PRECISION PUBLIC HEALTH ASIA 2023 CONFERENCE

12 - 14 July 2023

POST-EVENT REPORT: LEADERSHIP FORUM ON PROGRESSING PRECISION PUBLIC HEALTH

Organised by:

NUS National University of Singapore

Saw Swee Hock School of Public Health

PRECISION PUBLIC HEALTH ASIA SOCIETY

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FOREWORD

It was an honour to be able to convene and host the Leadership Forum for Progressing Precision Public Health at the side of the Precision Public Health Asia 2023 Conference. We had health sector leaders from Brunei, Indonesia, Lao PDR, Malaysia, the Philippines, Singapore, Thailand and Vietnam participate in this full-day Leadership Forum on 12 July 2023 and were joined by international technical experts who shared their work and research with the participants.

As countries and health systems start to recover from the global pandemic, many are faced with a growing burden of chronic diseases and widening fiscal deficits. The Forum brought our health sector leaders together to discuss the topics of Digital Health, Big Data, Precision Medicine and Population Health approaches to health, which have advanced strongly in the past decade. In many ways, these approaches are ready for us to adopt, use and lead to improve the health of our people at the country and regional level.

This report covers the discussions, insights and suggested next steps for the three roundtable sessions on (1) Precision Medicine, (2) Digital Health and (3) Big Data Analytics, AI and Data Sharing. The conversations, inputs and insights were tremendous. We hope you will find the content to be informative and helpful.

What surprised me the most was the leaders' strong and collective appreciation for this regional platform to be able to share knowledge and lessons, celebrate successes and build a stronger leadership community for health. It was encouraging and we hope to be able to build on this event's success and find ways to help the community connect and be updated on the future developments in Precision Public Health.

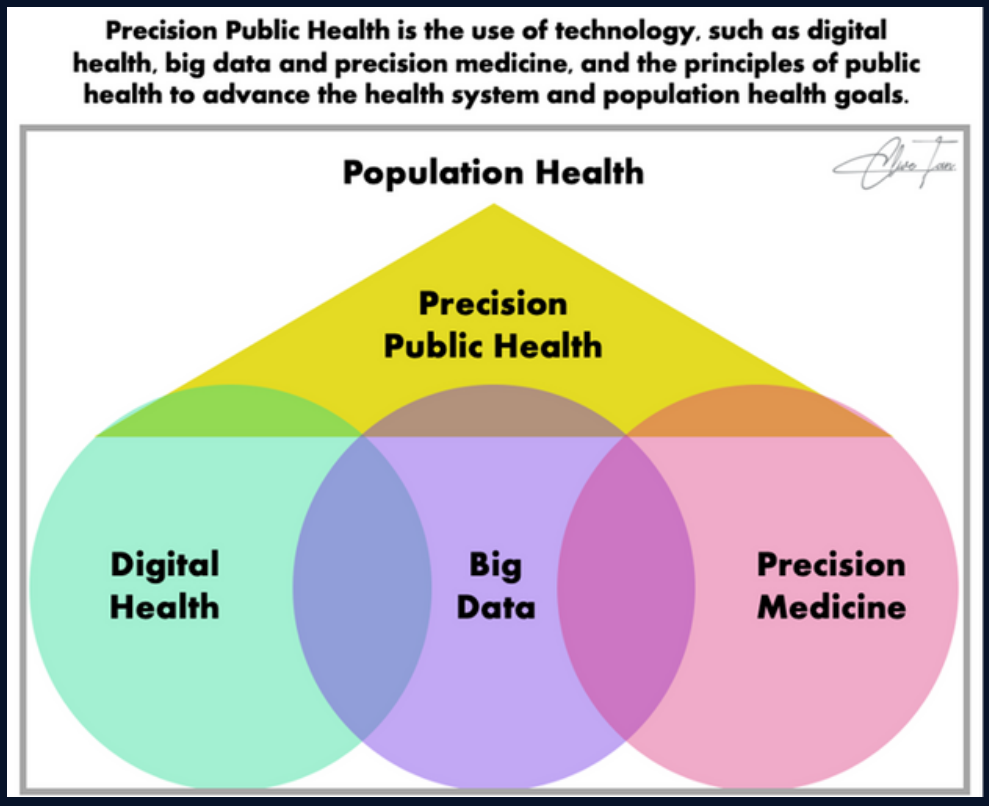
With sincere gratitude,

Dr Clive Tan
Founding Member, Precision Public Health Asia Society
Organising Chair, Precision Public Health Asia 2023 Conference
Host, Leadership Forum for Progressing Precision Public Health

