Asian Bioethics Network Meeting Report

Emerging Ethical Challenges of Healthcare Digitalisation

Virtual Meeting on 4 September 2023

BIOETHICS ADVISORY COMMITTEE &
NATIONAL MEDICAL ETHICS COMMITTEE

Contents

EXECUTIVE SUMMARY

1. The second Asian Bioethics Network (ABN) virtual meeting, themed 'Emerging Ethical Challenges of Healthcare Digitalisation' was convened on 4 September 2023 via Zoom. The main objectives were to (i) exchange knowledge and experiences; (ii) monitor trends in the region and be kept abreast of the latest developments in bioethics; and (iii) build and strengthen regional networks/partnerships. The meeting was attended by 48 delegates from nine countries.

2. The meeting discussed the importance of healthcare digitalisation in ensuring the efficiency and quality of care, and to improve care coordination. Some of the ethical challenges arising from healthcare digitalisation shared by ABN member states include considerations surrounding data privacy and security, equity, and explainability of Artificial Intelligence (AI), and transparency. The meeting agreed that these ethical challenges have underscored the need for a collaborative and cautious approach as we navigate the evolving field of healthcare digitalisation, and highlighted that it would be our collective responsibility to harness the benefits of digitalisation to enhance biomedical research and healthcare outcomes. The meeting also emphasised the importance of putting in place ethics guidelines to safeguard the well-being of research participants and patients and ensure maximal societal benefits could be achieved.

3. In the presentations by the two expert speakers, they discussed the essential substantive ethical principles and *procedural values* that need to be upheld when AI is applied. While we continually assess the outcomes from the use of AI, any medical interventions made using AI such as personalised Large Language Models (LLMs) should be justified through the application of ethical principles such as *justice, beneficence*, and *autonomy*. *Trust and validation* through rigorous testing would be important to ensure the reliability and effectiveness of clinical AI tools. While *procedural values* could guide AI decision making, it would be the clinician's role to judge the use of AI suggestions in making informed decisions about patient care.

4. Some of the suggestions to collaborate with other member states include (i) establishing multi-country collaborative research; (ii) maintaining a system that allows exchange and cooperation among member states while sharing information on discussions concerning related laws and systems; (iii) participating in forums organised by other member states for sharing of knowledge and experiences in bioethics; and (iv) arranging consultation meetings, networking, sharing reports on good practices, and organising observation/learning visits.

5. Most ABN members could contribute by sharing and exchanging knowledge, information, experiences and resources; some could support by developing and conducting training workshops and mentorship programmes. The ABN digital repository (which is currently under development) will serve as an information sharing platform for bioethics resources/programs, and facilitate the exchange of knowledge and experiences amongst member states.

6. Singapore will organise an ABN Bioethics Conference and Workshop in 2025 which will focus on prominent themes such as cybernetics, ethics of nanobiotechnology, and ethics in traditional and alternative medicine, and provide opportunities for member states to learn about other countries' bioethics initiatives and developments, including emerging ethical topics/issues arising from human biomedical research that may impact clinical treatment/management. The conference will also facilitate regional capacity and enhance public education efforts amongst ABN member states.

ASIAN BIOETHICS NETWORK MEETING REPORT

Second Asian Bioethics Network (ABN) Meeting on 4 September 2023 (Monday), 10:00am – 1:00pm (SGT), via Zoom

I. Overview

The second ABN meeting, themed 'Emerging Ethical Challenges of Healthcare Digitalisation', was convened via Zoom on 4 September 2023. The meeting was jointly organised by Singapore's Bioethics Advisory Committee (BAC) and the National Medical Ethics Committee (NMEC), and supported by the Biomedical Ethics Coordinating Office (BECO), Ministry of Health (MOH), Singapore. ABN currently comprises 15 members: Australia, Bhutan, Brunei, China, India, Japan, Korea, Myanmar, Nepal, New Zealand, the Philippines, Singapore, Sri Lanka, Thailand and Vietnam. Bi-annual meetings are held among member states to share about the latest developments in bioethics in their countries and to exchange and share knowledge and experiences.

II. Objectives

2 The second ABN meeting on 4 Sep 2023 serves the following objectives:

i. Exchange knowledge and experiences between ABN member states through the meeting discussions;
ii. Monitor trends in the region and be kept abreast of the latest developments in bioethics, particularly in the area of healthcare digitalisation; and
iii. Build and strengthen regional networks/partnerships

3 The meeting was attended by a total of 48 participants from nine countries (Australia, Brunei, Korea, Myanmar, Nepal, New Zealand, the Philippines, Singapore, and Thailand). Attendees included the Chairs of national ethics/bioethics committees or equivalent advisory groups, that provide guidance to the government on health ethics issues; and senior officers in the health ministry or other government agency responsible for the development, implementation and/or evaluation of health ethics policies, guidelines and programmes. The list of meeting attendees is appended in **Annex A**.

III. Programme

8 The programme comprises of an introductory presentation on the ABN, sharing sessions by ABN member states on their country's state of healthcare digitalisation and emerging technologies, two expert presentations titled 'Ethics of AI/Large Language Models (LLM) including ChatGPT' and 'Emerging Ethical Challenges of Healthcare Digitalisation' respectively, a Question and Answer session, a summary of the ABN Needs Assessment Survey, and upcoming plans for the ABN. The meeting programme is appended in **Annex A.**

a. Opening remarks

Emeritus Professor Lee Eng Hin, Chair, BAC, Singapore;
Emeritus Professor, Department of Orthopaedic Surgery, National University of Singapore (NUS); and Emeritus Consultant, Division of Paediatrics Orthopaedics, National University Hospital (NUH)

9 Emeritus Professor Lee welcomed all nine members of the ABN and other participants to the virtual meeting. He shared on the establishment of the ABN, its objectives, progress and development in the past two years and acknowledged that while it was a relatively young network, it had expanded considerably since 2021. This indicated strong support and interest from regional counterparts in exchanging bioethics experiences and furthering capabilities.

