

Keio-APRU Population Ageing Hub Longevity Initiative High-Level Policy Discussion Meeting Meeting Report

Date: Saturday 14 April 2018, 14:00-16:00

Location: San-Shi Kai Meeting Room, 11 F, Building 2 Keio University Hospital, 35 Shinanomachi, Shinjuku-ku, Tokyo

Executive Summary

On Saturday April 14 2018, Keio University Global Research Institute (KGRI)'s APRU Ageing Research Longevity Initiative hosted a high-level policy discussion meeting at Shinanomachi Campus.

The meeting allowed for an open discussion among leading academics and policy-makers on solutions for improving health and happiness in a rapidly ageing society. It featured special guests Dr. Victor Dzau (President of the United States National Academy of Medicine), Senator Keizo Takemi (Member of the House of Councillors), Dr. Hiroto Izumi (Special Adviser to Prime Minister Shinzo Abe) and Mr. Yuji Kuroiwa (Governor of Kanagawa Prefecture). In addition, the meeting was attended by top faculty members Prof. Masayuki Amagai (Dean of the Keio University School of Medicine) and Prof. Hideyuki Okano (Dean of the Keio University Graduate School of Medicine and Leader of the Keio University Longevity Initiative), as well as other Keio University professors and high-ranking officials from the prefectural and national governments.

The first half of the meeting was devoted to four presentations, respectively on: the role of Keio University in research on healthy longevity; the Role of the National Academy of Medicine in Catalyzing Innovation and Charting the Future of Healthy Longevity; Japan's National Policy Orientation and Architecture; and Longevity Research at Keio University. Videos of the presentations will be made available on Keio University's website.

In the second half of the meeting, there were two additional contributions from the perspectives of the Japanese Government and the Kanagawa Prefectural Government, followed by a targeted exchange among participants on ways to address the many challenges of our rapidly ageing societies, particularly in Japan and the United States, but also in the Asia-Pacific region as a whole. Discussions focused around: improved funding mechanisms at national and global level as a catalyst for research and innovation in the field of healthy longevity; Keio University's vision and ongoing research; creating global synergies for technological and human resource exchange and capacity building; necessary change and collaboration in social security policy and long term care

at the prefectural, national, Asia-Pacific and global levels; the importance of preventative healthcare and education in reducing the social and financial cost of an ageing population; and developing effective indicators to estimate individual healthy life-span.

Participants agreed that the exchange was very productive and further meetings should be held in the future, in continued collaboration with Keio University.

Proceedings

Part 1

Welcoming Remarks

All participants were welcomed by Prof. Masayuki AMAGAI, who kicked off the meeting with a brief overview of Keio University's history, key facts and figures. He then elaborated on the university's engagement with the Ministry of Education, Culture, Sport and Science and Technology's Top Global University Project, which is at the foundation of the Keio University Global Research Institute (KGRI). The Longevity Initiative is one of KGRI's three pillars, which has lead the university to conduct significant research on the topic of healthy longevity. In this context, Keio has been proud to host the Population Ageing Hub of the APRU (Association of Pacific Rim Universities) since January 2018.

Notable healthy longevity research topics at the Keio University School of Medicine include: linked development of T cell subsets with gut bacteria, organoid technology, *in vitro* experimentation on malignant colon cells, upright CT scan technology, minimally invasive surgery techniques using endoscopy and laparoscopy, and peripheral tolerance for autoimmune disease research.

Catalyzing Innovation and Charting the Future of Healthy Longevity

In his presentation of the activities of the United States National Academy of Medicine (NAM), President Victor DZAU emphasized his organization's efforts to promote and achieve global healthy longevity in a rapidly aging society. Given NAM's rich history, prestigious membership and outstanding reputation, Dr. Dzau sees its main role as a catalyst for global research, bringing together brilliant minds with innovative ideas from around the world and funding their research through a flexible and adaptive framework.

His presentation put forward a primary goal, to prepare for societies for longer lifespans by keeping individuals healthier, happier and more socially active for as long as possible. To do so, NAM identified four areas for action, namely: Science, Technology and Innovation; Personal,

Social, Economic and Environmental Determinants; Clinical Medicine and Health Delivery Systems; and Policy and Practice.

From a scientific and technological standpoint, NAM plans to launch the “Healthy Longevity Grand Challenge” to secure a target of USD 100M for innovation and research on scalable and transformative healthcare solutions in later life. The funding is organized in a pyramidal structure, with initial “small” grants (USD 50k-100k) available for preliminary creative research ideas. Much of this first-stage research will fail, but some will succeed, unlocking second-stage “medium” grants (USD 500k-1M). Finally, the most promising research projects will be able to unlock final stage funding (up to several million USD).

NAM is also developing a “Global Roadmap for Healthy Longevity”, which gathers knowledge and best practices from leading global experts on how to make progress in the aforementioned 4 areas for action and compiles them into a Consensus Report, featuring global recommendations on research and public health policy. These recommendations will then be issued to policy makers around the world, who can tailor them to the specific needs of their respective countries or regions.

