School of Health Innovation

Introduction to

Health Innovation

Graduate School of Health Innovation
Kanagawa University of Human Services

1. What is Health Innovation?

What is “Innovation”?

Innovation: An example of definition

Generating new social and economic values

with advanced scientific findings and technical inventions

combined with human insights

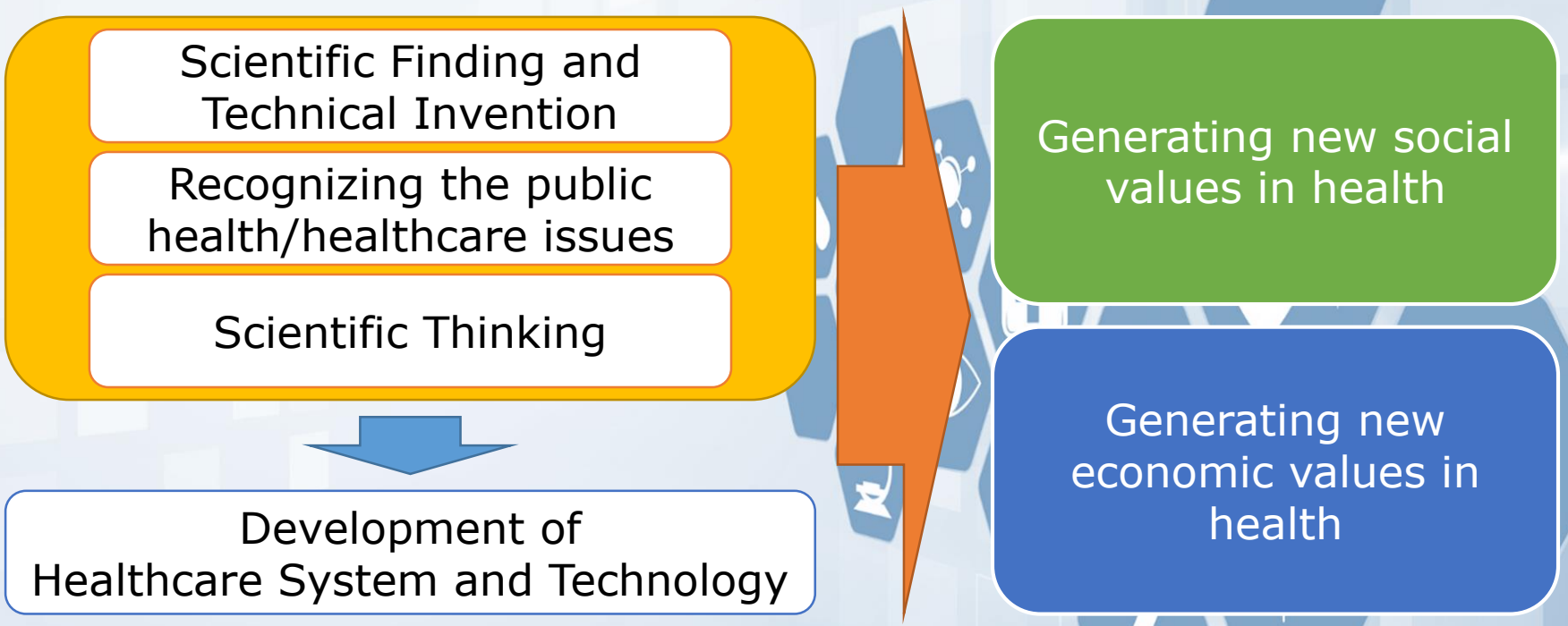
Cabinet Office, Japan(2006). The 3rd Science and Technology Basic Plan.

WHO defines Health Innovation

To develop and deliver new or improved health policies, systems, products and technologies, and services and delivery methods that improve people’s health.