10 He commented that the theme of the meeting on 'Emerging Ethical Challenges of Healthcare Digitalisation' was timely given the increasing use of novel and disruptive technologies in research and healthcare. He cited the example on the use of big data and artificial intelligence (AI) in research and healthcare which has brought notable benefits but also ethical issues that must be addressed. He said that the aim of the meeting was to recognise these ethical issues and to collectively discuss potential solutions to guide the ethical use of emerging technologies in the region. This would ensure that the transformative potential of these technologies is harnessed responsibly and ethically, to improve research and healthcare outcomes.

b. Introduction

Mr Gregory Vijayendran, Member, BAC, Singapore; and
Senior Counsel and Partner, Rajah and Tann Singapore LLP

11 Mr Vijayendran gave an introductory presentation on the ABN. He shared the background of the ABN and welcomed new members namely: Brunei, China, India, South Korea, the Philippines, and Thailand. He elaborated on the ABN's three-year workplan and initiatives (2023-2025) and updated on the progress and development of the ABN, in particular, the expansion of the ABN's remit to include clinical ethics. He informed that the new ABN webpage and digital repository was in development and would be completed in 2024. He also shared on the upcoming ABN Bioethics Conference and Workshop programmes to be held in Singapore in 2025. The proposed areas of focus and topics for discussion include (i) cybernetics; (ii) traditional and alternative medicine; and (iii) ethics of nanobiotechnology. The conference will include a discussion on pertinent ethical issues in the region, sharing from local and international experts, and sharing by ABN members on the latest trends and developments of biomedical ethics. Mr Vijayendran invited the ABN members to participate in the ABN Bioethics Conference in Oct 2025.

c. Presentation 1: Ethics of AI/Large Language Models (LLM) incl. ChatGPT

Professor Julian Savulescu, Member, NMEC, Singapore;
Director, Centre for Biomedical Ethics (CBmE), and
Chen Su Lan Centennial Professor in Medical Ethics, NUS

<u>AI in medicine</u>

12 Professor Savulescu's presentation covered the ethics of AI in the field of medicine and the controversies faced in the use of personalised LLMs. He highlighted that any interventions made using AI should be justified through the application of the following three ethical principles: *justice*, *beneficence*, and *autonomy.* It would be important to continually assess the outcomes from the use of AI and this could be done via randomised controlled trials, ongoing monitoring, and inspection.

<u>Ascribing responsibility</u>

13 Professor Savulescu shared in his presentation that personalised LLMs could be created from baseline models by feeding ChatGPT specific data. These personalised LLMs proved capable of writing a research paper that was enlightening, applicable, and persuasive that even experts believed the paper was worthy of publication. While this created an opportunity for co-creation and increased productivity, it also raised concerns on whether this would be considered a disservice on a reasonable basis. When assigning responsibility for the use of AI, there could be a tendency for people to attribute more responsibility on negative consequences as compared to attributing approval/commendation when benefits were gained. Hence, this would lead to ethical and policy implications.

Advanced uses of personalised LLMs

14 Professor Savulescu shared three possible uses of personalised LLMs: (i) consent taking; (ii) making medical; and (iii) moral decisions. He explained the following examples of applications:

(a) Consent GPT is a chatbot which exhibits precision and has been proven to be useful in trials taking procedural consent from patients. A patient's data and medical history can be subsequently used to create a personalised model.

(b) An ethical avatar is a soft ethical program model which is trained based upon a patient's beliefs and values. It can help to make future medical decisions when the patient becomes incapacitated.

(c) A more advanced version is the moral guru which has moral sentience and can engage patients in real-time conversations about moral decisions on treatment.

LLMs to replace doctors in offering treatment options?

15 Professor Savulescu also covered the four models of doctor-patient relationships, which were in use, and might be mimicked by LLMs: *paternalistic*, *informative*, *interpretative*, and *deliberative*. Patients would have the liberty to choose the communication style and interact with it to understand more about different treatment options. A disadvantage is that it might be confusing to patients in deciding the right treatment option due to exposure to different treatment options and multiple viewpoints.

d. Session 1: Presentations by ABN Member States

Facilitator: Associate Professor Lai Poh-San, Member, BAC, Singapore;
Associate Professor, Department of Pediatrics; and
Deputy Chairman, NUS Institutional Biosafety Committee, NUS

16 ABN member states were invited to share their country's state of healthcare digitalisation and emerging technologies, benefits, and the ethical challenges faced and how they addressed or planned to address them. They were also invited to share on other major achievements or ongoing/upcoming bioethics initiatives in their country. The first sharing session was facilitated by Associate Prof Lai Poh-San, BAC member.

(i) Australia

Ms Cathy Schapper, Acting Director, Ethics and Integrity section,
National Health and Medical Research Council (NHMRC), Australia

17 The presentation provided an overview of Australia's emerging technologies landscape which is governed by inter- federal, -state and -territory regulations, national ethics guidelines and policies. In Australia, research and use of most emerging technologies are not subject to national or jurisdictional laws, except for embryo research and genomics. A key milestone decision in emerging technologies was to allow the conduct of mitochondrial donation research in 2023, which could possibly allow mitochondrial donation to be accessible to Australians in future.

