

APAC Health Summit

Singapore 2026

Crossing the chasm: from genomic insight to clinical impact

A synthesis of discussions from healthcare,
research and policy leaders.

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About this report

This report draws on perspectives from 50 leaders across healthcare, research and industry, including participants at the Oxford Nanopore Health Summit in Singapore. We asked how genomics is changing, where it could create most value and what will be needed to translate progress into routine healthcare.

Foreword

Healthcare systems around the world are under increasing pressure. Populations are ageing, chronic diseases account for a growing share of ill health and healthcare expenditure, and demand for services continues to rise.

At the same time, our understanding of human biology has advanced dramatically. Genomics has transformed our ability to investigate disease, understand variation and generate insights that would have been unimaginable just a generation ago. What was once a highly specialised field is now moving closer to everyday healthcare and public health practice.

But the value of genomics should ultimately be judged not by how much data we can generate, or how sophisticated our technologies become, but by what difference they make to patients. For someone living with a rare disease, cancer, an infection or an inherited condition, genomics can mean shortening a diagnostic journey, identifying an answer where previously there was uncertainty, informing a treatment decision or providing information that is relevant not only to them, but also to their family.

This Report reflects discussions with experts from across healthcare, research and industry, including those who joined us at our recent health summit in Singapore. We are grateful to everyone who contributed their perspectives and experience, helping us explore both the opportunities ahead and the challenges that must still be addressed.

What emerged is a strong sense of opportunity, with 83% of healthcare and research respondents believing clinical genomics will move from specialist centres into routine healthcare over the next decade.

Realising that potential will require us to keep patients and clinical need at the centre of decision-making. It means focusing resources where genomics can address the greatest unmet need and ensuring that genomic medicine is practical in the settings where care is actually delivered. Simpler workflows, faster access to meaningful results, accessible interpretation and seamless integration into clinical pathways are just as important as advances in sequencing technology itself.

The technologies are maturing rapidly. The challenge now is to ensure that clinicians can use them confidently, that patients can understand and trust how genomic information is being used, and that healthcare systems can adopt them consistently and equitably.

Broader clinical adoption will therefore depend on continued collaboration between patients, clinicians, researchers, industry, regulators and policymakers. We need to build the clinical evidence, trust, infrastructure and regulatory frameworks that allow innovation to move responsibly from research into care.

Ultimately, this is about turning genomic information into better decisions for patients: reaching diagnoses earlier, choosing treatments more precisely, understanding disease more deeply and, increasingly, preventing illness before it occurs.

The chapters that follow explore these questions in more detail: where genomics is already changing healthcare, the barriers that remain, and what will be required to translate extraordinary scientific progress into meaningful and equitable benefits for patients and populations.

Davide Manisero
Chief Medical Officer, Oxford Nanopore Technologies

01 Genomics is at an implementation inflection point

A decade ago, genomics was largely confined to highly specialised clinical centres. Today, it is increasingly being discussed as a component of routine clinical care.

Around the world, governments are investing in large-scale genomics programmes, national datasets, sequencing capacity and digital infrastructure. What began as a scientific endeavour is becoming a strategic capability, with applications spanning rare disease, cancer, infectious disease, population health and preventive medicine¹

Despite differences in healthcare systems, many are converging around common priorities: integrating genomics into clinical care, building workforce capability, strengthening data infrastructure and demonstrating long-term value. The Asia-Pacific region provides some of the strongest examples of this evolution. Programmes such as Singapore’s PRECISE-SG100K are moving beyond genomics alone, integrating multimodal biological, clinical and lifestyle data to support a more holistic approach to precision medicine and population health².

