Advancing next-generation sequencing access: aspirations for next-generation sequencing policy and patient access in Hong Kong

Joseph Au[1,2], PhD, FHKCR, **Rupert Mok**[3], MBiomedEng, BEEng, **Cheryl Fung**[4], MPH, FCHSM, **Mikaela Tham**[5], BSc, **YS Teh**[5], BSc, **Anirudh Sen**[6], MBA, BSc, **William Brown**[5], MEng, **Martin CS Wong**[7] *, MD, MPH

[1] *Hong Kong Adventist Hospital Oncology Centre, Hong Kong SAR, China*
[2] *Hong Kong Precision Oncology Society, Hong Kong SAR, China*
[3] *Hong Kong Medical and Healthcare Device Industries Association, Hong Kong SAR, China*
[4] *Hong Kong Anti-Cancer Society, Hong Kong SAR, China*
[5] *Vista Health Pte Ltd, Singapore*
[6] *Asia Pacific Medical Technology Association (APACMed), Singapore*
[7] *The Jockey Club School of Public Health and Primary Care, The Chinese University of Hong Kong, Hong Kong SAR, China*

* Corresponding author: wong_martin@cuhk.edu.hk

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Introduction

On 26 November 2024, a roundtable discussion in Hong Kong brought together leading experts in oncology, healthcare policy, and patient advocacy to address the challenges and opportunities associated with expanding access to next-generation sequencing (NGS) for cancer care. This critical meeting aimed to establish actionable steps and policy changes that facilitate the integration and accessibility of NGS within Hong Kong's cancer care ecosystem.

Building on a previous publication that presented an overview of the status of access to NGS-based cancer care in seven Asia–Pacific territories, along with policy considerations to improve such access,[1] this dialogue focused on assessing the current state of NGS utilisation, identifying key gaps, and defining strategic priorities tailored to the local context. Despite diverse perspectives, participants shared a unified goal: to improve cancer outcomes through equitable access to NGS-based cancer care. Insights and recommendations generated during the session have been consolidated into the following consensus, which aims to shape future strategies and inform policy development.

The case for next-generation sequencing in Hong Kong

Next-generation sequencing has revolutionised cancer care worldwide by enabling personalised treatment plans based on the genetic profiles of individual tumours. This precision minimises unnecessary treatments, improves survival rates, and enhances patients' quality of life. Globally, studies have demonstrated that the integration of NGS into routine cancer care reduces mortality and healthcare costs while improving patient outcomes.[2-12]

Recent developments in Hong Kong have revealed positive progress in addressing policy, clinical, and reimbursement-related barriers to NGS access. For example, NGS has been included in the Hospital Authority Strategic Service Framework for Genetic and Genomic Services (HAGGSSSF), developed in October 2019,[13] with the objective of providing structured and coordinated genetic and genomic (G/G) services—including NGS—to meet patients' healthcare needs in a timely and equitable manner. The Hospital Authority (HA) has taken an additional step by establishing the Steering Group on G/G Service and the Central Committee on Genetic Services in 2019. These bodies jointly seek to enhance the coordination of service organisation, information technology infrastructure, G/G test implementation, and documentation processes. Clinician endorsement and advocacy have also increased; recently published consensus statements[14] and studies[15] outline principles for the clinical implementation of NGS and underscore the value of multidisciplinary molecular tumour boards in supporting NGS during real-world clinical practice. In terms of funding, two hospitals have expanded the availability of NGS panels for myeloid neoplasms since 2021, and reimbursement for small gene panels was piloted across Clusters in early 2023 for patients with non–small-cell lung cancer (NSCLC).[16]

Despite these efforts, the application of NGS in oncology over the past decade has primarily been led by private healthcare service providers. Professional organisations, particularly the Hong Kong Precision Oncology Society, along with private providers, have played a central role in increasing awareness and enabling access to innovative testing

options in advance of adoption by the public healthcare system.

