Developing a Dashboard to Profile and Visualize Patient Data with Infectious Diseases Using OMOP-CDM: A Case Study on Influenza in South Korea

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Background
• Infectious diseases pose a global health threat, emphasizing the need for timely and accurate information. However, privacy concerns and data heterogeneity limit the sharing of valuable Electronic Health Records (EHRs) data.
• This study aimed to develop a dashboard using standardized data to profile and visualize patient data on infectious diseases, enabling comprehensive management and treatment.

Conclusions
• We created visual dashboards using standardized data converted to OMOP-CDM to show information about patients with infectious diseases.
• The dashboard is going to be applied to data collected in near real-time (daily) converted to OMOP-CDM of clinical information from patients with infectious diseases for supporting healthcare providers in formulating treatment strategies for infectious diseases and making decisions quickly.

Methods

1. Data source
   • Ajou University School of Medicine database (AUSOM)
   • Type: EHRs
   • Period: 2018.01.01 ~ 2022.04.31

2. Data preparation
   • Selected and extracted important information for patients with infectious diseases from standardized data
   • Profiling of collected data for visualization dashboard, including demographics, diagnoses, lab tests, drugs and reports

3. Dashboard
   • **Cohort-level** - support healthcare providers and public health officials in better understanding the overall characteristics of infectious diseases
     
     Ex) clinical statistics, patient aggregation
   • **Individual-level** - support healthcare providers make informed decisions about patient care
     
     Ex) medical history, diagnosis, lab, drug, reports

4. Proof-of-concept study
   • Target cohort of patients with influenza, an acute febrile respiratory viral illness caused by influenza viruses

Results
• 4,920 patients with influenza were found in the AUSOM database.
• Patient gender distribution was relatively balanced, with males and females having a ratio of 48.7 to 51.3, respectively.
• Gyeonggi-do, the area where the hospital is located, accounted for the majority with 94% of all patients, followed by Chungcheongnam-do with only 0.5% (Figure 1).
• The patient's comprehensive medical information, including diagnosis, laboratory test results, and medications taken, was displayed on the individual-level page (Figures 2, 3).

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