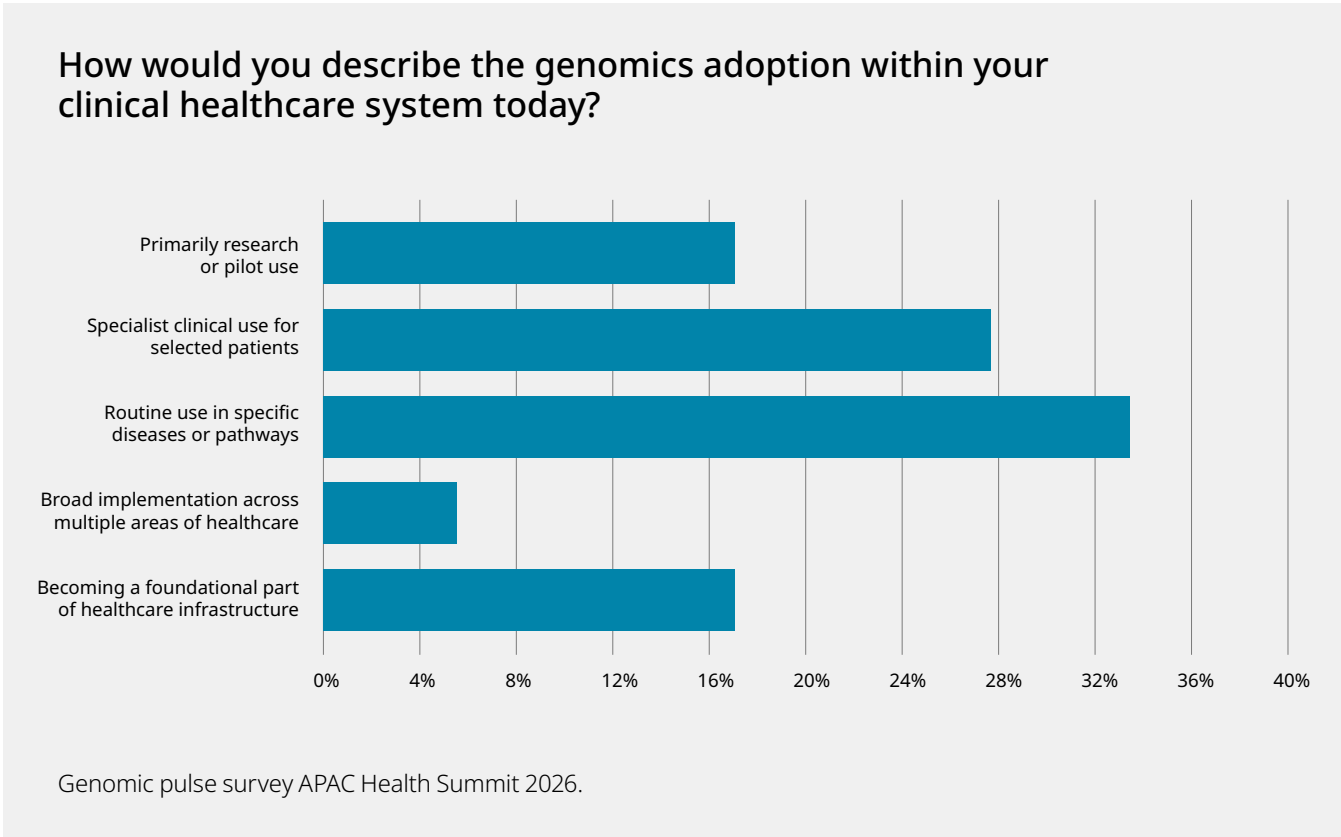
83% of healthcare and research respondents believe clinical genomics will transition from implementation primarily within specialist centres today to becoming part of routine healthcare over the next decade.

The implications extend beyond healthcare. Organisations including the World Health Organization and World Economic Forum recognise genomics and biological data as strategic components of national health infrastructure. Industry trends reflect this shift, with clinical applications emerging as a major driver of growth across oncology, rare disease and population health^{3,4,5}.

The challenge is no longer generating genomic insight but embedding it in ways that deliver measurable benefits for patients and populations.

‘By 2035, genomics could play a role in 50% of all healthcare interactions.’

Genomics England



02 The value of faster, more comprehensive testing

Genomics is undergoing a transformation from isolated tests towards more comprehensive answers. The goal is not simply more data, but greater certainty, shorter diagnostic pathways and earlier decisions.

For decades, clinical testing has largely followed an incremental model. A patient presents with symptoms, a test is ordered, and if no answer emerges another test follows. While this approach has delivered important advances, it can leave patients facing prolonged uncertainty and clinicians navigating fragments of information rather than the full picture.

As diseases become more complex and treatments more precise, the focus is shifting towards generating more comprehensive insight from the outset. Evidence suggests that integrating complementary sources of biological information can reveal patterns that might otherwise remain hidden, helping shorten diagnostic pathways, reduce uncertainty and support earlier clinical decision-making^{6,7}.