INTRODUCTION

The PPHA 2023 Leadership Forum brought together leaders from countries in the South East Asian region as well as experts from other regions such as Australia, the United Kingdom and the United States of America, with representation from the public sector, non-profit sector and private sector. The Forum enabled these individuals to come together to discuss ways to move Precision Public Health forward in our region and in the world.

At the start of the day, Dr Clive Tan provided the Forum with a definition of what we understand "Precision Public Health" in the region to be. The Forum participants agreed on the definition of Precision Public Health as 'the use of technology, such as digital health, big data and precision medicine, and the principles of public health to advance the health system and population health goals.' This definition was visualised in the diagram below showing the overlapping use of digital health, big data, and precision medicine which enables the science and practice of 'Precision Public Health' which in turn works to advance population health.



Having agreed on the scope and definition, the Forum proceeded with focused sessions on each of the three big drivers of Precision Public Health.

PRECISION MEDICINE

Technological advances have led to the development of new approaches for treating and/or preventing disease that are tailored to the individual, also known as Precision Medicine. Applications of Precision Medicine include tailored disease management in specific patient populations, disease prevention and early diagnosis and research and health product development for personalised treatments and cures. A key factor for the current expansion of Precision Medicine as a field is the increased accessibility and reduced cost of genetic testing as the technology has advanced. The Leadership Forum focused its discussions of Precision Medicine on the policy implications and priorities of increasingly available and cheaper genetic tests in Asia, and the key take-aways are summarized below:

Precision Medicine is already here

The term Precision Medicine may be increasing in popularity recently, however, the group discussion emphasised that it had existed in different forms for decades in our health systems. For example, many countries in Asia have newborn screening programmes for genetic diseases and genetic testing has been used for rapid tuberculosis diagnosis using tests such as Gene-Xpert. More recently, health systems in Southeast Asia have been using pharmacogenetics to account for genetic variation in responses to medicines, for example, screening for genetic markers that predict greater risk for Steven-Johnson syndrome which is a severe adverse effect of anti-epileptic drugs in some individuals. Some countries are also using genetic testing to predict risk for certain cancers as well as Brugada syndrome.

The discussion highlighted how different approaches are needed for clinical-grade genetic tests (that are usually ordered by medical professionals and performed in accredited laboratories) and commercially available non-clinical grade or direct-to-consumer (DTC) tests that can be sold to consumers without visiting any physician or genetic counsellor. Participants agreed that they were seeing an upward increase in direct-to consumer genetic testing in the Southeast Asian region although it is not widely adopted due to the high costs and out-of-pocket payment for such tests.

Participants noted that clinicians and consumers may have problems interpreting these DTC genetic test results for preventive healthcare and clinical purposes. Furthermore, there was concern that these tests are of varying quality and the over-commercialisation of such tests might result in concerns such as unethical business promotion and sales.

Precision Medicine can benefit both individuals and population health

The rapid advancement of genetic testing technology can have benefits for individuals in terms of personalised healthcare. One cutting edge technology, shared by invited expert Dr Robert Balderas, is high-parameter flow cytometry which can revolutionise our understanding of the underlying biological process behind many diseases and may one day allow us to generate a unique immune “fingerprint” for each individual to develop new biomarkers for diseases. In addition to advancing personalised care for individuals, many countries are undertaking bold

initiatives to scale Precision Medicine to reap the benefits that genetic insights, combined with digital tools, can help to predict and possibly prevent diseases in populations. Such national initiatives from the region will fill an important gap in the understanding of the Asian population genomic patterns for diseases, as many existing genetic databases are still mostly based on European and American data.