World Health Organization (2014) . How does WHIG define health innovation? *Promoting Health Through the Life-course. Retrieved Oct. 1st from http://www.who.int/life-course/about/who-health-innovation-group/en/*

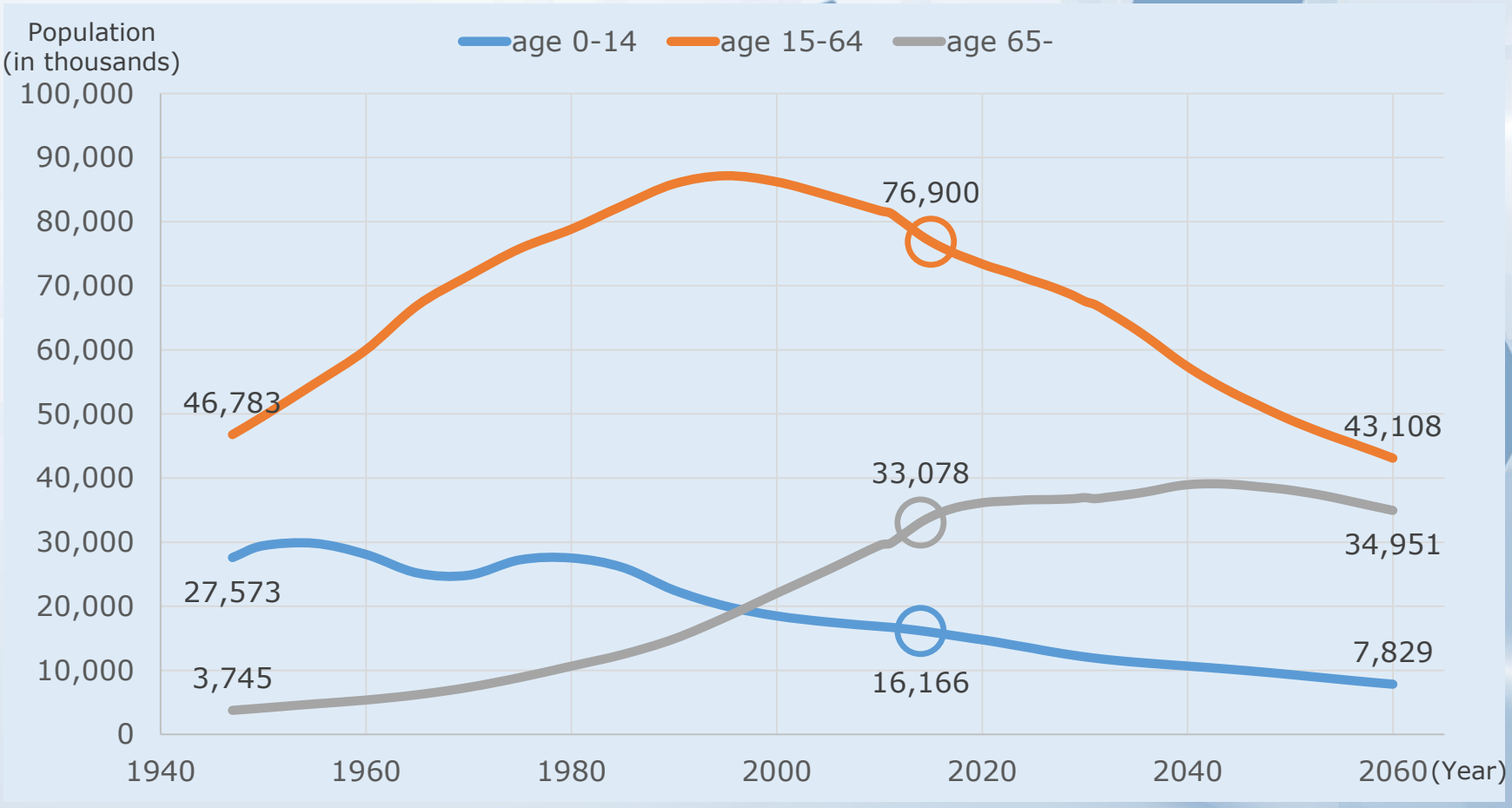
What is Health Innovation?



