Service Priorities and Programmes

Electronic Presentations

Convention ID: 172
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The effectiveness of computerized medication order systems on the medication turnaround time in hospital settings: A systematic review

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Keywords:
Computerized Physician Order Entry (CPOE)
medication turnaround time
hospitals

Introduction

With the high incidence rate of medication errors (MEs), there is a growing body of evidence that supports the introduction of computerized physician order entry (CPOE) systems to prevent MEs. However, due to the complexity of the medication process, CPOE may have a potential impact on the efficiency of patient care by affecting the medication turnaround time (TAT). The effectiveness of CPOE on workflow efficiency across the entire medication process has yet to be established.

Objectives

To examine the effectiveness of CPOE on overall medication TAT, and to identify the impact of CPOE on staff time across different phases of the medication process in relation to prescribing, pharmacy processing and medication administration in hospital settings

Methodology

All studies that evaluate the effect of CPOE on outcomes pertaining to medication TAT when comparing with paper-based prescriptions in hospital settings were electronically searched in MEDLINE®, EMBASE® , CINAHL Plus, PubMed, and the Cochrane library up to March 2014. Identified titles and abstracts were screened by two independent reviewers to determine eligibility. All selected studies were validated, and data were analyzed using the RevMan 5.2 Meta-analysis tool.

Result

Ten studies with quasi-RCT design were identified. The result based on ten studies

favored the CPOE as compared to paper-based prescription on reduction of overall medication TAT (Mean difference [MD]=1.45 hours. 95% CI: [0.63 to 2.27 hours], p = 0.00001), and prescribing to pharmacy processing(MD = 1.27 hours, 95% CI: [0.55 to 2.00 hours], p < 0.00001). When comparing the first phase with the third phase of the medication process in 2 studies, the reduction in time from prescribing to pharmacy processing were greater than the time from pharmacy processing to medication administration in both studies, with a reduction of 77% Vs 11% , and reduction of 86% Vs 55% in respective studies. Findings from this review may suggest that CPOE only significantly reduced a portion of the medication TAT within the three phases in medication management. Insufficient research was undertaken to evaluate the impact of CPOE specifically on the medication administration phase which is usually taken by nurses. The information is of great importance on the efficiency of nursing care if medication administration time increases instead of reduces with the implementation of CPOE.