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Impact of Inpatient Medication Order Entry on Medication Safety in RTSKH

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Introduction

In order to improve medication safety, Inpatient Medication Order Entry (IPMOE) was developed. Prior to IPMOE implementation, paper-based system Medication Administration Records (MAR) was used for hand-written orders of medications. IPMOE was rolled in Ruttonjee Hospital (RH) from April to August 2015; which allows close-the-loop drug ordering, pharmacy verification and administration of medication with the same electronic pattern.

Objectives

To investigate the impact of IPMOE implementation on medication safety

Methodology

This descriptive pre-post study on the implementation of IPMOE was conducted in RH in which number of medication errors before and after IPMOE implementation were evaluated from April 2013 (2Q2013) to September 2017 (3Q2017). Secondarily, characteristics of the medication errors were accessed.

Result

The recorded medication errors rose after IPMOE implementation (3Q2015) and then dropped to a lower level as comparable to pre-implementation of IPMOE. The rise was mainly attributed to the increasing number of prescribing errors; whilst the number of administrating and dispensing errors fell by two thirds after IPMOE implementation.Most of medication errors before IPMOE implementation were primarily related to transcribing errors (e.g. wrong drug prescribed/dispensed, wrong route, drug omission, administrating of drug with wrong frequency due to wrong scheduling, etc.) which were largely eliminated after IPMOE implementation. Clinical intelligence checking of IPMOE also eliminated the medication errors that involved drug allergies.
The cause of increase in prescribing errors after IPMOE implementation is due to unfamiliarity with the infusion details (e.g. amount of diluent and infusion rate) of parenteral drugs. Infusion details were not mandatory for prescribing parenteral drugs

on MAR but are deemed necessary in IPMOE. Prescribers are recommended to order parenteral drugs by using IPMOE common orders whenever possible.
Therapeutic duplication is another major prescribing error after implementation of IPMOE. When using paper MAR, nurses checked for duplication and rectified before sending the order to pharmacy, however, in IPMOE, the order was directed to Pharmacy directly.
Initially, there were administrating errors that involved duplicated frequency; it was rectified after IPMOE enhancement.
Before implementation of IPMOE, paper MARS were pre-screened by nurse before sending to pharmacy for verification which reduced many captured prescribing errors. IPMOE allows electronic medication orders directly delivered to pharmacy for verification; in which all potential prescribing errors were captured and hence result in increase in prescribing errors.
IPMOE provides a close-the-loop medication prescribing, dispensing and administration cycle. It enables medication safety by reducing transcribing and enhanced clinical checking. However, we should not fully rely on the system and should work with care to ensure medication safety.