Region	Initiative
Singapore	The Singapore National Precision Medicine Initiative[1] is a whole-of-government endeavour to collect genomic and other data of initially 100,000
Thailand	Genomics Thailand[2] is a national genetic study is in progress. 50,000 individuals are included in this study
Multi-country collaboration	GenomeAsia100K[3] is non-profit consortium collaborating to sequence and analyze 100,000 Asian individuals genomes to help accelerate Asian population specific medical advances and precision medicine

[1] Wong E, Bertin N, Hebrard M, Tirado-Magallanes R, Bellis C, Lim WK, et al. The Singapore National Precision Medicine Strategy. Nat Genet. 2023 Feb 19;55(2):178–86.

[2] National Biobank of Thailand. Genomics Thailand [Internet]. [cited 2023 Aug 22]. Available from: https://www.nationalbiobank.in.th/en/geth

[3] Genome Asia 100K. Home, Genome Asia 100K [Internet]. 2023 [cited 2023 Aug 22]. Available from: https://www.genomeasia100k.org/

Health systems in Asia need to better prepare for Precision Medicine beyond the technology

Beyond technologies, routine adoption of Precision Medicine in clinical practice and health systems requires social, financial, ethical and regulatory factors to be addressed.

Regulatory frameworks for Precision Medicine

Many regulators in Asia have taken a risk-based approach to the regulation of genetic testing, considering non-clinical genetic tests as low risk. Clinical genetic tests are regulated as a medical device in many jurisdictions. The consensus among participants was that there is a need to regulate genetic testing for quality assurance and public safety, however, there was no regulatory framework that fits for all scenarios for Precision Medicine. Participants suggested that any regulatory frameworks would have to be detailed and specific in their controls. Also, there should be a distinction between regulation for the different uses of genetic testing e.g. genetic testing of pathogens vs genetic testing for rare diseases vs pharmacogenomics purposes.

Ethical considerations and public & consumer engagement

Precision Medicine may help improve disease prediction, diagnosis and treatment at an individual- and population-level but participants highlighted that the rapid uptake and application of genetics and genomics raises several ethical, legal and social concerns. Potential for genetic discrimination (which refers to the unfair and differential treatment of an individual based on actual or suspected genetic characteristics) emerged as a common factor among different countries for hesitancy among the public to accept genetic tests. Genetic discrimination may arise in certain contexts such as insurance, employment and access to health care. It will be important for countries in the region to co-create frameworks to protect consumers and patients from genetic discrimination to enable the access to safe, responsible and efficient forms of Precision Medicine.

Trust is an important factor to increase acceptance of genetic testing and Precision Medicine, especially as countries embark on population level initiatives such as the Singapore and Thailand genomic studies described earlier. Invited expert Dr Tamra Lysaght shared on research among the Singaporean population exploring the social license and expectations for Precision Medicine initiatives. Social license to operate has developed from the natural resource extraction and development sectors to achieve broad-based and ongoing community support for conducting their operations[4]. The findings suggest that there is broad conditional support for sharing de-identified data with both the public and private sector, provided that the research would provide benefits to the broader society and that any sharing is brokered by a trusted entity[5]. The research was conducted in Singapore, the government enjoys high levels of trust from the public.

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[4] Muller, H.A., Kalkman, S et al (2021). "The social licence for data-intensive health research: towards co-creation, public value and trust." BMC Medical Ethics 2021 Vol. 22 Issue 1 Pages 110

[5] Lysaght T, Ballantyne A, et al. (2021) Trust and Trade-Offs in Sharing Data for Precision Medicine: A National Survey of Singapore. Journal of Personalized Medicine. 11(9):921.

Financing models for Precision Medicine

Co-host and speaker Dr Jeremy Lim challenged participants to consider if the current status quo for financing of health care will need to be revised for Precision Medicine. Referencing the three dimensions of Universal Health Coverage (UHC) of who is covered, which services are covered and proportion of costs covered, he highlighted that Precision Medicine implementation will be a challenge when measured with UHC considerations. Provider and patient adoption and regulatory approval of and reimbursement for precision medicine requires a robust evidentiary framework for evaluation of its effect on outcomes which is currently lacking for many use cases of applied Precision Medicine. This important evidence generation for cost-effectiveness and outcomes research should be integrated early as more Precision Medicine initiatives are created and scaled. Participants also shared that incentives from payors are important to increase adoption of Precision Medicine by medical providers.