18 Key ethical challenges in Australia include educating the public on emerging technologies and their impacts, balancing potential benefits and risks of research into/use of emerging technologies, accurately assessing the risks of harm associated with research into/use of emerging technologies and determining the degree to which these technologies should be subject to regulations/guidelines/laws and according of responsibility to develop and enforce oversight and governance of these technologies. To address the challenges, NHMRC developed and issued guidance materials for Human Research Ethics Review Committees (HRECs) for research involving emerging technologies and educational materials to inform the public on the development, assessment, regulation and integration of emerging technologies into healthcare and other fields. Ongoing bioethics initiatives in Australia include revision of the National Statement on Ethical Conduct in Human Research (first issued in 2007 and last updated in 2023, with further update in 2024) and guidelines on cell, tissue and organ donation and transplantation. Initiatives to address the infrastructure and systems for the review and conduct of clinical trial research, including the reform and expansion of HRECs were also carried out.

(ii) **South Korea**

Associate Professor IIhak Lee, Associate Professor in Medical Ethics,
Department of Medical Humanities and Social Sciences, College of Medicine,
Yonsei University, Korea

19 The presentation shared South Korea's perspective on healthcare digitalisation which mainly involved the application of intelligence and communication technology in healthcare, with consideration of both system infrastructure and industry perspectives. Key areas of digitalisation include telemedicine, wellness care, digital registries, and AI frameworks. Major national initiatives include the National Digital Healthcare, Smart Hospital and Precision Medicine Research and Development (R&D) programmes.

20 South Korea faced ethical challenges such as gaining public trust, protection of privacy and confidentiality, return of benefit and non-discrimination, harmonisation of healthcare sectors, and research ethics oversight specifically for big data and digital health. To address these challenges, the following guidelines were issued: Healthcare Information Guideline Ministry of Health and Welfare [MOHW], Acts of Information/Bioethics Act, Ethics Guideline on Healthcare AI [MOHW], Human-Centered 'AI Ethical Standards' Ministry of Science and ICT [MSTI], and Guideline on AI [FDA]. The Ethical, Legal, and Social Implications (ELSI) Study Committee in National Bio Big Data Initiative was also established. Ongoing/ upcoming bioethics initiatives included ELSI programme on regenerative medicine, bioethics discourse on "physician aids in dying", and on the ethics of aging and elderly care.

(iii) **Myanmar**

Professor Zaw Than Htun, Director-General, Department of Medical Research (DMR); and Vice-Chairperson, Institutional Review Board (IRB), Myanmar

21 The presentation focused on the use of AI in medical practice in Myanmar for diagnostic purposes and in public health. One example was the whole genome sequencing of Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) during the COVID-19 pandemic, where AI and deep machine learning techniques were utilised to provide insights on the various mutations and detect disease-causing variants of SARS-CoV2. Another example was the use of AI to perform drug resistant molecular marker analysis of bacteria and malaria parasites (*Plasmodium falciparum* and *Plasmodium vivax)*. The use of AI had been expanded to include areas such as Radiology (e.g., to differentiate tuberculosis versus lung cancer imaging) and Histopathology (e.g., breast carcinoma screening). As the use of AI is limited in the Myanmar healthcare landscape, Myanmar would be looking into more avenues where AI could be used.

e. Session 2: Presentations by ABN Member States

Facilitator: Professor Chin Jing Jih, Member, BAC, Singapore; and Chairman, Medical Board, Tan Tock Seng Hospital

22 The second sharing session was facilitated by Professor Chin Jing Jih, BAC member.

(iv) **Nepal**

Ms Namita Ghimire, Chief of Ethical Review of the Monitoring and Evaluation Section, Nepal Health Research Council (NHRC), Nepal

23 The presentation introduced the bioethics landscape in Nepal, including the role of the NHRC. NHRC is the main body managing health research through its ethical review board (ERB) and 57 Institutional Review Committees (IRCs). One of its significant achievements was the empowerment of IRCs to give clearance for research proposals, which led to an increase in the quality and quantity of approved projects. NHRC also published its Ethical Guidelines for Health Research in 2022. The presentation also shared some of the challenges faced by NHRC and IRCs, which included the lack of a standardised clearance process, subpar manpower and facilities, budget constraints and the need to improve partnerships with experts. Nepal aims to address these challenges through conducting periodic courses for the academic fraternity and introducing bioethics courses in tertiary institutions. Besides conducting conferences on responsible conduct on research (RCR), Nepal is also an avid participant in the Forum for Ethical Review Committees in the Asian and Western Pacific Region (FERCAP) events since 2019 and will be hosting the FERCAP conference in 2024.

(v) **New Zealand**

Professor John McMillan, Chair, National Ethics Advisory Committee (NEAC), New Zealand; and Professor, Bioethics Centre, University of Otago, New Zealand; and Mr Shannon Hanrahan, Deputy Chair, NEAC, New Zealand

24 The presentation provided an overview of the NEAC. NEAC is expanding its remit to include clinical ethics and advises New Zealand's MOH on ethical issues related to health and disability research and services and puts in place ethical benchmarks. The presentation also shared about NEAC's emphasis on fair and equal results for individuals and their extended family when embracing new technologies such as precision health and AI. One of the key initiatives was the Māori Data Sovereignty Network, which was established in 2015. NEAC

recognised that Māori data is contingent on the rights articulated in the Treaty of Waitangi and the UN's Declaration on the rights of Indigenous Peoples. Currently, NEAC is reviewing the country's research ethics guidelines and plans to incorporate principles from 'Te Ara Tika Guidelines for Maori Research Ethics' (a framework for addressing Māori ethical issues) and Te Ao Māori (relationships between nature and people). Te Whatu Ora Health New Zealand is a public health agency established in 2022 to co-manage the provision of healthcare services. The Pae Ora (Healthy Futures) Act 2022 established the national public health service (Health New Zealand) and Māori Health Authority (MHA).