To generate new social and economic values in health
by developing social system and technology
through integration of
scientific finding, technical invention, and scientific thinking

2. Issues surrounding Kanagawa and Japan’s healthcare

Population Trend in Japan by Age Categories



Source: National Institute of Population and Social Security Research「Population Projection for Japan（Estimated in December 2016）」
Retrieved 20 October, 2015, from http://www.ipss.go.jp/syoushika/tohkei/newest04/sh2401top.html

Healthcare issues in Kanagawa

Population Decline

- The population decline has already begun in Kanagawa prefecture, except for urban areas and the elderly.
- It will become difficult to maintain existing social systems including public insurance system.

Evidence Based Policy Making

- In recent years, the necessity of evidence based policy making (EBPM) is rising.
- However, human resources with training in EBPM is limited.

Necessity of Health Innovation

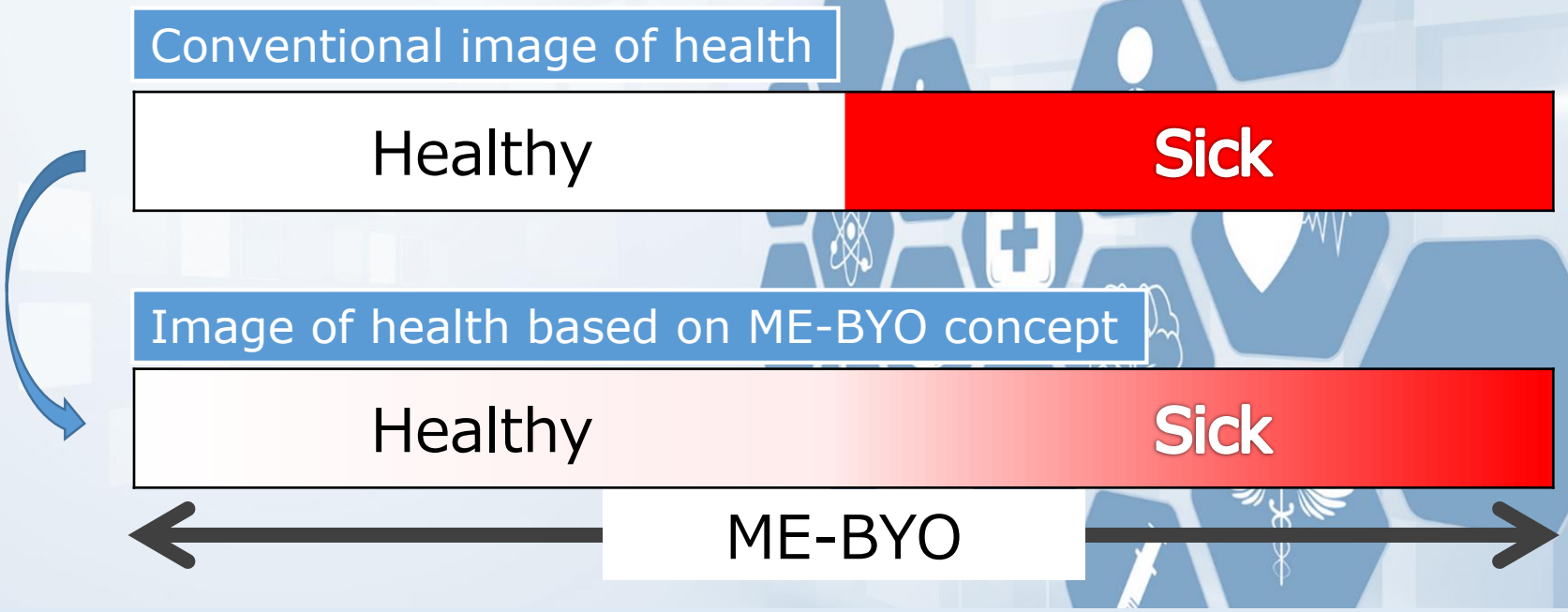
Various issues are arising due to progress of aging society

Urgent needs for innovative health policy and social system to improve people's health

To facilitate health innovation is essential.