Public-private partnership for adoption of Precision Medicine

Participants shared infrastructure barriers to adoption of Precision Medicine such as lack of necessary laboratory equipment and trained experts which means many countries rely on overseas processing of samples. Addressing these foundations for Precision Medicine requires a clear understanding of the value-add of these developments, the political will for the necessary long-term investments and a framework for collaboration with the private sector. The complexities of financing access to genetic testing described above may benefit from a public-private partnership to finance not just access to genetic testing but laying the foundations to invest in local infrastructure for genomics. Public and private sectors should also share best practices for implementing Precision Medicine. One example shared in the Forum was learning from industry best practices in data security.

Ensuring equity in Precision Medicine

A whole-of-society approach can unlock the true value of precision medicine for our region's health systems to allow health systems to deliver the right interventions, for the right people, at the right time, in the right way and at the right cost. However, it is important that the advance of Precision Medicine does not leave those people and communities who need it most behind. Equity emerged as an important theme raised by the participants who acknowledged that currently, genetic testing is mostly available through out-of-pocket payments. Hence, increasing access to recommended genetic tests for all income levels should be a priority. Another important factor to promote equity is increasing the knowledge and understanding among the public about genetic testing; consumer education should be available to citizens from all walks of society to understand more about genetic testing to make informed decisions about their health. Participants also emphasized the importance of countries and health sector leaders in Asia to collaborate with one another to share learnings and best practices as they are all at different stages in their economic development and their national Precision Medicine journeys.

DIGITAL HEALTH

Digital health is the field of knowledge and practice associated with the development and use of digital technologies to improve health[6]. There was a clear acknowledgement from the participants that the digital health revolution is upon us, and that South East Asia needs to adapt to this transformation and further harness it to combat rising healthcare costs and an ageing population.

The participants discussed the challenges in this space. For larger countries, inadequate digital infrastructure limits interoperability and outreach of digital health innovations. Funding for digital health infrastructure, innovation and implementation is also difficult to acquire. Within South East Asia, many countries also lack clear regulatory frameworks and ownership of the field, and participants felt the developments and plans have not been adequately prioritised – resulting in safety and cybersecurity concerns when digital health technology and applications are progressively implemented. To tackle these challenges and build-up the regional digital health ecosystem, the Forum participants discussed three main strategies:

Health systems in Asia need to prepare for the digital health revolution

There was consensus that more work needs to be done to lay the foundations for the development of national and regional digital health ecosystems. Such preparation is vital to ensure countries can adapt to continually evolving innovations and technology. However, there was also an acknowledgement that such capacity was unequally distributed across the region, with larger countries finding it more challenging to address digital inequities.

The Forum agreed that firstly, there is a need for countries to integrate and standardise databases. This will allow for electronic medical records, surveillance, and human resource data to be analysed to identify health gaps, and spur innovation to meet population health needs. An important starting point to achieving a unified database begins with identifying unique national patient identifiers that can allow data to be synchronised across multiple platforms.

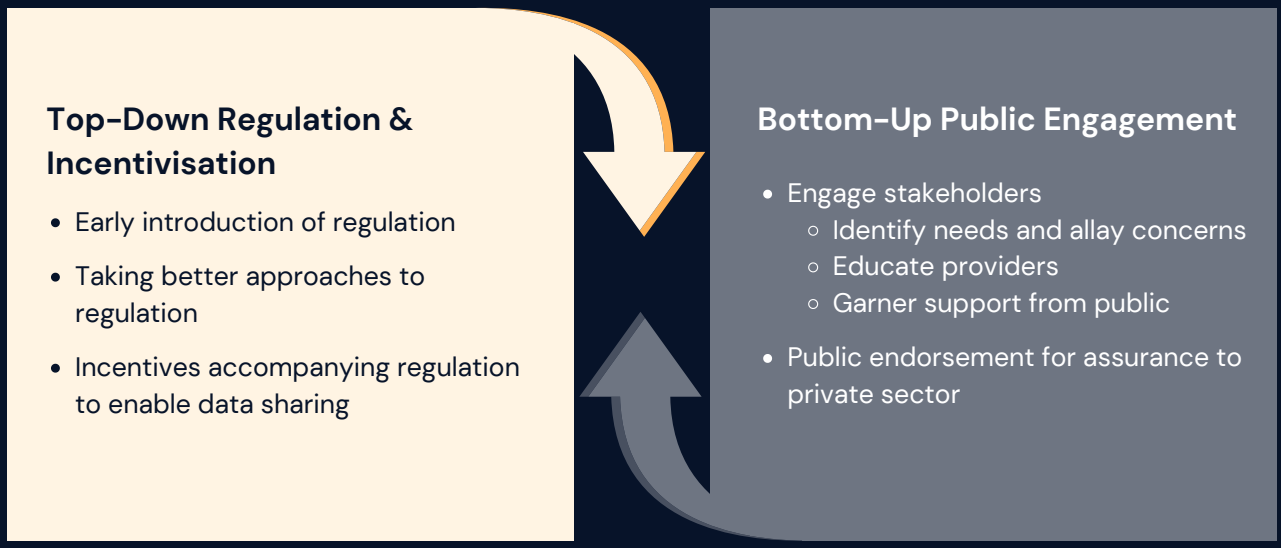
Secondly, the Forum agreed that we need to build capacity – especially in rural and remote areas. The set-up of digital infrastructure will better enable equitable access to electricity, internet, and internet-enabled devices. Building digital health literacy amongst the public and providers will allow smooth integration of digital health tools into healthcare. These investments are vital to closing inequities in healthcare access and ensuring successful adoption of digital health innovations across the region.