In hereditary cancer, rare disease and other complex conditions, these approaches are helping resolve cases that conventional pathways have failed to explain. Experience from the Hong Kong Genome Project (HKGP) suggests that combining large-scale sequencing with long-read analysis can reveal clinically relevant features,

including repeat expansions, structural variants and methylation patterns that may be difficult to detect using standard approaches⁸.

Similar challenges are emerging across cancer and rare disease care. As disease complexity increases, clinically relevant information is often distributed across multiple tests and data sources. Work at the Peter MacCallum Cancer Centre and NSW Health Pathology Randwick Genomics points towards the potential for more integrated genomic testing to reduce repeated investigations, improve diagnostic efficiency and provide a more complete understanding of disease^{9,10}.

‘More information from one test. Earlier results, earlier clinical decisions.’

Professor Piers Blombery,
Peter MacCallum Cancer Centre, Australia

Earlier access to disease insights may support treatment planning, including eligibility for targeted therapies or clinical trials, while shortening diagnostic pathways and reducing uncertainty for patients.

Advances in sequencing, bioinformatics and AI are making this practical by simplifying analysis, integrating diverse data types and shortening the path from sample to insight. The next chapter of precision medicine will depend less on any single technology and more on the ability to combine different sources of biological information into clinically meaningful understanding.

‘Use the smallest assay that answers the clinical question.’

Dr Joanne Ngeow, Lee Kong Chian School of Medicine, Singapore

03 Translating proven capabilities into routine clinical care at scale

As proven capabilities move beyond specialist centres, attention is shifting from technological innovation towards the practical realities of clinical adoption.

Genomics creates value when it becomes part of the healthcare system rather than an addition to it. While many healthcare systems already have access to advanced genomic technologies, healthcare leaders consistently identified ecosystem readiness as a greater barrier than technology itself.

Sustainable funding and clear policy direction remain critical. 50% of the healthcare respondents identified the lack of sustainable reimbursement and funding as the single largest barrier to wider adoption. Innovation is most likely to succeed when it is embedded within diagnostic and clinical services, supported by funding pathways that enable research to progress from discovery through validation and clinical evaluation. Equally important is ensuring equitable access, so that the benefits of genomic medicine extend beyond selected institutions or disease areas and become part of mainstream healthcare.

System readiness and workforce readiness are intertwined. As genomic information becomes more integrated into clinical decision-making, healthcare systems will need a larger workforce equipped with molecular and genomic expertise, supported by

multidisciplinary collaboration between clinicians, pathologists, genetic counsellors and researchers. Building this capability will require sustained investment in education, training and knowledge sharing, moving beyond isolated centres of expertise towards broader healthcare adoption.

The question is no longer what genomics can do, but how its benefits can reach patients at scale. While many leading centres have demonstrated clinical utility, extending those benefits more broadly will require evidence generated in real-world settings, clear and clinically actionable reporting, and services that clinicians can use confidently within existing care pathways. Policy direction and adaptive regulatory pathways that support the adoption of new approaches will be as important as scientific progress.

These elements are closely interconnected, and progress will depend on advancing them together.

Genomics England, the Hong Kong Genome Institute and Victorian Clinical Genetics Services highlight a common trend: the challenge is no longer generating genomic insight, but embedding it within routine care.

In the UK, more than 5,000 diagnostic discoveries have been returned to the NHS through research programmes, demonstrating the value of connecting genomic research directly to clinical services. Similar efforts in Hong Kong and Australia show how shared infrastructure, integrated workflows and validated diagnostic pathways can help shorten diagnostic journeys and support patient management^{8,11,12}.