3. ME-BYO concept

ME-BYO(未病)　Concept

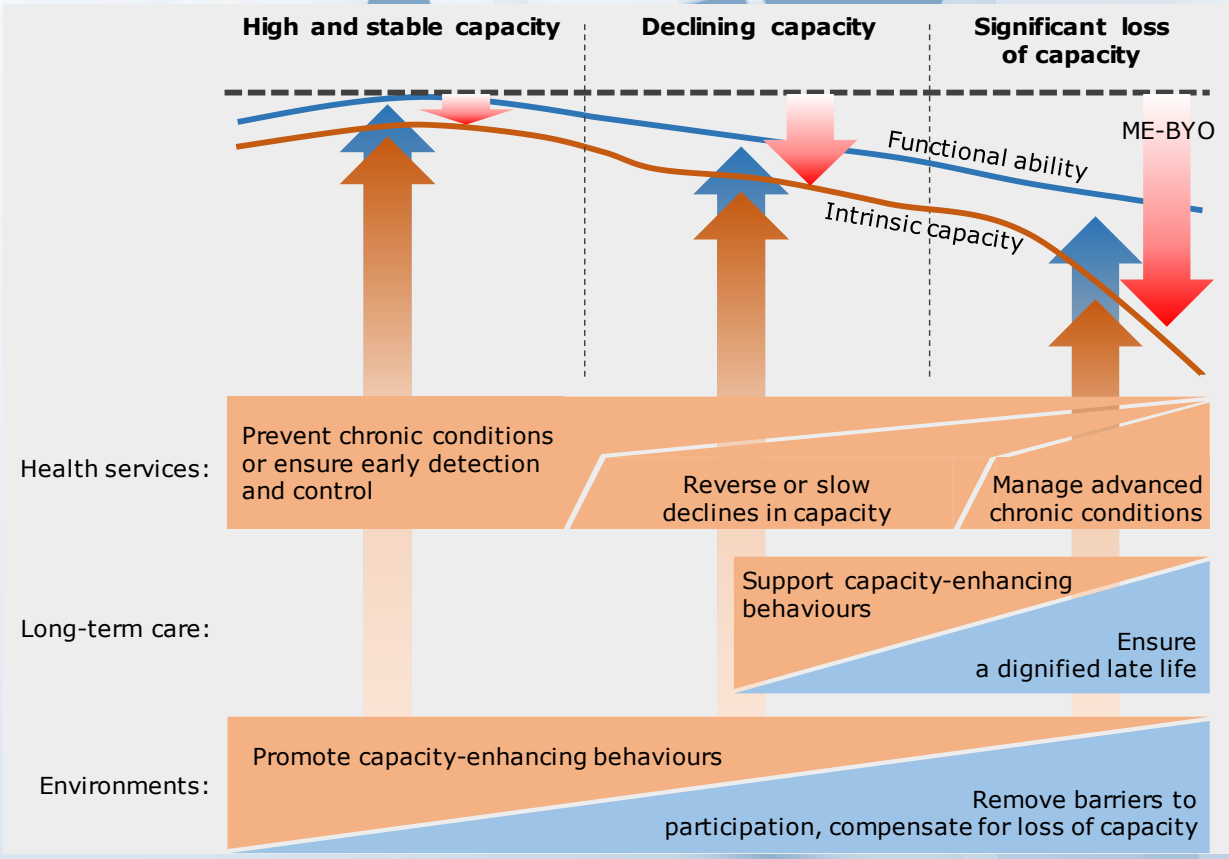


ME-BYO is a concept that captures the status of our body and mind as changing continuously from healthy to sick, not as a dichotomy between the two; ME-BYO conceptualizes the whole process of this change.