Thirdly, the health sector will have to develop strong change management processes that support integration of digital health innovations into care models and proper care process redesign. This must start with having clear principles for introducing digital health into our ecosystems, and care model redesign to focus on achieving outcomes of safety, value, accessibility, integration, and interoperability

[6] World Health Organization. Global strategy on digital health 2020-2025. (2021).

of data sources. This process of continuous design & redesign of care models will ensure we can swiftly adapt to evolving technology.

Digital health strategy requires top-down & bottom-up approaches



Once the foundational work has been done, the implementation of a digital health strategy requires a top-down & bottom-up approach that shows value to all stakeholders involved – including practitioners, patients, and the public and private sectors. The Forum agreed that early introduction of top-down regulation of both healthcare and industry remains vital to enhancing innovation through a shared understanding between government and innovators, prevent healthcare silos from forming, and improve trust with patients and stakeholders. Trust can be built via a top-down approach of investing into cybersecurity, having appropriate data stewardship, strong governance & privacy policies, and robust processes for verifying product safety.

Governments in the South East Asian region should work toward adopting a lifecycle approach to regulation. Such an approach works with industry from pre-market development, to procurement, to implementation and monitoring – an end-to-end approach can better harmonise regulation and industry efforts. As digital health innovation might introduce many new elements to the healthcare ecosystem, the Forum also identified accelerated regulatory sandboxes as another useful strategy in the regulators' toolbox. They can create a safe environment for innovators to experiment with digital health development and innovation, and can produce useful lessons to inform regulators on potholes and pitfalls of the technology and processes. Collectively these can provide regulators with insights on which aspects require tighter regulation and oversight. They also provide assurance of quality and 'pre-approval' of providers from the perspective of the consumers, improving public acceptance and implementation uptake.

There was also strong consensus that regulation should be accompanied by incentives. Incentives could be deployed on two fronts. Firstly to encourage widespread public adoption of digital health products. Secondly to encourage digital health innovation, attract investors, and encourage data sharing – which can be fundamental to creating a well-integrated digital health ecosystem.

The bottom-up approach involves engaging stakeholders. The Forum participants agreed on the importance of engaging various stakeholders within the healthcare ecosystem to assess the needs and concerns of the public, industry and clinicians. Providers should understand and be able to articulate the benefits and cost-effectiveness of digital innovation in improving population health. They should be well-versed on the value of the data they collect in supporting population health planning – be able to see and communicate its importance, which will improve data collection compliance. The public should also be shown the benefit of digital health innovations in improving care provision and be reassured of patient and data safety – this way they can be empowered to use these products and personalised insights to improve their own health. Public endorsement of digital innovations can also provide assurance to companies entering the market and allow for seamless implementation.

Co-operation across the South East Asian region is important

Throughout the session, the necessity for regional co-operation was emphasised as crucial for the overall improvement of the region. The Forum participants saw the benefit in permitting safe, responsible, seamless and convenient data sharing across the South East Asian region. Sharing anonymised patient datasets and safety data could make it easier for regulatory authorities to cooperate and make data-informed and shared decisions.

