

Progress report 2022

Study of Effectiveness and safety of vaccination

Professor: Hideo Yasunaga, Department of Clinical Epidemiology & Health economics

Associate Professor: Kohei Uemura, Department of Biostatistics and Bioinformatics

Project Lecturer: Sachiko Ono, Department of Eat-loss medicine

Project Assistant Professor: Nobuaki Michihata, Department of Health Services Research

Overview

The purpose of this study is (i) to construct a large-scale database that contains vaccinations data linked to medical claims data, and (ii) to examine the effectiveness and safety of vaccines. The goal is to promote vaccination policies based on scientific evidence by providing epidemiological evaluations of the vaccines. At present in Japan, a large-scale database that contains both vaccination information and medical information does not exist. The lack of such a database makes it difficult to evaluate the efficacy and safety of new vaccines in a timely manner. The development of such a large-scale database will enable us to conduct epidemiological studies of vaccines.

Activities in FY2021

We constructed a large-scale database by linking immunization information with medical claims data provided by a local government. We created preprocessed tables using the database language (SQL) and conducted preliminary analyses for each research theme.

Activities in FY2022

In FY2022, we evaluated the effectiveness and safety of vaccines using the integrated database. Furthermore, in cooperation with another municipality, we linked the Health Center Real-time information-sharing System on COVID-19 (HER-SYS) and the Vaccination Record System (VRS) to construct a new database that integrates information on patients

with COVID-19 and COVID-19 vaccinations. We conducted several epidemiological researches using the database.

Publications

1. Uemura K, Ono S, Michihata N, Yamana H, Yasunaga H. Duration of influenza vaccine effectiveness in the elderly in Japan: A retrospective cohort study using large-scale population-based registry data. *Vaccine*. 2023 in press.
2. Hashimoto Y, Yamana H, Iwagami M, Ono S, Takeuchi Y, Michihata N, Uemura K, Yasunaga H, Aihara M, Kaburaki T. Ocular Adverse Events after Coronavirus Disease 2019 mRNA Vaccination: Matched Cohort and Self-Controlled Case Series Studies Using a Large Database. *Ophthalmology*. 2023 Mar 1;130(3):256-64.
3. Aso S, Ono S, Michihata N, Uemura K, Yasunaga H. Effectiveness of vaccination on influenza-related critical illnesses in the elderly population. *Journal of Infection and Chemotherapy*. 2023 Feb 7.
4. Ohbe H, Sasabuchi Y, Iwagami M, Ogura T, Ono S, Matsui H, Yasunaga H. Intensive care unit versus high-dependency care unit for COVID-19 patients with invasive mechanical ventilation. *Annals of the American Thoracic Society*. 2023 Jan;20(1):102-9.
5. Takeuchi Y, Iwagami M, Ono S, Michihata N, Uemura K, Yasunaga H. A post-marketing safety assessment of

COVID-19 mRNA vaccination for serious adverse outcomes using administrative claims data linked with vaccination registry in a city of Japan. *Vaccine*. 2022 Dec 12;40(52):7622-30.

6. Ono S, Michihata N, Yamana H, Uemura K, Ono Y, Jo T, Yasunaga H. Comparative effectiveness of BNT162b2 and mRNA-1273 booster dose after BNT162b2 primary vaccination against the Omicron variants: A retrospective cohort study using large-scale population-based registries in Japan. *Clinical Infectious Diseases*. 2023 Jan 1;76(1):18-24.

Presentations at Conferences and Conferences

1. Michihata, N. Effectiveness of Heterologous Coronavirus Vaccination. The 26th Annual Meeting of the Japanese Society of Vaccinology, November 27, 2022
2. Hashimoto Y, Yamana H, Iwagami M, Ono S, Takeuchi Y, Michihata N, Uemura K, Yasunaga H, Aihara H, Kaburaki T. Ocular adverse events after COVID-19 vaccination: A matched cohort study & a self-controlled case series study. The 5th Annual Meeting of the Japanese Society for Clinical Epidemiology, November 13, 2022. 3.
3. Aso, S., Ono, S., Michihata, N., Uemura, K., and Yasunaga, H. Influenza vaccine and severe eye disease in the elderly. Association of influenza vaccine with severe illness and death in the elderly. The 5th Annual Meeting of the Japanese Society for Clinical Epidemiology, November 13, 2022. 4.
4. Michihata N, Ono S, Yamana H, Uemura K, Jo D, Yasunaga H. Factors associated with untimely vaccination with measles-rubella combined vaccine and varicella vaccine in children. The 5th Annual Meeting of the Japanese Society for Clinical Epidemiology, November 13,

2022.

5. Yamana H, Ono H, Michihata N, Uemura K, Jo D, Yasunaga H. Preventive effect of 23-valent pneumococcal vaccine against pneumonia. The 5th Annual Meeting of the Japanese Society for Clinical Epidemiology, November 13, 2022. 6.
6. Ono, S., Michihata, N., Yamana, H., Uemura, K., Ono, Y., Jo, D., Yasunaga, H. Comparative effectiveness of BNT162b2 booster and mRNA-1273 booster against omicron variants. The 5th Annual Meeting of the Japanese Society for Clinical Epidemiology, November 13, 2022.

Lectures and research meetings

None

Social Activities

None