Source: Office of Healthcare Policy. (2017). *The Healthcare Policy(2017).* Retrieved 2 October, 2018, from https://www.kantei.go.jp/jp/singi/kenkouiryou/en/pdf/2017_policy.pdf

Opportunities to foster Healthy Ageing

- Combination of a person's physical and mental capacities (known as intrinsic capacity) is a strong predictor of health and wellbeing.
- ME-BYO represents the decline of intrinsic capacity.



Soruce: Cesari, M. (2017). Fig2.4. A public-health framework for healthy ageing: opportunity for public-health action across the life course. Biological theory for the construct of intrinsic capacity to be used in clinical settings. Retrieved Sep. 20, 2018 from http://www.who.int/ageing/health-systems/3_Biological-theory-intrinsic-capacity.pdf

ME-BYO index

ME-BYO Index

- Aiming at social and health system change by promoting behavior change of each individual.
- Need to predict the personal trajectory of health status (intrinsic capacity, IC) over time, not just the current status.
- Personalized, continuous, dynamic, cost-effective, across life course

Evidence to obtain

- The concept “ME-BYO” is not clearly defined by evidence based data yet.
- To combine the conventional methodology with new methods will be required.
- Using big data from observational studies will be effective.

4. Evolution of technology in health

IT / Big Data / AI

Information and Communication Technology

Big Data

Artificial Intelligence (AI)

Robotics

Genome Medicine

Precision Medicine/Health

- Information and Communication Technology
  - Electronic Health Record
  - Online / telemedicine
  - Personal Health Record / smartphone apps
- Big Data
  - Claim data: National Database / KDB
  - Health big data: National Survey, etc
- Artificial Intelligence
  - Diagnosis support system
  - AI health guidance
  - Drug discovery using AI & big data

Robotics

Information Technology (IT)

Big Data

Artificial Intelligence (AI)

Robotics

Genome Medicine

Precision Medicine/Health

- Medical devices
  - Robot-assisted surgery
  - Nano capsule for endoscopy, cancer care, etc.
  - Rehabilitation assist
- Nursing care
  - Patient transfer assist
  - Care worker support

Genome Medicine, Precision Medicine

Information Technology (IT)

Big Data

Artificial Intelligence (AI)

Robotics

Genome Medicine

Precision Medicine/Health

- Precision Medicine
  - Cancer care
- Precision Health/Prevention
  - Genome cohort study
  - Biobank

References

- Cesari, M. (2017). *Biological theory for the construct of intrinsic capacity to be used in clinical settings* [PDF file]. Retrieved from http://www.who.int/ageing/health-systems/3_Biological-theory-intrinsic-capacity.pdf
- Government of Japan. (2006). *The 3rd Science and Technology Basic Plan (Provisional translation)* [PDF file].Retrieved from http://www8.cao.go.jp/cstp/english/basic/3rd-Basic-Plan-rev.pdf
- Kuroiwa, Y. & Otani, Y. (2018). *Official textbook ME-BYO: A new point of view of health in the era of "100 years life-span".* [in Japanese] Tokyo: kokuseijoho Center.
- National Institute of Population and Social Security (2016). *Population Projection for Japan*（*Estimated in December 2016*. Retrieved from http://www.ipss.go.jp/syoushika/tohkei/newest04/sh2401top.html
- Office of Healthcare Policy. (2017). The Healthcare Policy(2017). Retrieved 2 October, 2018, from https://www.kantei.go.jp/jp/singi/kenkouiryou/en/pdf/2017_policy.pdf
- World Health Organization. (2014) . *How does WHIG define health innovation? Promoting Health Through the Life-course.* Retrieved from http://www.who.int/life-course/about/who-health-innovation-group/en/

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