While the Forum acknowledged that countries had different regulatory needs, participants agreed that greater knowledge sharing at conferences and regional platforms can help countries adopt innovative regulatory strategies and avoid duplicate efforts in designing regulation processes. Harmonising regulations across South East Asia could also increase the willingness of corporations to introduce their innovations to the region. Participants even suggested that the region's countries could collaborate on cross-country regulatory sandboxes for new digital health technology.

There should also be a deliberate effort made to build partnerships across international borders. Public-private partnerships can support digital health efforts by rolling-out strategies, collecting data, and monitoring population health. Cross-border collaboration can also lead to cross pollination of ideas, sharing of best practices, the acceleration of innovation and the enhanced acceptance of new technologies. Unified industry engagements with the South East Asian region's regulatory bodies can also help achieve economies of scale and competitive advantage as a region when introducing digital health products into their markets.

To promote co-operation across South East Asia, participants suggested developing a digital health organisation that could champion innovation across the region. Such an organisation could design processes for data sharing, set-up conferences and committees for knowledge exchange, and even facilitate secondment of staff between countries. By presenting South East Asia as a unified body at the forefront of the digital health revolution, it can gain attention from private corporations and international bodies, foster trust, and ignite and sustain progress for digital health developments in the region.

In conclusion, these three strategies can help the South East Asian region progress its digital health agenda. The Forum acknowledged that the strategies are not one-size-fits-all, and countries will need to identify areas in which they face greater or more pertinent deficits first and resolve them one at a time. The digital health revolution requires a whole system change, involving all stakeholders, and countries across the region working together to build on one another's strengths.

BIG DATA ANALYTICS, AI AND DATA SHARING

Technological advances have allowed us to collect and analyse increasing amounts of health data, such as demographic, medical, consumer-generated, financial, environmental and research data. Participants concurred that the big data revolution is here and now. By marrying the right datasets with each other and coupling them with AI and analytics, multiplicative insights about population health can be unlocked. The Forum agreed that big data is not about the number of data sources or the size of the dataset but rather it is about the utility and the richness of insights that can be generated. While progress has been made to convert unstructured data to structured data in healthcare, there are still many technological, political, regulatory and consumer challenges that lay ahead in the health data realm.

Big data analytics, AI and data sharing have started to positively transform healthcare

Participants agreed that the benefits of big data integration and analytics accrue at both the micro and macro levels. At the individual level, data sharing can enhance the patient journey and enable continuity of care. At the organisational level, the use of big data and AI can reduce inefficiencies and save costs. At the societal level, big data analytics can help governments achieve population health goals and develop policy in the right direction.

Success stories of the use of big data in healthcare in South East Asia were shared to foster cross-pollination of ideas and cross-border learning. Many countries in the region are focusing on developing their electronic health record systems. For example, Indonesia passed a regulation[7] mandating all healthcare facilities to transit from paper records to electronic records by December 2023. In Brunei, health records are fully electronic and integrated across government health facilities in the Bru-HIMS[8] system, and the government has future plans to implement Bru-HIMS in private healthcare facilities so that 'one patient' has 'one record'. In Singapore, the Ministry of Health is on a similar journey to integrate electronic medical records across public and private healthcare facilities. Singapore's HealthHub[9] now provides Singaporeans with one-stop access to their personal medical records. One participant demonstrated the use of HealthHub on his personal mobile phone and shared that this innovation is able to bring the benefit and value of data sharing and integration directly back to the patient.

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[7] Pandamsari AP. Indonesia's journey towards electronic medical records. Healthcare Asia Magazine [Internet]. 2022 Dec [cited 2023 Aug 22]; Available from: https://healthcareasiamagazine.com/exclusive/indonesias-journey-towards-electronic-medical-records

[8] Ministry of Health Brunei Darussalam. Bru-HIMS [Internet]. [cited 2023 Aug 22]. Available from: https://www.moh.gov.bn/SitePages/Bru-HIMS.aspx

[9] Ministry of Health Singapore. Health Hub [Internet]. [cited 2023 Aug 22]. Available from: https://www.healthhub.sg/