Finally, Dr. Dzaou emphasized that faced with an ever growing demand for breakthroughs in ageing research, there will be an increasing need for adequate funding. Ageing research doesn’t sound cool and hasn’t attracted much investment so far, which is why researchers from a variety of fields of study need to come together and make it more appealing to the public. While public policy and social environment are important, the true breakthroughs for healthy longevity lie in the field of science and technology, which is why Dr. Dzaou hopes that the Grand Challenge initiative can generate widespread research, as well as create synergies with other funding streams, for example from Asia.

National Policy Orientation and Architecture

In his presentation, Senator Keizo TAKEMI focused on four main challenges resulting from a super-ageing society, as well as the Asia Health and Wellbeing Initiative (AHWIN), a joint project amongst a number of Asian countries to work together to respond to their respective rapidly ageing societies. Although Asia is the most rapidly ageing region in the world, many countries don’t have a robust social safety net to absorb the shock resulting from such an unprecedented speed of population ageing.

The first challenge is the increasing onset of non-communicable diseases, which highlighted the

need for dedicated resources and collaboration in the field of cancer research. Japan is currently in the process of rolling out its own Plan for Implementing Cancer Genomic Medicine.

The second is the sustainability of medical care, particularly in coping with increasingly high insurance expenditure. The number of nursing homes is increasing at an alarming rate and there is more than ever a need for “Integrated Community Care Systems”, which would empower communities to assist their elderly in staying in a familiar and comfortable home environment for as long as possible.

The third challenge is the skyrocketing rate of elderly poor, a new social phenomenon of retirees becoming increasingly dependent on welfare. This dependence calls for an urgent solution, given its high social cost and the considerable strain it puts on Japan’s social safety net.

The final challenge is the shortage of healthcare workers, with a predicted labor shortage of about 400’000 in Japan by 2025. Through the AHWIN initiative, Japan is collaborating with other Asian countries (particularly Vietnam) in exchanging human resources for advanced training. To do so, Japan will seek to deliver permits for foreign healthcare workers willing to work for up to 10 years in Japan before returning to use their acquired knowhow in their home countries, where needs of such quality workers will be massive in the near future.

Longevity Research in Keio University

In his presentation, Prof. Hideyuki OKANO provided an overview of Keio University’s ongoing research on healthy longevity in the context of the Top Global University Project and Keio University Global Research Institute (KGRI). He focused on three topics: dementia, supercentenarian research, and marmosets.

On dementia, Keio University is seeking to identify early indicators and provide mitigating treatment from the earliest stages of the illness. To do so, it is gathering considerable data via the School of Medicine’s Memory Center, which has broad access to patients and the technology to collect induced pluripotent stem cells (iPSCs), information of full genome sequences and PET imaging (Amyloid β and Tau imaging) data from people suffering precursor symptoms (at preclinical stage and Mild Cognitive Impairment stage) of Alzheimer’s disease.

In the field of supercentenarian research, Keio University has the world’s largest biosamples. Through their multi-omics analyses, the project hopes to identify patterns in phenotypes that can be used to map biological pathways and identify critical health markers in younger

individuals, in order to put in place tailored healthcare solutions for later life.

Finally, through its research on Genetically-Modified non-human primates, Keio University's MARMOSET project has been able to better identify and understand the pre-symptomatic stages of Neurodegenerative Diseases (such as Parkinson's disease and Alzheimer's disease), leading to ongoing development of new treatments to tackle the disease earlier than was previously possible.

Part 2

The second part of the session began with more detailed discussions on the magnitude of the ageing population issue in Japan, with a reduced workforce, an increasing demand for healthcare and rising insurance costs. There is a pressing need to address these issues, namely through promoting an increase in natality, welcoming more foreign workers, increasing the labor participation rate of women and raising the retirement age.

More and more elderly people both want to and are physically capable of working beyond the current retirement age, so it makes sense to think of ways to provide more flexibility in retirement laws. Additionally, having a sense of purpose (through work for example) as well as a comfortable living environment (out of healthcare facilities) reduces the risk of dementia and other illnesses, consequently reducing healthcare costs. Therefore, once retirement becomes inevitable, the next step should be empowering communities to take care of their elderly. There is a steady increase in the available technology to allow elderly individuals to work longer, remain active after hospitalization and stay in their own homes rather than move to healthcare facilities. This realization is at the center of the Japan Agency for Medical Research and Development (AMED)'s philosophy in allocating funding for research and development in the field of healthy longevity.

Next, participants moved on to discuss the importance of healthy lifespan, particularly in seeing health and sickness as a spectrum rather than a dichotomy. The concept of ME-BYO, or pre-sickness, was introduced as a means to promote healthy daily life practices and activities. By adopting a healthy diet, sufficient exercise and positive social activity, individuals of all ages can prevent the onset of disease later in life, prolonging not just their lifespan but also their healthspan. These concepts can be taught to children, with the hope that they will then convey them to their parents and grandparents, leading to an overall healthier and less isolated society.

