Effectiveness Analysis of CPOE Implementation in Preventing Duplicate Medication: An Evidence From a Single Medical Center in Taiwan

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OBJECTIVES:

Medication reconciliation is an important sector of medication safety use to prevent medication errors. In recent years, National Health Insurance Administration has been concerned about duplicate medication in Taiwan. As the elderly population grows in Taiwan, the demand for medication reconciliation has increased. This study aims to analyze the effectiveness of Computerized Physician Order Entry (CPOE) implementation in avoiding duplicate medication.

METHODS:

This retrospective study was conducted in a single medical center in Taiwan from January 2018 to December 2019. We included the outpatient visits, the alert data extracted from the CPOE warning system (CPOEWS) and Pharmacist reported system. The latest three months of medication records from Pharma-Cloud before the current visit would be recorded in the hospital's electronic medication system since January 2018. Anatomical Therapeutic Chemical (ATC) codes in the CPOEWS were applied to screen the duplicate prescription from Pharma-Cloud. If a duplicate medication occurs, CPOEWS will show warnings to the Physician and Pharmacist. If the Physician ignored warnings, the Pharmacist would intervene by contacting the Physician to verify and later report the case to the system.

RESULTS:

We identified a total of 3,500,346 outpatient visits with 12,205,757 medication prescriptions, 963,858 duplicate warnings, and 913 pharmacist-reported cases; the reporting rate was 0.0074‰. The drug cost saving of pharmacist intervention was $9556.43 within the two-year period. The three most common drug classes among duplicate medications were drugs for acid-related disorders (6.88%), anti-inflammatory/anti-rheumatic products (5.57%), and analgesics (5.48%). Additionally, the three most duplicated medications came from Chest (11.30%), cardiovascular (7.36%), and endocrinology specialists (6.42%).