Apart from electronic health records, many participants shared that the COVID-19 pandemic provided countries with a burning platform to innovate with data for epidemiological surveillance and national crisis preparedness. In Malaysia, health data was pooled and aggregated from the Crisis Preparedness and Response Centre (CPRC), Makmal Kesihatan Awam Kebangsaan (MKAK, or the National Public Health Laboratory), My Sejahtera (contact tracing app) and other data contributors to develop a bird's eye view of the COVID-19 resilience in each of its states. This development helped inform policy makers with decision-making on resource allocation and national-level strategies. A participant shared that Taiwan's policymakers were able to swiftly identify and allocate resources, such as COVID-19 masks and oxygen cylinders, to areas in need due to the existing established databases such as the National Health Insurance MediCloud[10] system.

Outside Asia, there are many well-established use cases of big data, analytics and integration for improving health and research outcomes. Invited expert David Ford highlighted the established trusted research environments in the UK and shared on the example of the SAIL[11] (Secure Anonymised Information Linkage) databank in Wales – recognised as one of the broadest and best-characterised population databases in the world – which provides the data fueling population health research to improve health, wellbeing and public services. In tandem, the SeRP[12] (Secure eResearch Platform) is a unified technology platform that was created to enable safe data sharing, linkage and analysis of SAIL data from anywhere in the world.

The Forum acknowledged that the data revolution in healthcare is indeed underway, and discussed the many positive real-world examples of unlocking novel insights from health data that can provide meaningful lessons and encourage others in the region. Collectively, participants concurred that they need to make sustained and deliberate efforts to invest in big data and analytics to continue moving in the right direction together.

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[10] National Health Insurance Administration M of H and W. NHI MediCloud System [Internet]. 2022 [cited 2023 Aug 22]. Available from: https://eng.nhi.gov.tw/en/cp-43-28d42-23-2.html

[11] SAIL. SAIL Databank [Internet]. 2021 [cited 2023 Aug 22]. Available from: https://saildatabank.com/

[12] Swansea University. Who We Are, SeRP [Internet]. 2020 [cited 2023 Aug 22]. Available from: https://serp.ac.uk/about-serp/

Health systems need to build capacity and prepare for the big data revolution now to reap the benefits

While big data and analytics can transform healthcare for the better, there was agreement that inadequate preparation and investment in big data could widen health inequities, exacerbate organisational inefficiencies and add to the risk of patient harm. To be able to reap the benefits and minimise the pitfalls of big data in healthcare, the region needs to better prepare for the data transformation and build technological, political, regulatory and social capacity.

Countries in the region are at different stages of digital health developments. There are many technological barriers that need to be addressed to safeguard equity. Investments to build technical capacity and interoperability can promote national and cross-border data exchange. Common data standards for data entry and usability should be established to uphold data quality.

"We often cite data and technical interoperability as the biggest challenge, but institutional and human interoperability is an equally important challenge."

In addition to technological capacity, participants shared that governments need to foster political will and a culture of change management so that important stakeholders communicate with each other and are collectively invested in building data capabilities. Ideally, an independent national agency or commission should be established to provide strong leadership, develop a robust national framework or strategy, forge multi-stakeholder and public-private partnerships, and expand sources of funding and investments. Regionally, the frame needs to shift from viewing healthcare as a cost to an investment.

On the regulatory front, several participants highlighted that data is not shared due to a lack of regulatory processes and legal clarity. Therefore establishing frameworks with clear rules and guidelines that effectively encourage data sharing while adequately protect data privacy and security will need to be established.

Finally, participants strongly agreed that keeping the user or patient at the centre of everything is crucial. For data systems to succeed and create public health benefits, it is important to build trust with patients and the public, use incentives and gamification to engage users, as well as communicate the value to stakeholders and ensure the benefits accrue back to the patients.

Participants identified that these technological, political, regulatory and consumer aspects of big data are important to keep in mind and invest in. They acknowledged that while this may not be easy, it is important to start small and identify early wins. The participants collectively agreed that the sector needs to take a pragmatic approach to developments: instead of waiting till systems are perfect, the sector should start now and learn along the way. As long as data systems are good enough to meet end goals, progress would be a step in the right direction.

