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Title

The Contribution of Pharmacogenetic Drug Interactions to 90-Day Hospital Readmissions in a Real-World Health System

Priority 1 (Research Category)

Acute and emergency care

Presenters

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Abstract

Context: Clinical Pharmacogenetics Implementation Consortium (CPIC) guidelines exist for many medications commonly prescribed prior to hospital discharge, yet there is limited data regarding the contribution of gene-x-drug interactions to hospital readmissions.

Objective: The present study evaluated the relationship between prescription of CPIC medications prescribed within 30 days of hospital admission and 90-day hospital readmission from 2010-2020.

Study Design and Analysis: Retrospective cohort study. Multivariable logistic regression analyzed the association between one or more gene-x-drug interactions with 90-day readmission.

Population Studied: Primary care patients (N=10,104) who underwent sequencing with a 14-gene pharmacogenetic panel.

Intervention/Instrument: Primary care physicians ordered a Color genetic panel that included pharmacogenetic genes reported through electronic health records.

Outcome Measures: The primary endpoint was 90-day hospital readmission. The presence of at least one pharmacogenetic indicator for a medication prescribed within 30 days of hospital admission was considered a gene-x-drug interaction.

Results: There were 2,211/2,354 (93.9%) admitted patients who were prescribed at least one CPIC medication. Univariate analyses indicated that the presence of at least one identified gene-x-drug interaction increased risk of 90-day readmission by more than 40% (OR=1.42, 95% confidence interval (CI) 1.09-1.84)(p=0.01). A multivariable model adjusting for age, race, sex, employment status, body mass index, and medical conditions, slightly attenuated the effect (OR=1.32, 95% CI 1.02-1.73)(p=0.04).

Conclusions: Our results suggest that the presence of one or more CPIC gene-x-drug interactions increases the risk of 90-day hospital readmission, even after adjustment for demographic and clinical risk factors.