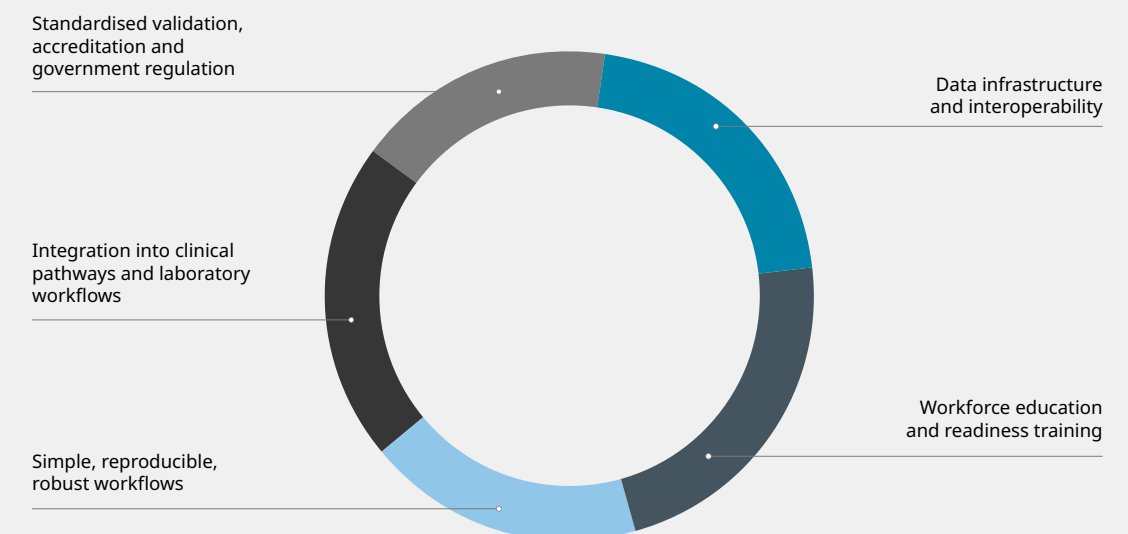
These experiences also reinforce that clinical impact depends on more than technology alone. Representative datasets, interoperable infrastructure and clinically integrated services are essential to ensuring genomic medicine delivers benefit at scale and across diverse populations^{13,14}. The strongest case for investment will be based on system-wide value, including shorter diagnostic journeys, reduced repeat testing and earlier intervention.

Scientific progress has brought genomics closer to routine clinical service. The next challenge is implementation: embedding genomic insight within the systems, workflows and services that support everyday care.

‘Implementation consistency needs training, repetition and skill development.’

Tony Roscioli, Associate Professor
NSW Health Pathology Randwick Genomics, Australia

Which capability will be most important for scaling genomic medicine?



Genomic pulse survey APAC Health Summit 2026.

04 Beyond diagnosis: towards prediction and prevention

While genomics has traditionally been used to diagnose and understand disease, its greatest long-term potential lies in risk prediction and prevention.

Traditional healthcare is largely reactive, responding once symptoms emerge. Together with precision treatment selection, genomics offers the potential to move upstream by identifying risk earlier and enabling intervention when more options remain available.