The future of big data integration, analytics and AI can innovatively transform population health and Precision Public Health

The Forum agreed that the region should effectively prepare for the big data revolution in healthcare now and build its technological, political, regulatory and social capabilities to build towards a more transformative future of health and healthcare. Participants engaged in a thought-provoking discussion about untapped sources of big data and the exciting insights that could be unlocked in the future.

Many participants concurred that a sole focus on health data and medical records is not good enough and creates blind spots or biases. It is important to collect data outside the healthcare system, such as data on social determinants of health that marries epidemiological data with geographical data, or OneHealth data that combines human and environmental data. Another opportune example is coupling data from wearables with clinical data to build preventative health measures.

Interestingly, several participants commented that existing data systems are still used in more traditional and conventional ways and instead, more advanced analytics could be applied on existing data that could yield new insights. For example, a participant suggested that the Indonesian government could use data from Gojek – a multi-service app that provides services such as food delivery, transport etc – to analyse eating patterns and propose lifestyle modification recommendations based on the regional data. There was also a lot of interest in exploring social media data and linking Internet of Things data with medical records. Lastly, a few participants brought up examples of untapped sources of data that are not obvious, such as the periodic renewal of driving licenses in Thailand as an opportunity to analyse for decline in cognition, eyesight and reflexes.

These exciting discussions of what the future of Big Data Analytics, AI and Data Sharing may hold helped to renew the regional commitment to big data investments in health and healthcare. Participants reiterated that laying a strong foundation in big data will have benefits that are cross-cutting and accrue across digital health, precision medicine, population health and Precision Public Health. The eventual goal is to help everyone receive quality, accessible and timely healthcare services as well as optimise everyone's health. All participants unanimously concurred that big data analytics, AI and data sharing is an important means and enabler to this end.

CONCLUSION

The Leadership Forum provided a useful platform to discuss successes, lessons, and challenges for the development and future of Precision Public Health in the region. A few key themes emerged which permeated through all aspects of Precision Public Health.

Firstly, there was a collective realisation and acknowledgement that regulatory frameworks needed to be renewed and refreshed in each country to keep up with the pace of new innovations coming onto the healthcare scene. These regulations need to strike the delicate balance between safeguarding the health and data of the population, but yet not stifling innovation in the field. On the other hand, physical infrastructure and digital gaps still exist in some populations. Necessary elements such as stable electricity supply and internet access are still a challenge in some rural parts of South East Asia, which calls for solutions to improve access and close the gaps in these geographical areas and population groups.

Secondly, discussions highlighted that with all these digital innovations and data collection, cybersecurity and digital warfare is a real concern. The Forum established that data leaks, hacks, and privacy breaches may be inevitable and dangerous. Hence, governments, academia and organisations need to build and maintain trust with the population to ride through such challenges together. Policy makers and creators of Precision Public Health solutions need to strike the delicate balance between easy accessibility of information and the security of the system as a whole.

Last but certainly not the least, the Forum established that regional cooperation in South East Asia is extremely important, especially regarding cross-border issues such as infectious diseases and pandemic response. There is a need to customise and contextualise our digital solutions to the region instead of importing solutions wholesale from international firms and developers. Participants also acknowledged that interoperability of systems and data is a challenge to be overcome both within countries, and between countries in the region. To tackle these issues at the regional level, we will need to identify the leads and champions in each country and have a clear call to action.

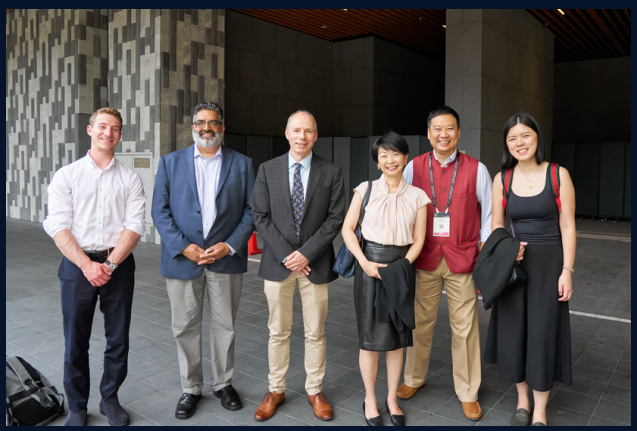
EVENT SNAPSHOTS

EVENT SNAPSHOTS







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