer care in Hong Kong, ensuring timely detection, equitable access to care, and improved survival outcomes for future generations.

Author contributions

All authors contributed to the concept or design, acquisition of data, analysis or interpretation of data, drafting of the manuscript, and critical revision of the manuscript for important intellectual content. All authors had full access to the data, contributed to the study, approved the final version for publication, and take responsibility for its accuracy and integrity.

Conflicts of interest

ADL Sihoe has acted as a consultant for AstraZeneca, Medela, and Roche, while receiving support from Medtronic and Nestlé. MSC Li has received grants or contracts from AstraZeneca, Gilead, MSD, Takeda, and Johnson & Johnson. He has received honoraria for lectures, presentations, speakers bureaus, manuscript writing, or educational events from entities including AstraZeneca, Novartis, Amgen, Pfizer, Takeda, ACE Oncology, Gilead, Guardant Health, Janssen, Merck, MSD, and BMS. He has also received support for attending meetings and/or travel from AstraZeneca, Pfizer, Daiichi Sankyo, MSD, Roche, Janssen, and Amgen. Additionally, he has served on advisory boards for AstraZeneca, Pfizer, Takeda, Amgen, AnHeart Therapeutics, Yuhan, BlossomHill Therapeutics, and Janssen. MCS Wong is an honorary medical advisor of GenieBiome Ltd. He is an advisory committee member of Pfizer; an external expert of GlaxoSmithKline; a member of the advisory board of AstraZeneca and has been paid consultancy fees for providing advice on research. Other authors declared no conflicts of interest.

Funding/support

This editorial was funded by Roche Diagnostics and MSD. The funders had no involvement in the design of the Forum Series, data collection, analysis, interpretation, or manuscript preparation.

References

1. Asia Pacific Policy Review and Engagement for Lung Cancer. First edition of the Lung Cancer Care Continuum Policy Forum Series: Early Detection in Hong Kong. Available from: https://aspirelungcancer.com/news/lung-cancer-care-continuum-policy-forum. Accessed 7 Feb 2025.
2. Centre for Health Protection, Department of Health, Hong Kong SAR Government. Lung cancer. 2024 Jan 12. Available from: https://www.chp.gov.hk/en/healthtopics/content/25/49.html. Accessed 11 Oct 2024.
3. World Health Organization. Tobacco. 2023 Jul 31. Available from: https://www.who.int/news-room/fact-sheets/detail/tobacco. Accessed 14 Oct 2024.
4. Census and Statistics Department, Hong Kong SAR Government. Thematic Household Survey Report–Report No. 79–Pattern of Smoking. 2nd Issue 2024. Available from: https://www.censtatd.gov.hk/en/wbr.html?ecode=B1130201202 4XX01&scode=380. Accessed 14 Oct 2024.
5. Noronha V, Budukh A, Chaturvedi P, et al. Uniqueness of lung cancer in Southeast Asia. Lancet Reg Health Southeast Asia 2024;27:100430.
6. Non-communicable Disease Branch, Centre for Health Protection, Department of Health, Hong Kong SAR Government. Lung cancer prevention and screening. June 2023. Available from: https://www.chp.gov.hk/files/pdf/6_lung_cancer_prevention_and_screening_eng.pdf. Accessed 11 Feb 2025.
7. Hong Kong SAR Government. The Chief Executive's 2024 Policy Address. Oct 2024. Available from: https://www.policyaddress.gov.hk/2024/en/. Accessed 1 Nov 2024.
8. Department of Health, Hong Kong SAR Government. Colorectal Cancer Screening Programme. Available from: https://www.colonscreen.gov.hk/en/public/index.html. Accessed 11 Feb 2025.
9. Loong H, Pan X, Chiu CH, et al. P1.17-03 Cost-effectiveness of low-dose computerized tomography lung cancer screening in high-risk non-smokers and smokers in Hong Kong. J Thorac Oncol 2023;18 Suppl:S223.
10. Census and Statistics Department, Hong Kong SAR Government. Table 310-31001: Gross Domestic Product (GDP), implicit price deflator of GDP and per capita GDP. 2024 Nov 15. Available from: https://www.censtatd.gov.hk/en/web_table.html?id=310-31001. Accessed 12 Feb 2025.
11. Loong HH, Pan X, Chiu CH, et al. 486P–Fiscal feasibility and implications of integrating lung cancer screening into Hong Kong's healthcare system [poster]. 2023 Dec 2. Available from: https://oncologypro.esmo.org/meeting-resources/esmo-asia-congress-2023/fiscal-feasibility-and-implications-of-integrating-lung-cancer-screening-into-hong-kong-s-healthcare-system. Accessed 1 Nov 2024.
12. Yang PC, Chen TH, Huang KP, Lin LJ, Wu CC. Taiwan national lung cancer early detection program for heavy smokers and non-smokers with family history of lung cancer [abstract]. J Clin Oncol 2024;42;16_suppl:8009.
13. Zhou F, Zhou C. Lung cancer in never smokers—the East Asian experience. Transl Lung Cancer Res 2018;7:450-63.
14. Amicizia D, Piazza MF, Marchini F, et al. Systematic review of lung cancer screening: advancements and strategies for implementation. Healthcare (Basel) 2023;11:2085.
15. National Lung Screening Trial Research Team; Aberle DR, Adams AM, et al. Reduced lung-cancer mortality with low-dose computed tomographic screening. N Engl J Med 2011;365:395-409.
16. Yang P. PS01.02 National lung cancer screening program in Taiwan: the TALENT Study. J Thorac Oncol 2021;16:S58.
17. de Koning HJ, van der Aalst CM, de Jong PA, et al. Reduced lung-cancer mortality with volume CT screening in a randomized trial. N Engl J Med 2020;382:503-13.
18. Sihoe AD, Fong NK, Yam AS, Cheng MM, Yau DL, Ng AW. Real-world first round results from a charity lung cancer screening program in East Asia. J Thorac Dis 2024;16:5890-8.
19. Ramaswamy A. Lung cancer screening: review and 2021 update. Curr Pulmonol Rep 2022;11:15-28.
20. Lin Y, Khurelsukh K, Li IG, et al. Incidental findings in lung cancer screening. Cancers 2024;16:2600.
21. Lam DC, Liam CK, Andarini S, et al. Lung cancer screening in Asia: an expert consensus report. J Thorac Oncol 2023;18:1303-22.
22. Feiler B. Scanxiety. Fear of a postcancer ritual. Time 2011;177:56.
23. Goodwin B, Anderson L, Collins K, et al. Anticipatory anxiety and participation in cancer screening. A systematic review. Psychooncology 2023;32:1773-86.