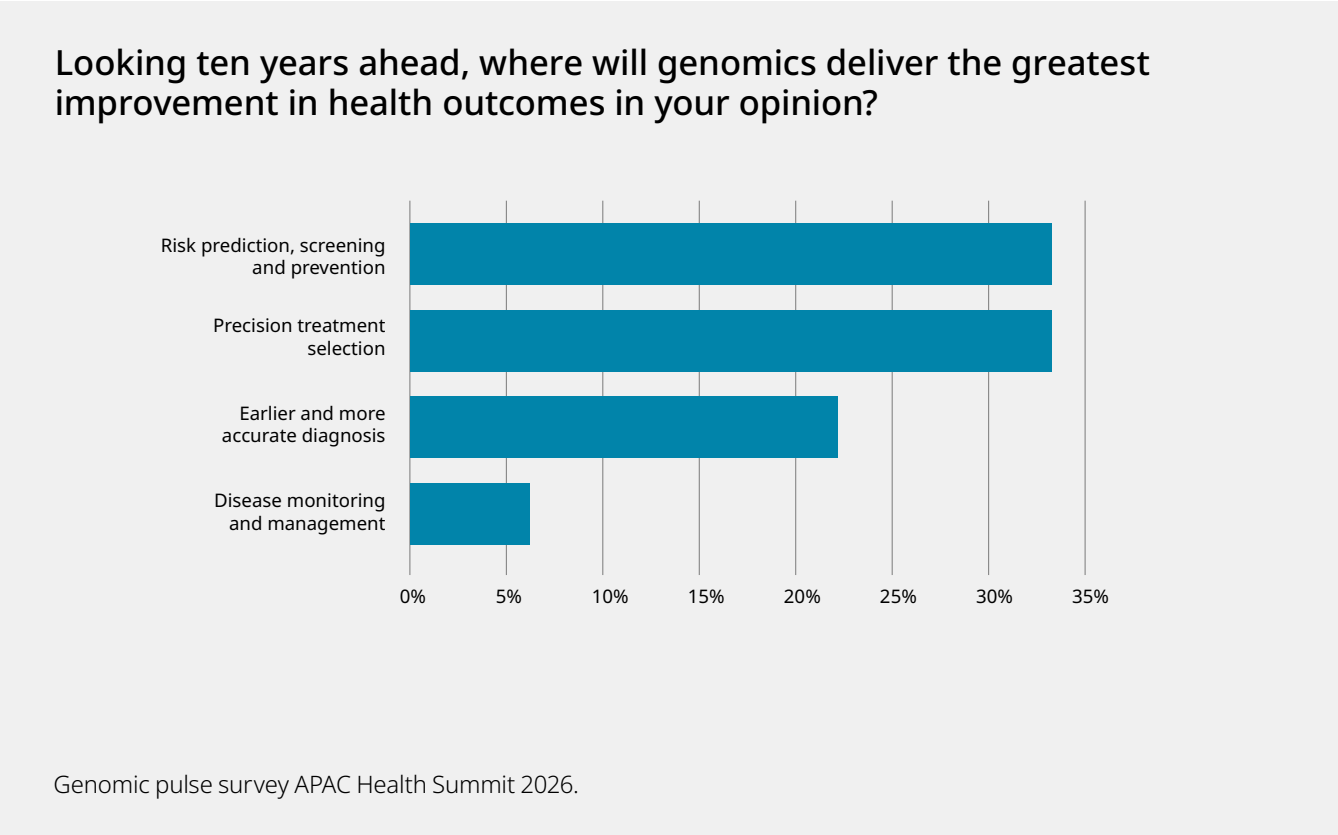
The value of multimodal genomic information also extends beyond a single test result. As scientific understanding advances, findings that were once uninterpretable may gain clinical relevance through reanalysis, improved reference datasets and growing biological knowledge. In some cases, this can support earlier surveillance and prevention for at-risk relatives.

Evidence from newborn screening, cancer surveillance, pharmacogenomics and infectious disease monitoring suggests this transition is already underway, with a growing focus on identifying risk early enough to influence outcomes. Effective prediction will depend on representative populations, longitudinal datasets and the ability to connect multiple layers of genomic information, clinical and demographic data over time.

As these datasets grow, AI is expected to play an increasingly important role in integrating population databases, clinical evidence, scientific literature and genomic data to improve rare disease interpretation and enable large-scale reanalysis as new evidence emerges¹⁵.

The reliability of those predictions will depend on the data used to build them. Models trained on incomplete or unrepresentative populations risk producing findings that do not translate across communities. Building large, diverse and longitudinal datasets will therefore be as important as advances in the models themselves.

The next phase of genomics will be defined not by data generation alone, but by how effectively that information is used to identify risk earlier, support intervention and improve healthcare outcomes.



Looking ahead

The genomics revolution is no longer defined by scientific discovery alone. The ability to generate biological insight continues to advance rapidly. The challenge now is turning that insight into routine clinical benefit.

Healthcare leaders are optimistic about the future of genomics, while remaining realistic about what comes next. The next phase will be defined less by technological capabilities and more by the ability to translate genomic insight into measurable value. Success will depend on generating evidence, building healthcare capability, integrating genomic information into routine care and ensuring equitable access across populations.

Achieving this will require representative datasets, interoperable systems and responsible approaches to data sharing. It will also require a continued focus on patients, ensuring that progress is measured by faster answers, earlier recognition of risk and more equitable access to care for better health outcomes.

No single organisation can deliver this transition alone. Realising the full potential of genomics will require collaboration between clinicians, laboratories, researchers, health systems, policymakers, industry, patients and advocates. The opportunity ahead is not simply to generate more genomic data, but to make genomic insight a routine part of healthcare for the people who stand to benefit most.

Methodology

This report draws on responses and discussions involving 50 leaders across healthcare, research and industry, including participants at the Oxford Nanopore Health Summit in Singapore. Participants represented a range of regions, disciplines and healthcare sectors. The findings reflect qualitative discussion alongside responses to five questions about the progress, future value, barriers and long-term direction of clinical genomics. Discussions were held under the Chatham House Rule.

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email media@nanoporetech.com

www.nanoporetech.com

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