Examples from Kanagawa Prefecture have shown that the ME-BYO approach can lead to

decreased healthcare costs later in life, longer healthy lifespans and improved health. Increased research and global collaboration could lead to more positive results in this area, which is why a “Health Innovation School” is being built in Kanagawa’s Biomedical Cluster, a leading hub for innovation and research on health longevity.

Participants then went on to discuss areas in which further consideration and collaboration would be necessary. The first was increased interdisciplinary synergies between economics, health sciences and public policy. Individuals are becoming increasingly functional in their late age, but current seniority systems and the high labor cost of elderly workers can be an obstacle to late-age employment. Technology can be increasingly consequential in allowing workers to either continue working longer, or transfer their knowledge and experience into new fields if their position falls obsolete to globalization or mechanization. These opportunities should be reviewed, rethought and promoted jointly with new retirement policies.

Regarding NAM’s Grand Challenge, participants agreed that integrating Asia into both funding and research would be tremendously beneficial to bringing more researchers into the field and inviting groundbreaking exploits. Moreover, integrating the United States into AHWIN could lead to positive technological exchange and capacity building.

Finally, participants agreed that one particular area of study that would be of paramount importance from both technological and social standpoints is the development of accurate and simple indicators of healthy lifespan. As of now, most policy and research is simply based on age, which isn’t an effective measurement in understanding an individual’s ability to work, estimate future healthcare costs or predict longevity. A type of Universal Ageing Index would be ideal, and should be one of the main goals of ongoing microbiome research.

Annexes

- Agenda
- List of Participants
- PowerPoint Presentations:
 - Welcome to Keio University School of Medicine - *Masayuki AMAGAI*
 - Catalyzing Innovation and Charting the Future of Healthy Longevity: Role of the National Academy of Medicine - *Victor DZAU*
 - National Policy Orientation and Architecture - *Keizo TAKEMI*
 - Longevity Research in Keio University - *Hideyuki OKANO*
 - Aged society and Japan’s experiences: Mechanism for healthy and vibrant society -

Hiroto IZUMI

- “Health Care New Frontier”: Kanagawa’s Innovative Policy for the challenges of Super Ageing Society - *Yuji KUROIWA*

ANNEX 1

Agenda

Part 1: The Role of Keio University in Responding to an Ageing Society

Moderator: Prof. Masato YASUI – Professor, Keio University School of Medicine

- 14:00 – 14:15 Welcoming Remarks
Prof. Masayuki AMAGAI - Dean, Keio University School of Medicine
- 14:15 – 14:30 Catalyzing Innovation and Charting the Future of Healthy Longevity
Dr. Victor DZAU - President, US National Academy of Medicine
- 14:30 – 14:45 National Policy Orientation and Architecture
Senator Keizo TAKEMI - Member, House of Councillors
- 14:45 – 15:00 Longevity Research in Keio University
*Prof. Hideyuki OKANO – Dean, Keio University Graduate School of Medicine
Leader, Longevity Initiative, Keio University Global Research Institute (KGRI)*

Part 2: Developing Innovation Mechanisms for a Healthier Global Super-Ageing Society

Moderator: Dr. Hiroki NAKATANI – Project Professor, Keio-APRU Population Ageing Hub

- 15:00 – 15:20 Additional Remarks (10 minutes each) by:
- Dr. Hiroto IZUMI, Special Advisor to Prime Minister Shinzo Abe*
- Mr. Yuji KUROIWA, Governor of Kanagawa Prefecture*
- 15:20 – 16:00 Discussion: The Way Forward

ANNEX 2

List of Participants

Masayuki AMAGAI	Dean, Keio University School of Medicine; International Member of US National Academy of Medicine
Victor DZAU	President, US National Academy of Medicine
Hiroto IZUMI	Special Advisor to Prime Minister Shinzo Abe
Satoshi KOITABASHI	Secretary to the Governor for Administrative Policy, Kanagawa Prefectural Government
Yuji KUROIWA	Governor of Kanagawa Prefecture
Koji MIURA	Professor, Clinical and Translational Research Center, Keio University Hospital
Hiroki NAKATANI	Project Professor, Keio-APRU Population Ageing Hub
Hideyuki OKANO	Dean, Keio University Graduate School of Medicine
Hiroko OTSUBO	Counsellor, Office of Healthcare Policy, Cabinet Secretariat
Atsushi SEIKE	President, Promotion and Mutual Aid Corporation for Private Schools of Japan
Kenji SHUTO	Vice Governor, Kanagawa Prefectural Government
Keizo TAKEMI	Member, House of Councillors
Masato YASUI	Professor, Keio University School of Medicine