# Progress report 2024

## Health Economy and Society Policy

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### ■ Introduction and Organization

Health Economy and Society policy is a donated fund course established in 22nd Century Medical and Research Center in February 2017, which is donated by 10 companies, Develop¬ment Bank of Japan Inc., Chugai Pharmaceutical Co., Ltd., Baxter Limited, Nihon Medi-Physics Co., Ltd., Medibrain Corporation, Asahi Kasei Medical Co., Ltd., NIPRO Corporation, Toray Medical Co., Ltd., JMS Co., Ltd., and Terumo Corporation, and is cooperating with Department of Cardiac Surgery, Division of Nephrology and Endo¬cri-nology, and Department of Clinical Epidemiology & Health Economics as cooperating course. Also, in February 2023, this course was transferred to a social collaboration course by NN Life Insurance Co., Ltd. We are also exploring the mechanism of adherence and researching its socioeconomic impact with Department of Neuropathology, Department of Clinical Epidemiology & Health Economics as new cooperative courses.

The social structure has been changing over recent years and it can be assumed that policies related to the medical system and medical industry are at a crossroads in Japan and may undergo dramatic changes in the future. Our department was established to discuss future healthcare systems (medical practices and systems, economy and industry), particularly in terms of theory construction and validation studies pertaining to the "evaluation of the value of the healthcare field" and other topics.

Concretely, we promote theoretical and methodological research on health technology assessment, cost effectiveness analysis, and the healthcare industry structure, and aim to evaluate the value of healthcare technologies and healthcare systems. We also promote manpower training programs (Program for “The movements of medical value“) in health technology assessment with collaboration departments.

### ■ Research activities

We are engaging in the following research in order to promote rational and evidence-based medical resource investment, to support medical practice, and to promote advances in medical technology.

1) The evaluation of the cost effectiveness of various therapies, including (but not limited to) VAD therapy for severe heart failure, hemodialysis therapy for end-stage renal failure and radiological diagnostics.
2) A study of the socioeconomic on the disease burden impact of lifestyle-related diseases and dementia in Japan.
3) Testing and developing methods for evaluating labor productivity (e.g., the productivity of cardiology doctors) by applying data envelopment analysis (DEA) techniques.
4) Apply AI (artificial intelligence, machine learning) to develop a disease management program that focuses on adherence.

In this year, we have proceeded with the cost-effectiveness analysis of medical technology such as therapeutic devices for fulminant myocarditis and therapeutic agent for Kawasaki disease. In addition, we conducted the healthcare economics analysis of universal health coverage, as well as an analysis of regional function cooperation of medical and nursing care.

Moreover, we conducted an analysis of the

impact of renal transplantation on the medical insurance system, as well as the theory construction, cost calculation, and claim level estimation of medical treatment prices for the area of childbirth. We also verify the QOL measurement method (surrogate answer) for end-stage lung cancer.

We conducted health technology assessment (HTA) and data science education that applied the big data of the medical economy system (The Tokyo University Health Economy Big Data: *TheBD*). In addition, we are also working on a project to develop a forecasting model for HTA that makes use of the big data. Moreover, we are starting a study that applies computational finance to forecast the market value of research and development projects.

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