(vi) **The Philippines**

Attorney Charade B. Mercado-Grande, Assistant Secretary of Health, Health Facility and Patient Support Team, Department of Health; and Chairperson of the Bioethics Advisory Board, Philippines

25 The presentation shared some of the ongoing bioethics initiatives in the Philippines, which includes the reviewing of its 'Rules and Regulations Governing the Accreditation of Health Facilities Engaging in Human Stem Cell and Cell-Based or Cellular Therapies in the Philippines', and informed that the recommendations (following the public consultation) would be ready by September 2023. The presentation also updated that a fourth Technical Work Group Meeting was held on 9 August 2023, which involved the University of Manila, National Institutes of Health, and various Ethics Review Committees (ERCs), was held in conjunction with the forum for ERC in Western Pacific and Asia. The meeting featured a training seminar on research ethics which contributes to capacity development where participants discussed the prominent challenges in health research through detailed examination of cases.

(vii) **Singapore**

Mr Charles Lim Aeng Cheng, Member, BAC & NMEC, Singapore; Principal Senior State Counsel, Legislation Division, Attorney-General's Chambers of Singapore (AGC); and Senior Fellow of the AGC-Legal Service Academy, Singapore

26 The presentation provided an overview on healthcare digitalisation in Singapore and the applications in its healthcare sector. These included the use of AI tools to assist in diagnosis, and the implementation of the National Electronic Health Records in 2011, which has served as a centralised repository of health data that is accessible to all healthcare providers. Singapore also engaged the population through the use of wearables and mobile apps such as HealthHub (access personal and family's medical records) and HealthierSG (preventive healthcare). Some of the challenges faced by Singapore as a result of healthcare digitalisation include ethical issues in data privacy and confidentiality of personal data, possible unethical use of genetic data, and medical negligence/malpractice from telemedicine. The Personal Data Protection Act 2012 provides a baseline standard of protection for personal data which will be complemented with the upcoming Health Information Bill that ensures safe and secure sharing of patient data.

27 The presentation also shared some of the initiatives in Singapore that help to address the ethical challenges of healthcare digitalisation, such as the Moratorium on genetic testing and insurance and guidelines that were issued to prevent discrimination based on genetic profiles in employment and the insurance sector. Telemedicine is regulated as a licensable healthcare service in Singapore. In regulating AI medical devices, Singapore has developed the AI in Healthcare Guidelines in 2021 to promote good practices. The BAC is also developing an advisory report to guide academics, researchers, and healthcare professionals on the ethical use of big data and AI applications in human biomedical research. In addition, the BAC collaborated with the National Library Board to establish a 'Bioethics Corner' at the National Library in 2022, to raise awareness and literacy on bioethics. BAC is also working with the Science Centre Singapore to develop a Bioethics Exhibition to raise public awareness of

emerging bioethical issues such as AI and human nuclear genome editing.

(viii) **Thailand**

Professor Prasit Palittapongarnpim, Department of Microbiology, Faculty of Science, Mahidol University, Thailand

28 The presentation covered the applications of genomic sequencing, such as the diagnosis of rare genetic diseases, and provided an overview of Genomics Thailand, which is part of the Ministry of Public Health's precision medicine implementation research program in Thailand between 2019-2023. Through sequencing the genomes of 50,000 people, Thailand seeks to uncover the factors that make one vulnerable to specific diseases. Some of the challenges of the programme include ethical issues on the possibility of identification of donors, privacy, data ownership, and withdrawal rights. The presentation also noted that new research data could render previous insignificant information significant, which in turn would require future follow-ups. A shortage of trained personnel and inadequate public awareness of the advantages and negative impacts also hampered the programme.

29 Some of the ways in which Thailand had addressed these challenges include the implementation of universal health coverage schemes and engagement with the insurance industry to reduce risk of discrimination, and seeking prior consent from donors who wish to be informed of significant findings from their genomes to address the issue of stigmatisation. Thailand also plans to obtain buy-in from the ethnic minority (5-10% of population), who may have different genetic profiles, for their genome sequencing programme.

f. Question and Answer Session

Moderator: Professor Kon Oi Lian, Deputy Chair, BAC, Singapore; and Adjunct Professor, Duke-NUS Medical School

Ethics of Scientific Conduct

30 Professor Kon commenced the session and said that as digital technology in healthcare progresses rapidly, we should anticipate the challenges emerging from the developments. Emeritus Professor Yongyuth from Thailand suggested that an area of interest for the network could be ethics of scientific publication, to which Professor McMillan from New Zealand agreed. Professor Kon proposed that the network could create and standardise a formal process to handle allegations of violations of the standard codes of scholarly conduct and ethical behaviour. Professor Savulescu from Singapore commented that Dr Brian Earp's articles are a good reference point for ethics in science. Dr Brian Earp is a Senior Research Fellow in the Uehiro Centre for Practical Ethics at the University of Oxford; Associate Director of the Yale-Hastings Program in Ethics and Health Policy at Yale University and The Hastings Center; and Associate Editor of the *Journal of Medical Ethics*.

Digital Repository

31 Professor McMillan was supportive of the planned digital repository and agreed on the importance of knowledge sharing. He also acknowledged that knowledge sharing would help member states in the drafting of guidelines pertaining to ethics.

Asian Bioethics Association

32 Professor Savulescu suggested that the current members could consider strengthening relations among member countries and develop into an Asian Bioethics Association instead of remaining as a network.

New Technologies and Public Awareness

33 Professor Kon commented that we should be judicious when adopting new technologies such as precision medicine. This is in view of commercial entities that are cashing in on this industry. Professor Palittapongarnpim from Thailand reiterated the need for well-informed doctors to reap the benefits of big data in healthcare and shared that the public could also be kept informed on the pros and cons of new technologies.