The public healthcare service has predominantly focused on the use of NGS for diagnostic and prognostic assessments of rare, hereditary, prenatal, and paediatric conditions, rather than harnessing its potential to guide clinical decision-making and improve outcomes concerning prevalent cancers. Notably, measures introduced by the public healthcare system over the past 4 to 5 years have begun to incorporate NGS into routine oncology services.

Although Hong Kong has made positive strides towards increasing NGS access, the supporting healthcare and funding policies remain largely focused on select cancers, such as NSCLC, if they address cancer at all. Expert sentiment regarding access to NGS-based cancer care indicates that Hong Kong is still in the early stages of improving access; further policy changes will be required to deliver the benefits of this transformative technology to the broader cancer patient population.

Barriers to wider adoption of next-generation sequencing

The roundtable reviewed an extensive list of identified barriers to NGS access across the Asia–Pacific region and reached a consensus to prioritise the following three challenges for improved NGS integration in Hong Kong over the next 1 to 2 years:

1. Policy gaps: NGS has not been fully embedded within Hong Kong's cancer strategy, resulting in fragmented regulatory, reimbursement, and implementation frameworks. Although NGS is referenced in the HAGGSSSF, the absence of a comprehensive policy and action plan restricts practical implementation across broader cancer indications.
2. Clinical challenges: The lack of local clinical guidelines and inadequate awareness among healthcare professionals impede the standardisation and effective use of NGS. These deficiencies contribute to inconsistent adoption across the healthcare system.
3. Reimbursement obstacles: Existing funding assessment frameworks fail to reflect the full value of NGS, including its potential to improve patient outcomes and reduce long-term healthcare costs. This absence from existing frameworks results in siloed budgets and limited investment in NGS implementation for other cancers that may benefit, such as ovarian and colorectal cancer.

Strategic priorities for advancing access to next-generation sequencing–based cancer care

The experts outlined three critical priorities to address these challenges and advance the integration of NGS in Hong Kong.

Public and professional education

Public and healthcare professional awareness campaigns are essential to foster demand for and understanding of NGS. The experts noted that many healthcare providers lack the capacity to remain current with the pace of research advancements necessary to develop strong familiarity with NGS applications; patients often lack the knowledge required to advocate for its inclusion in their care.

Education campaigns aimed at both groups would serve to demystify NGS, highlight its benefits, and support its incorporation into routine cancer care. Educational efforts for healthcare professionals could include structured programmes or courses that lead to formal qualifications or certifications. These initiatives could also address common misconceptions regarding NGS cost and complexity, thereby facilitating broader acceptance.

The formation of multidisciplinary teams comprising bioinformaticians, NGS specialists, pathologists, oncologists, and patient advocacy groups is a critical step towards enhancing awareness, clinical implementation, and patient acceptance of NGS in cancer care. These teams will need to define priority patient groups to ensure that educational initiatives remain focused and relevant.

Subsequent awareness programmes should aim to inform both healthcare providers and patient communities about the benefits of personalised care, with the goal of increasing demand and strengthening advocacy for these services. Precision oncology groups and academic institutions were proposed to lead this effort, supported by healthcare professionals, patient advocacy organisations, and relevant government agencies.

Development of Hong Kong–specific comprehensive clinical guidelines

Standardised, evidence-based guidelines are essential to ensure the appropriate and effective use of NGS. Such guidelines would enable healthcare providers to determine which patients are most likely to benefit from NGS and how test results should be interpreted to guide treatment decisions.

Similar to education campaigns, experts highlighted the importance of multidisciplinary collaboration in the timely development and revision of these guidelines to reflect ongoing advancements in genomic medicine. The establishment of a centralised organisation or working group to oversee this process was proposed as a potential solution. Academic institutions and government bodies will need to allocate resources in support of regular meetings, conferences, and educational programmes to maintain current and relevant NGS guidelines.

It was suggested that an independent organisation or association be formed to develop objective, evidence-based NGS guidelines, thus ensuring impartiality and scientific integrity. This initiative would also include readiness assessments to evaluate public acceptance, clinical infrastructure, and economic feasibility.

Additionally, oncologists and other specialists should be actively involved in drafting the guideline recommendations, with a focus on priority cancers such as ovarian cancer, colorectal cancer, and NSCLC.

