

July 3rd, 2024

K.K. eMind

Tohoku University, National University Corporation
Otsuka Pharmaceutical Co., Ltd

eMind, Tohoku University, and Otsuka Pharmaceutical Launch Epilepsy Smart Medical Joint Research Project (Phase II) Aiming to Start and Expand Epilepsy Treatment Support System

K.K. eMind, (eMind), Tohoku University School of Medicine (Tohoku University), and Otsuka Pharmaceutical Co., Ltd. (Otsuka) announce the launch of a collaborative research project using the smartphone application eMind for Medical Research for patients with epilepsy, as part of the Epilepsy Smart Medical Collaborative Research Project (Phase II). This collaborative research aims to contribute to improving the quality of life (QOL) of patients with epilepsy, with the ultimate goal of implementing a technology-driven system to support epilepsy care in society based on the research findings.

Research Background and Progress to Date

In 2021, information and communication devices reached a household penetration rate of over 97%. Among these, smartphones and wearable devices—being the most familiar—are equipped with a wide variety of sensors and functions. The operation logs from these devices are now closely linked to human cognition and behavior.

To support epilepsy patients across physical, mental, and social dimensions, the Epilepsy Smart Medical Collaborative Research Project (Phase I) was established in October 2022 to conduct research applying eMind's proprietary AI prediction technology (Patent No. 6841466), which utilizes data obtained from digital devices, to the field of epilepsy.

Since April 2023, research has been conducted with epilepsy inpatients at Tohoku University Hospital. During their hospitalization for detailed examinations, various biosignals, behavioral data, psychosocial evaluation data, and daily life data collected via the smartphone application eMind for Medical Research have been analyzed using AI. The research focused on developing models for predicting epileptic seizures and inferring psychological states, while also verifying the correlations between physical, mental, and social assessments. As a result of these research activities, a patent related to the seizure prediction model was obtained in May 2024 (Patent No. 7534745), and an international application is currently underway.

The “AnyTalk” feature within the eMind app provides a social support service aimed at maintaining and improving treatment and medication adherence for epilepsy patients. When

users input their thoughts and feelings about daily events, they receive supportive and empathetic messages based on psychological insights from qualified psychological supporters (licensed psychologists or certified clinical psychologists) accredited by eMind. This system has been highly rated by patients for its contribution to improving QOL and addressing feelings of loneliness and anxiety. Evaluating and verifying the effectiveness of such psychosocial support is also one of the concrete steps toward real-world implementation.

Research Theme of the Epilepsy Smart Medical Collaborative Research Project (Phase II)

In April 2025, Otsuka joined the Epilepsy Smart Medical Collaborative Research Project (Phase II). Building upon the outcomes of Phase I, this new phase of research will involve applied studies with a stronger focus on real-world implementation, in collaboration with Otsuka's digital solution division. The project aims to continuously develop and validate a system designed to enhance the patient experience. Based on the results of this research, the ultimate goal is to contribute to improving the quality of life (QOL) of epilepsy patients by implementing a technology-driven system to support epilepsy care in society.

Overview of the Epilepsy Smart Medical Collaborative Research Project

-Title: Epilepsy Smart Medical Collaborative Research Project (Phase II)

-Objective: To support epilepsy patients across physical, mental, and social dimensions through digital devices and AI, contributing to the improvement of their QOL.

-Principal Investigators

- Hidenori Endo, Professor, Graduate School of Medicine, Tohoku University
- Satoru Komura, COO, K.K. eMind
- Koji Onishi, Portfolio Management Office, Otsuka Pharmaceutical Co., Ltd.

-Research Location: Tohoku University, National University Corporation

-Duration: From April 2025 to March 2028