Significant Findings from Genomic Sequencing

34 With reference to Thailand's presentation, Emeritus Professor Lee from Singapore agreed that it would be important to follow up with patients on significant findings when they undertake genomic sequencing. Professor Palittapongarnpim said that Thailand's framework on reporting significant findings takes guidance from the US and UK frameworks. Professor Kon cautioned that the process of following up with patients would require extensive resources and could be stressful for the individuals and their families, to which Associate Professor Ngiam from Singapore concurred. Associate Professor Ngiam also described the process used in the National University Health System (NUHS) where fully processed genomic results would not be released to the patients unless requested for.

35 Prof Kon further commented that when implementing this follow-up process, the respective country would also need to continue supporting and sustaining the genomic sequencing project after its conclusion. Professor Savulescu raised three ethical principles which would be applicable when implementing the follow-up process – *respect for persons*, *beneficence*, and *distributive justice* (the last principle would not be applicable if huge amounts of resources were incurred).

g. Presentation 2: Emerging Ethical Challenges of Healthcare Digitalisation

Associate Professor Ngiam Kee Yuan, Member, BAC, Singapore;
Group Chief Technology Officer, NUHS; and
Senior Consultant, Division of Thyroid and Endocrine Surgery,
NUH and Alexandra Hospital

Ethics and Healthcare Digitalisation

36 Associate Professor Ngiam's presentation discussed the emerging ethical challenges of healthcare digitalisation, and the importance for doctors and patients to have the confidence that healthcare tools had undergone rigorous testing and validation before they were deployed in the industry. He also emphasised that regulatory requirements had contributed to the safety of AI tools used in healthcare, and the medical industry would rely on peer-reviewed evidence to adopt AI methods in practice. Therefore, trust and validation would be important to ensure the reliability and effectiveness of clinical AI tools.

AI vs Augmented Intelligence

37 Associate Professor Ngiam also shared that the medical community and patients would be concerned if medicine become automated without any touch of empathy, especially with the advent of AI tools. However, this was far from the truth as AI tools in medicine were used as augmented intelligence and not as AI. The difference between AI and augmented intelligence was that the former involved machines imitating intelligent human behaviour, while the latter was a means to effectively use information technology to enhance human intelligence rather than replace it. He also emphasised that healthcare workers' capability and quality of service would be enhanced with AI tools helping them with tasks and not necessarily making workers obsolete.

Building Ethics into AI through Addressing Data Bias

38 Associate Professor Ngiam drew attention to the growing concern of data bias as a result of the use of AI in medicine, and emphasised that data bias could potentially cause group harm arising from biases built into AI algorithms. He also explained the six principles in the ethics framework for AI decision making: professional integrity, justice, public benefit, procedural value, transparency (explainability), and accountability, and said that it would be the clinician's role to judge the use of AI suggestions in making informed decisions about patient care.

Self-learning AI Machines

39 Associate Professor Ngiam also shared on self-learning AI machines, a prospective AI tool in medicine, which could solve problems in an optimal way. It uses recursive self-improvement protocol in which it rewrites its own code when it can prove that the new code provides a better strategy. However, he cautioned that this could lead to potential harm but could be mitigated by restricting its continuous recursive self-improvement process. However, these technologies are currently far from being practical for healthcare use.

40 In summary, Associate Professor Ngiam said that clinicians and not AI tools would still be responsible for patient care. AI tools could assist healthcare workers to be more efficient at work and reduce the cost and turnaround time, but it would not replace medical professionals completely.

h. Sharing of the ABN Needs Assessment Survey Findings and Upcoming ABN Plans
Dr Voo Teck Chuan, Member, BAC & NMEC, Singapore; and
Research Assistant Professor, NUS CBmE

Objective of ABN survey

41 The survey was conducted among 13 member states[1] (excluding Singapore) in May 2023 to understand what the member state view as important factors and areas of need in contributing to their country's development in bioethics, and potential ways that they can contribute to the ABN initiatives. Nine (Australia, Brunei, India, Korea, Myanmar, Nepal, New Zealand, the Philippines, and Thailand) out of 13 member states participated in the survey. The survey questions aimed to understand the readiness in ethics development, ethics infrastructure and capabilities, areas of need, topic of interest and expectations of ABN, views on World Health Organisation (WHO) and Asia-Pacific National Ethics and Bioethics Committees (AP-NEC).

Survey Findings

a. Presence of national bioethics committee, clinical ethics committee, and institutional review boards (IRBs)

[1] 13 member states (Australia, Bhutan, Brunei, China, India, Myanmar, Nepal, New Zealand, the Philippines, South Korea, Sri Lanka, Thailand, Vietnam) were invited to participate in the survey.

42 All the nine member states who responded do not have clinical ethics committee, while majority (8 out of 9 member states) of them have IRBs and national bioethics committees in place.

b. Areas in bioethics development that may require ABN's assistance

43 Out of the nine member states who responded, seven member states would require assistance to provide training/develop training materials for ethics committees, and develop bioethics education programme; six member states would require assistance to establish clinical ethics committee and develop bioethics reports/publications; and three member states would require assistance to establish national bioethics committee.

44 ABN members also specified ways in which the ABN could address areas of need in bioethics development identified by member states, which include (i) promoting cross-cultural communication and understanding, through the development of training programs and resources that focus on cultural awareness and sensitivity; (ii) addressing the resource constraints through efforts to secure funding for bioethics education, research, and capacity building; and (iii) publishing bioethics related materials online for other member states to access.

c. Areas of interest and ethical issues

45 Almost all the respondents were either very interested or interested in ethical issues arising from human biomedical research (including those that may impact clinical treatment/management), and ethical issues arising from clinical practice.

d. Value of ABN

46 Almost all the respondents either strongly agreed or agreed that ABN would be valuable to members in the following ways: (i) provide access to useful information, resources, and materials on bioethics shared by other ABN members; (ii) provide opportunities to learn about bioethics-related initiatives, public education programmes, and experiences of other ABN members for possible adaptation in their country; and (iii) provide opportunities to learn and share experiences among ABN member states in addressing emerging bioethical issues or new challenges.