Education for healthcare professionals should also be reinforced through workshops and training programmes to ensure they remain informed of NGS-related developments. Relevant Hong Kong stakeholders from the established Greater Bay Area Precision Oncology Working Group and academic institutions were proposed to lead these efforts, with support from industry, healthcare professionals, and patient advocacy groups.

Inclusion of next-generation sequencing in Hong Kong's cancer strategy

Although Hong Kong has incorporated NGS strategies into the HAGGSSSF, NGS integration within the national cancer strategy represents a pivotal step. This integration would align regulatory, reimbursement, and clinical frameworks, while providing a clear mandate for expanded NGS access specifically within cancer care.

Experts emphasised that this integration should position NGS as an essential diagnostic tool and define implementation pathways across cancer types. Greater emphasis should also be placed on collaboration within the Greater Bay Area, considering the growing number of patients who receive care from both Hong Kong and mainland hospitals. By drawing on international experience and lessons learned[17-23]—where cancer strategies have effectively facilitated the adoption of new technologies—Hong Kong has the opportunity to replicate and adapt these successes to the local context.

The panel also noted that achievement of this strategic priority will require initial efforts to educate the public and healthcare professionals about NGS (as outlined in *Public and professional education*), along with the development of Hong Kong–specific clinical guidelines for its use in cancer care (as outlined in *Development of Hong Kong–specific comprehensive clinical guidelines*).

The need for a multidisciplinary working group to achieve strategic priorities

To support progress, the roundtable proposed establishing a multidisciplinary working group composed of stakeholders from healthcare, academia, patient advocacy, and industry. This coalition would serve as a unified voice, coordinating efforts to address existing barriers and advocating for necessary policy reforms.

Core functions of the coalition

- Advocacy: Advocate for the inclusion of NGS in the cancer strategy and propose reforms to reimbursement policies.
- Evidence generation: Gather and disseminate available clinical and economic evidence regarding NGS, and identify outstanding gaps for evidence-generation guidance initiatives tailored to Hong Kong's healthcare landscape and stakeholder needs.
- Guideline development: Support the creation and ongoing maintenance of clinical guidelines.
- Education and outreach: Design and implement awareness initiatives targeting both the public and healthcare professionals.

Existing organisations, such as the Hong Kong Precision Oncology Society, could serve as a foundation for this initiative, drawing on their expertise and networks to accelerate progress. Among other stakeholders, the Hong Kong Anti-Cancer Society should also be included, considering its experience in advocacy and public education. Private service providers will continue to play important roles, given their extensive expertise in NGS implementation and their instrumental contributions in piloting innovative solutions ahead of the public healthcare sector.

A vision for precision cancer care

The expansion of access to NGS is a critical step towards modernising cancer care in Hong Kong. By addressing policy gaps, establishing clinical guidelines, and strengthening education, Hong Kong can realise the full potential of precision medicine.

The formation of a multidisciplinary working group will be central to this transformation. Through collaboration across sectors, generation of local evidence, and pursuit of systemic reform, this coalition can lead efforts to secure equitable access to NGS for all cancer patients.

In conclusion, this roundtable constituted an important milestone in advancing the integration of NGS within Hong Kong. The consensus reached offers a clear roadmap for action, laying the foundation for a healthcare system that embraces innovation and prioritises patient outcomes. Future steps will include the dissemination of a formal consensus statement and an invitation for stakeholders to join this collective initiative. Together, we can ensure that Hong Kong's cancer care system is prepared to meet future challenges and deliver better outcomes for all.

Author contributions

All authors contributed to the editorial, approved the final version for publication, and take responsibility for its accuracy and integrity.

Conflicts of interest

MCS Wong is an honorary medical advisor of GenieBiome Ltd, SunRise, and BGI Health. He is a member of the advisory committee for Pfizer; an external expert for GlaxoSmithKline Ltd; a member of the advisory board of AstraZeneca; and has received consultancy fees for providing research advice. As an editor of the journal, he was not involved in the internal review process prior to acceptance. Other authors disclose no conflicts of interest.

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