



**Service Priorities and Programmes**  
**Electronic Presentations**

**Convention ID:** 184

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**Post title:** Resident Pharmacist, UCH, KEC

**The Impact of a Centralized Automatic Tablet Dispensing and Packaging System in a Local Hospital Inpatient Pharmacy**

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**Keywords:**

Medication Safety

Automation

Medication Distribution

Unit Dose

ATDPS

**Introduction**

The World Health Organization (WHO) has launched the third Global Patient Safety Challenge on Medication Safety in 2017. The goal of this challenge is to reduce medication-related harm by 50% in the next five years. Developing technologies and tools for reducing medication errors have been adopted as one of the five key objectives within this challenge. Inpatient Medication Order Entry (IPMOE) system has been successfully implemented in most of the Hospital Authority hospitals. This enables electronic prescribing, which eliminates medication errors and reduces delays associated with the transmission of medication orders. However, dispensing and distribution of medicines are all manual processes which are prone to errors. A medication distribution system that comprised of an automated dispensing device and a unit dose system have been shown to provide a variety of advantages including a reduction of medication errors over alternative distribution systems in other health care systems. It is recommended as the preferred method of drug distribution in hospitals by the American Society of Health-System Pharmacists and the Australian Council on Healthcare Standards. It is also one of the medication management standards for hospital accreditation approved by the Joint Commission.

**Objectives**

To determine the percentage of medication dispensing errors, dispensing efficiency and the percentage of ward return before and after implementation of a centralized automatic tablet dispensing and packaging system (ATDPS).

**Methodology**

This was a prospective observational study with before-after design conducted at the United Christian Hospital. Medication distribution methods were observed in two periods of two months. Pre-intervention phase concerned manual dispensing, was taken place from Nov 2016 to Jan 2017. Post-intervention phase with ATDPS dispensing was taken place from May 2017 to July 2017. The data were collected from a medical ward. Duration of medication supply per issue was shortened from 4 days to 1 day. Five items were removed from the ward stock list as they were

dispensed by ATDPS. A near-miss reporting form was used to facilitate data collection process.

### **Result**

A total of 5647 and 17804 pouches of medications were dispensed in pre and post intervention group respectively. Implementation of ATDPS led to 81% reduction in dispensing errors. The percentage of medication dispensing errors reduced from 0.0885% to 0.0169% (p-value 0.011). For pre-intervention group, the most frequent type of dispensing error was wrong patient (60.0%), followed by medication omission (20.0%) and wrong medication (20.0%). For post-intervention group, the most frequent type of dispensing error was medication omission (100.0%).

Dispensing efficiency increased fourfold from 6.2 to 24.3 no. of unit dose per min (p-value 0.000). Although there was a reduction in total dispensed quantity, the percentage of ward return increased slightly from 24.51% to 26.77% (p-value 0.000).