2 Years Period

3.5 M Outpatient

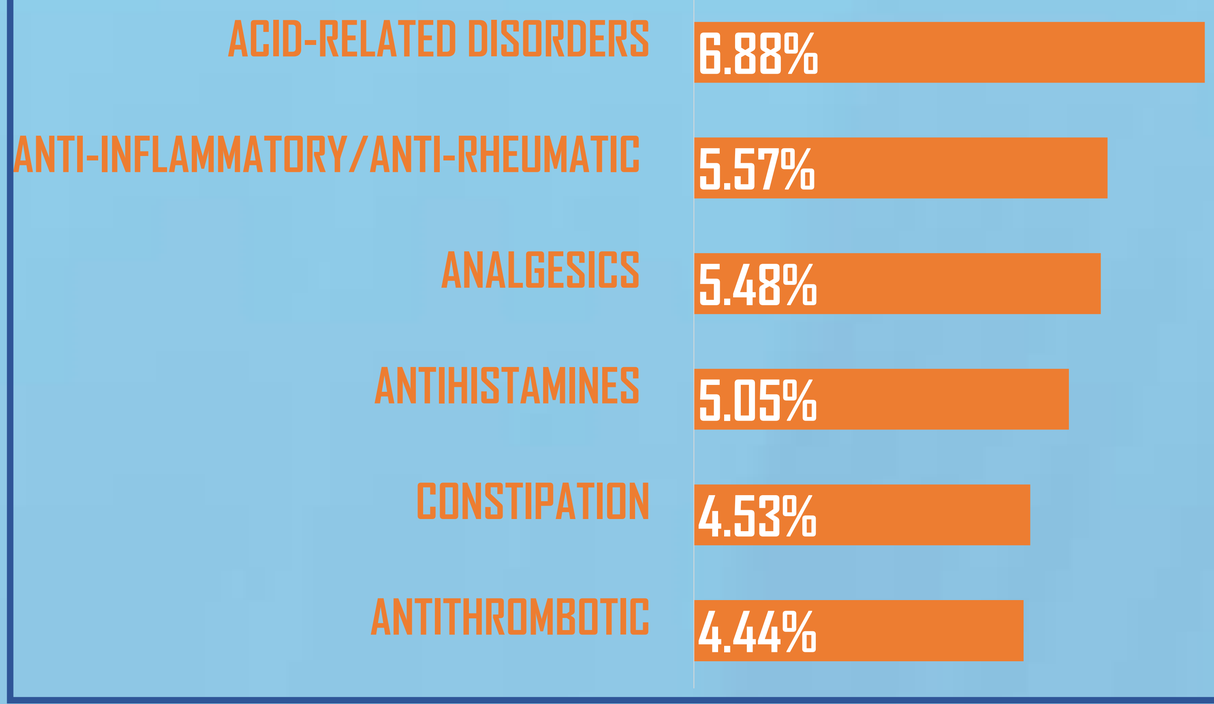
12 M Medication Prescription

963 K Duplicate Warnings

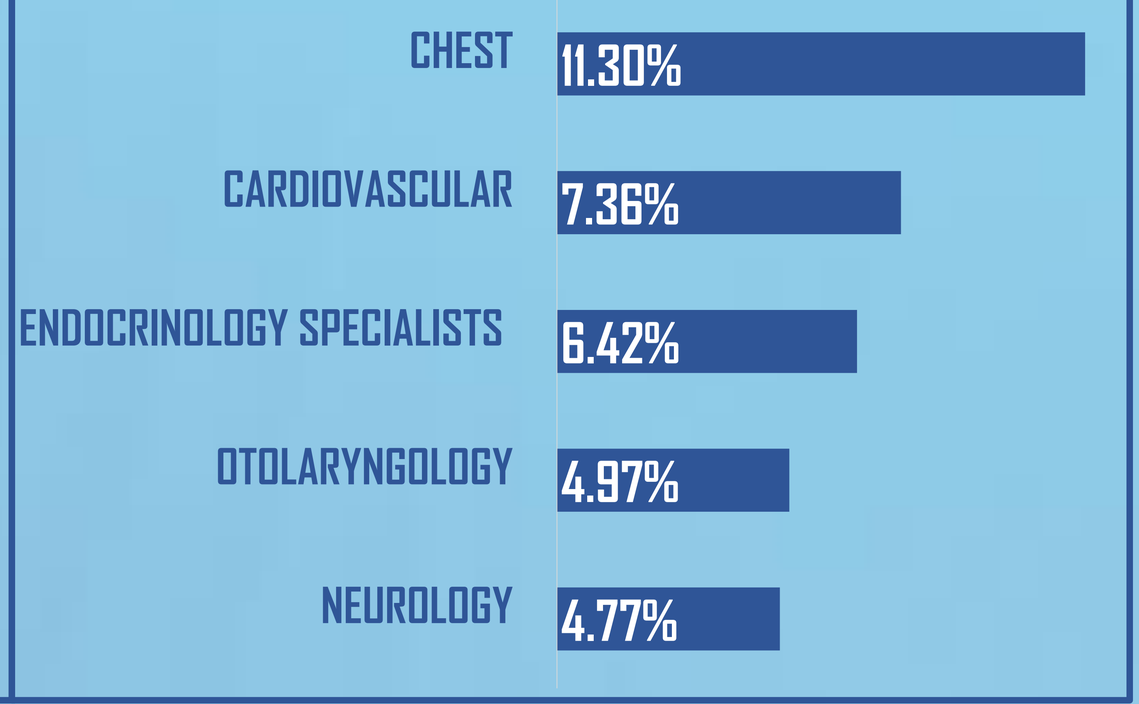
913 Pharmacist-Reported Cases

US$9 K Cost Saving

Common Drug classes among Duplicate Medications



Most Duplicated Medications Came From



CONCLUSIONS:

The result showed that implementing CPOEWS has significantly resolved most of the duplicate medication.
Therefore, Pharmacists could have more attention to intervening in other medication reconciliation like drug-drug interactions and provide medical consultations.

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MR : Medication reconciliation ; CPOE : Computerized Physician Order Entry ; CPOEWS : CPOE warning system ; ATC : Anatomical Therapeutic Chemical (ATC) ; M : Million ; K : Thousand