e. Areas of active development by ABN member states within the next two years

47 Some of the specific areas in bioethics that member states suggested for development include (i) networking, capacity building, and implementing ethics guidance for review of research involving emerging technologies; (ii) acquiring basic knowledge and understanding of technical terms through standardised learning modules with certification, benchmarking of regulatory procedures, and continuation of handholding exercises; (iii) capacity strengthening of research ethics, public health ethics and clinical ethics among IRB members, academia, researchers and other stakeholders concerned; (iv) developing and implementing public education programmes on bioethics, reorganising laws and systems related to bioethics, and improving healthcare in areas related to genetic information and assisted reproductive technology; and (v) promoting bioethics research, advocacy and public engagement.

f. Proposed ways of collaboration with other ABN member states

48 Some of the suggestions to collaborate with other member states include (i) establishing multi-country collaborative research; (ii) maintaining a system that allows

exchange and cooperation among member states while sharing information on discussions concerning related laws and systems; (iii) participating in forums organised by other member states for sharing of knowledge and experiences in bioethics; and (iv) arranging consultation meetings, networking, sharing reports on good practices, and organising observation/learning visits.

g. Challenges from engagement with AP-NEC in enhancing bioethics capability

49 Some of the challenges identified by member states include (i) difficulty in implementing and harmonising the practices and governance frameworks across different countries in the region given that not all member states have similar mechanisms, understanding of ethics, and regulatory frameworks governing ethics in health sectors; (ii) difficulty in implementing the recommendations and guidelines provided by the Asia-Pacific Regional Meeting for National Bioethics/Ethics Committees (AP-NEC) due to resource constraints, such as a lack of funding and personnel; and (iii) difficulty in aligning legal and regulatory framework with international standards and guidelines due to differences in the frameworks, which could create barriers to effective collaboration with the AP-NEC.

h. Areas of contribution to ABN

50 Six out of nine respondents would share and exchange knowledge, information, experiences and resources; four of them could support by developing and conducting training workshops and mentorship programmes; and only one or two member states could support through planning, preparing, organising or hosting ABN biennial meetings, and provide funding to support training workshops and mentorship programmes.

ABN's upcoming plans

51 Dr Voo shared on the aims of ABN's upcoming initiatives and how they could help to address the gaps/areas of need identified by member states. He mentioned that the ABN digital repository (which is currently under development) will serve as an information sharing platform for bioethics resources/programs, and facilitate the exchange of knowledge and experiences amongst member states. He also introduced the upcoming ABN Bioethics Conference and Workshop in 2025 in Singapore which will focus on prominent themes such as cybernetics, ethics of nanobiotechnology, and ethics in traditional and alternative medicine, and provide opportunities for member states to learn about other countries' bioethics initiatives and developments, including emerging ethical topics/issues arising from human biomedical research that may impact clinical treatment/management. The conference will also facilitate regional capacity building amongst ABN member states and enhance public education efforts amongst ABN member states.

i. Closing Remarks

Emeritus Professor Roy Joseph, NMEC Chair, Singapore; and
Director of the Paediatric Ethics Programme, NUS CBmE

52 In Emeritus Professor Roy's closing remarks, he thanked ABN members for their active participation and valuable insights. He acknowledged that the exchange of knowledge and experiences and the accompanying robust discussions had been effective in enabling us to recognise the emerging ethical issues that accompany healthcare digitalisation, identify potential solutions and translate to best practices collectively. He also summarised the key

discussion points from Professor Savulescu's and Associate Professor Ngiam's presentations, as well as the ABN's needs assessment survey findings. He commented that the sharing by ABN member states on their major achievements and bioethics initiatives had provided everyone with valuable insights on the latest bioethics developments in the region. Before concluding, Emeritus Professor Roy also took the opportunity to invite ABN member states to the upcoming ABN Bioethics Conference and Workshop in 2025.

IV. Post-Meeting Feedback

53 The participants provided positive review and valuable feedback on the content, structure, and the overall meeting. The sharing session by the ABN members turned out to be the most enjoyable segment followed by the keynote presentations.

However, some areas for improvement/feedback include the following:

(1) Share good models or methodology;

(2) Have focus group discussions on relevant topics followed by presentations;

(3) Have all members to provide a presentation summary regardless of attendance;

(4) Hold physical meetings, if possible;

(5) Share information through the digital repository; and

(6) Work together on common interests/topics.

54 Participants also suggested the following topics for future ABN meetings:

(1) Use of genomics data in medical treatment, e.g., in the context of new technologies, all members could share on legislation, community support, and upcoming projections;

(2) Ethics of mental health; and

(3) Ethics of regenerative medicine.

Annexes

Annex A

Programme

Time	Item	Presenter/ Moderator
10:00am	House Rules	
10:05am	Opening/Welcome Remarks	Emeritus Professor Lee Eng Hin
10:10am	Introduction	Mr Gregory Vijayendran
10:20am	Presentation 1: Ethics of AI/Large Language Models including ChatGPT	Professor Julian Savulescu
10:35am	Session 1: Presentations by ABN Member States (Australia, Brunei, Korea, and Myanmar)	Associate Professor Lai Poh-San
11:20am	Break	
11:25am	Session 2: Presentations by ABN Member States (Nepal, New Zealand, the Philippines, Singapore, and Thailand)	Professor Chin Jing Jih
12:15pm	Q&A Session	Professor Kon Oi Lian
12:25pm	Presentation 2: Emerging Ethical Challenges of Healthcare Digitalisation	Associate Professor Ngiam Kee Yuan
12:40pm	Summary of ABN Needs Assessment Survey Findings and Upcoming Plans for the ABN	Dr Voo Teck Chuan
12:55pm	Key Takeaways and Closing Remarks	Emeritus Professor Roy Joseph
1:00pm	End of Meeting	

