

Characterization of Health by OHDSI Asia-Pacific chapter to identify Temporal Effect of the Pandemic for Cardiovascular Diseases (CHAPTER-CVDs)

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Background

Since December 31st 2019, when the first case was reported to WHO, infections by SARS-CoV-2 have spread worldwide. Government and healthcare strategies against COVID-19 vary extensively between countries and by time. As routinely-collected data emerges, a federated network study could provide a fuller picture how healthcare system is resilient across the systems, regions, and countries. Data assets mapped to the Observational Medical Outcomes Partnership (OMOP) common data model (CDM) 5 provide a unique opportunity to make a difference in the current crisis, allowing for robust analyses to be performed in a timely across a network of sites (1). The OHDSI Asian Pacific regional chapter has launched the Characterization of Health by OHDSI Asia-Pacific chapter to identify Temporal Effect of the Pandemic (CHAPTER) study to describe the temporal change in incidence of diseases and healthcare pattern before and after the emergence of COVID-19.

In this abstract, we describe the preliminary results for cardiovascular diseases.

Methods

In this retrospective study, we aim to focus on the temporal change in cardiovascular diseases: hypertension, acute myocardial infarction (AMI), and heart failure (HF). Databases from the Australia LPD and the Japan Claims converted to the OMOP-CDM were adapted as our data source. The digital phenotype definition and the incidence rate was calculated by leveraging previous Phenotype Phebruary project initiated by the Observational Health Data Science and Informatics (OHDSI) community (2). We employed interrupted time series analysis to describe the trend of incidence of three hypertension, AMI, and HF before and after the COVID-19 pandemic occurrence.

Results

In our preliminary results, there is a sharp decline in the incidence of hypertension, AMI, and HF in the Australia LPD in 2020, whereas this trend is less evident in the Japan claims. There was rebound of incidence of cardiovascular diseases in 2021 in the Australia LPD (Figure 1).

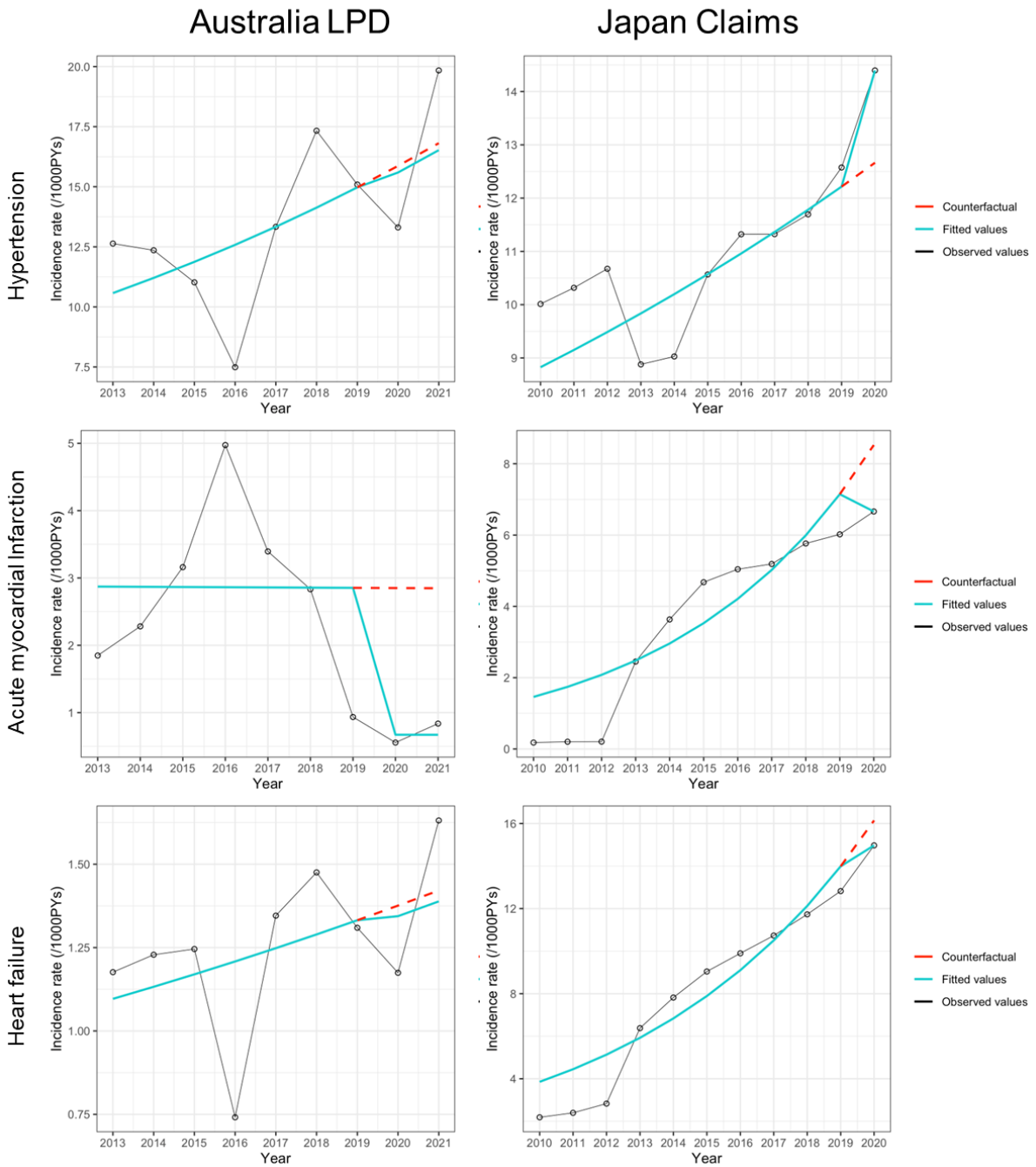


Figure 1. Comparison of the periods with and without COVID-19 pandemic exposure. The counterfactual refers the predicted values had no COVID-19 occurrence, and the fitted values are estimated based on the Poisson regression model with adjusting time vector (years).

Conclusion

In our preliminary result, we found the potential change in the incidence of CVDs after COVID-19 pandemic occurrence. The further investigation of CHAPTER study group will provide more scientific relevant and detailed information across the OHDSI network. The temporal difference of CVDs will provide insights on the impact of COVID-19 and resilience in each healthcare system during the pandemic. We are recruiting the data partner to join this study.

References

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2. Patrick Ryan, et al. "Phenotype Phebruary Day 1 – Type 2 Diabetes Mellitus." OHDSI Forums, 4 Feb. 2022, <https://forums.ohdsi.org/t/phenotype-phebruary-day-1-type-2-diabetes-mellitus/15764/18>.