Annex B

List of Participants

Table 1: International Attendees

S/N	Name	Country	Designation and Institution
1	Ms Cathy Schapper	Australia	Acting Director, Ethics and Integrity section, NHMRC
2	Dr Jeremy Kenner	Australia	Expert Advisor Ethics, NHMRC
3	Dr Alice Yong	Brunei	ex-Chair, Medical and Health Research and Ethics Committee, Ministry of Health
4	Associate Professor Ilhak Lee	Korea	Associate Professor in Medical Ethics, Department of Medical Humanities and Social Sciences, College of Medicine, Yonsei University
5	Dr Eunyoung Lee	Korea	Senior Researcher (Team Leader), Department of Policy and Research, Team of Policy Development, Korea National Institute for Bioethics Policy (KoNIBP)
6	Ms Geyhyoung Joh	Korea	Administrative Staff, Department of Policy and Research, Team of Policy Development, KoNIBP
7	Professor Zaw Than Htun	Myanmar	Director-General, DMR Vice-Chairperson, IRB
8	Dr Theingi Thwin	Myanmar	Director, Research (Ret.), DMR Member, DMR Ethical IRB
9	Ms Namita Ghimire	Nepal	Chief, Ethical Review of the Monitoring and Evaluation Section, NHRC
10	Professor John McMillan	New Zealand	Chair, NEAC Professor, Bioethics Centre, University of Otago
11	Mr Shannon Hanrahan	New Zealand	Deputy Chair, NEAC
12	Ms Elizabeth Bohm	New Zealand	Principal Advisor, NEAC

13	Ms Nicola Liebergreen	New Zealand	Senior Advisor, NEAC
14	Attorney Charade B. Mercado-Grande	The Philippines	Assistant Secretary of Health, Health Facility and Patient Support Team, Department of Health Chairperson, Bioethics Advisory Board
15	Ms Kathleen Grace M. Lentija	The Philippines	Nurse IV, Health Facilities and Services Regulatory Bureau, Department of Health
16	Emeritus Professor Yongyuth Yuthavong	Thailand	Emeritus Professor, Department of Biochemistry, Faculty of Science, Mahidol University
17	Professor Prasit Palittapongarnpim	Thailand	Professor, Department of Microbiology, Faculty of Science, Mahidol University
18	Ms Thitiwan Kerdsomboon	Thailand	Division Director, The Office of Research Integrity Division (ORI), National Science and Technology Development Agency (NSTDA)
19	Dr Rattanapan Phoomirat	Thailand	Senior Project Analyst, ORI, NSTDA
20	Ms Rujikorn Sabsompong	Thailand	Project Analyst, ORI, NSTDA

Table 2: BAC attendees

S/N	**Name**	**Designation and Institution**
1	Emeritus Professor Lee Eng Hin	Chair Emeritus Professor, Department of Orthopaedic Surgery, NUS Emeritus Consultant, Division of Paediatrics Orthopaedics, NUH
2	Professor Kon Oi Lian	Deputy Chair Adjunct Professor, Duke-NUS Medical School
3	Dr Chew Wei Leong	Member Associate Director (Genome Design) and

		Senior Research Scientist, Genome Institute of Singapore Adjunct Assistant Professor, NUS
4	Professor Chin Jing Jih	Member Chairman, Medical Board Senior Consultant, Department of Geriatric Medicine, Tan Tock Seng Hospital
5	Associate Professor Lai Poh San	Member Associate Professor, Department of Paediatrics Deputy Chairman, NUS Institutional Biosafety Committee, NUS
6	Mr Charles Lim Aeng Cheng	Member, and NMEC member Principal Senior State Counsel, Legislation Division, Attorney-General's Chambers
7	Associate Professor Ngiam Kee Yuan	Member Group Chief Technology Officer, NUHS Senior Consultant, Division of Thyroid and Endocrine Surgery, NUH and Alexandra Hospital
8	Mr Gregory Vijayendran	Member Senior Counsel and Partner, Rajah & Tann Singapore LLP
9	Dr Voo Teck Chuan	Member, and NMEC member Research Assistant Professor, CBmE, Yong Loo Lin School of Medicine, NUS

Table 3: NMEC attendees

S/N	Name	Designation and Institution
1	Emeritus Professor Roy Joseph	Chair, and BAC member Emeritus Consultant, Department of Neonatology, Khoo Teck Puat - National University Children's Medical Institute, NUH Director of the Paediatric Ethics Program, CBmE, Yong Loo Lin School of Medicine, NUS
2	Dr Yap Hwa Ling	Deputy Chair Senior Consultant, Department of Psychological Medicine, Changi General Hospital
3	Associate Professor Tracey Evans Chan	Member Associate Professor, Faculty of Law, NUS
4	Professor Chay Oh Moh	Member Emeritus Consultant, Department of Respiratory Medicine, KK Women's and Children's Hospital
5	Associate Professor Serena Koh Siew Lin	Member Programme Director, Alice Lee Centre for Nursing Studies, Yong Loo Lin School of Medicine, NUS
6	Professor Julian Savulescu	Member Director, CBmE Chen Su Lan Centennial Professor in Medical Ethics, NUS
7	Dr Giles Tan Ming Yee	Member Assistant Chairman Medical Board (Clinical Quality & Value) & Region Chief (East), Senior Consultant, Department of Developmental Psychiatry & East Region, Institute of Mental Health, Singapore

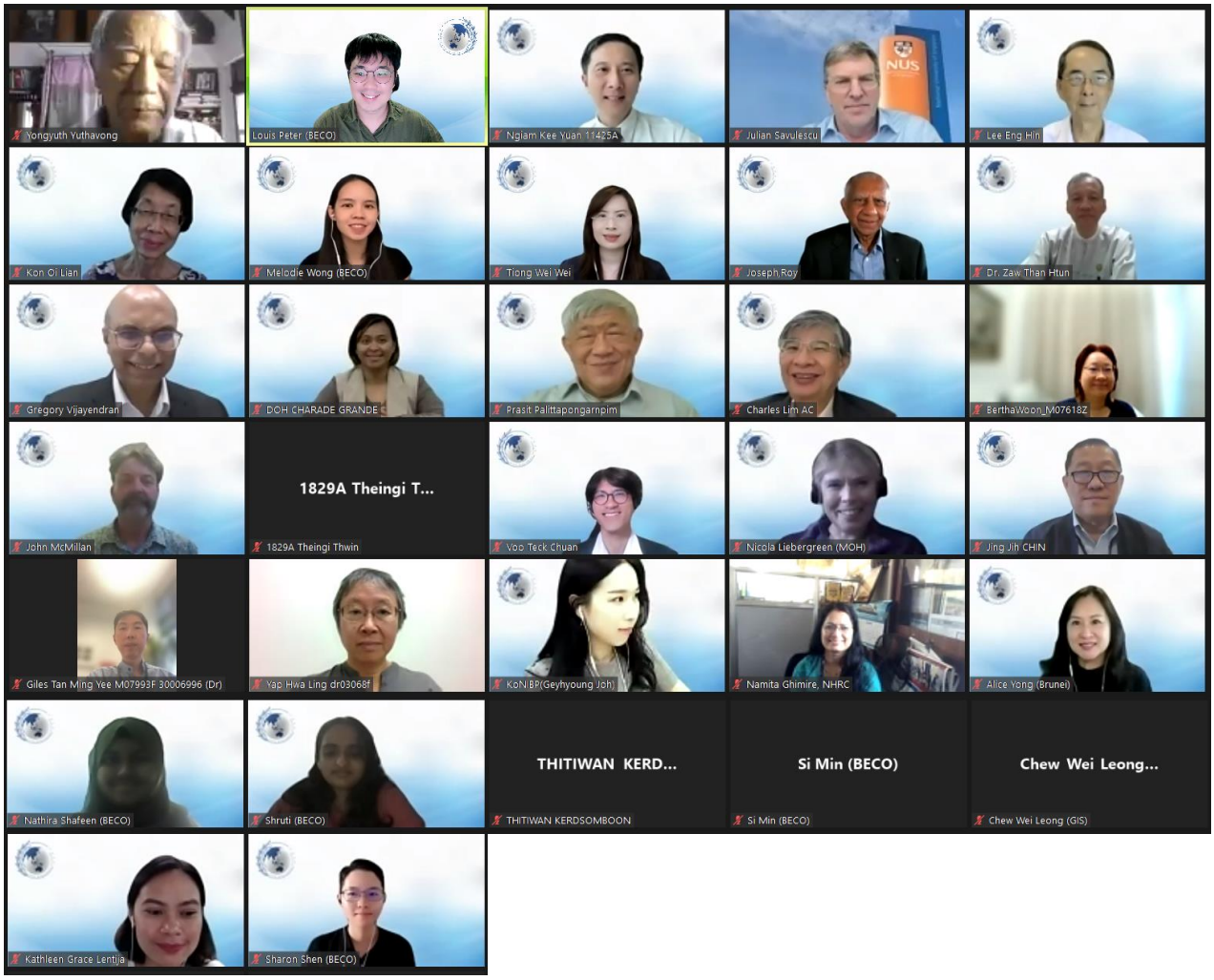
8	Dr Bertha Woon	Member Director, Bertha Woon General & Breast Surgery, Gleneagles Hospital

Table 4: MOH, Singapore attendees

S/N	Name	Designation
	Health Regulation Group (HReg)	
1	Adjunct Associate Professor (Dr) Raymond Chua	Deputy Director-General of Health, HReg Assistant Commissioner (Cybersecurity-Healthcare), Chief Information Security Officer's Office
	Aged and Ancillary Service Regulations and Transformation (AART)	
2	Mr Shawn Tan	Senior Manager (Engagement and Strategy), AART
	Hospitals, Ambulatory Care and Research Regulations Division (HARR)	
3	Ms Cheok Poh Yian	Senior Manager (Licensing, Research and Charities Branch), HARR
4	Ms Cheong Han Hui	Senior Manager (Licensing, Research and Charities Branch), HARR
5	Ms Amanda Lim	Manager (Licensing Research and Charities), HARR
	Regulatory Policy and Legislation Division (RPL)	
6	Dr Tiong Wei Wei	Deputy Director (Precision Medicine and Research (PM&R)/Biomedical Ethics Coordinating Office (BECO)), Regulatory Policy and Legislation (RPL)
7	Mr Louis Peter Hor	Senior Manager (BECO), RPL
8	Ms Nathira Shafeen	Assistant Manager (BECO), RPL
9	Ms Melodie Wong	Health Policy Analyst (PM&R), RPL
10	Ms Toh Si Min	Senior Executive, RPL
11	Ms Sharon Shen	Executive (BECO), RPL
12	Ms Muthusubramanian Shruti	Executive (BECO), RPL

Annex C

Photo Gallery



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Amended by:	Dr Adrian Sim, SAD(BECO/PM&R), RPL, MOH Dr Tiong Wei Wei, DD(BECO/PM&R), RPL, MOH
Cleared by:	Dr Yap Hwa Ling, NMEC Deputy Chair Mr Gregory Vijayendran, BAC Deputy Chair Prof Kon Oi Lian, BAC Deputy Chair
Approved by:	Emeritus Prof Roy Joseph, NMEC Chair & BAC Member Emeritus Prof Lee Eng Hin, BAC Chair