Automated Medication Dispensing Systems for Hospital Use: Clinical Effectiveness and Guidelines
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Acknowledgments:

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About CADTH: CADTH is an independent, not-for-profit organization responsible for providing Canada’s health care decision-makers with objective evidence to help make informed decisions about the optimal use of drugs, medical devices, diagnostics, and procedures in our health care system.
Research Questions

1. What is the clinical evidence regarding the benefits and harms of automated medication dispensing systems in hospitals?

2. What are the evidence-based guidelines regarding automated medication dispensing systems in hospitals?

Key Findings

Two systematic reviews were identified regarding the clinical evidence regarding the benefits and harms of automated medication dispensing systems in hospitals.

Methods

A limited literature search was conducted on key resources including PubMed, The Cochrane Library, University of York Centre for Reviews and Dissemination (CRD), OVID Medline, CINAHL, Canadian and major international health technology agencies, as well as a focused Internet search. No filters were applied to limit the retrieval by study type. Where possible, retrieval was limited to the human population. The search was also limited to English language documents published between January 1, 2012 and August 18, 2017.

Selection Criteria

One reviewer screened citations and selected studies based on the inclusion criteria presented in Table 1.

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<th>Table 1: Selection Criteria</th>
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<td><strong>Population</strong></td>
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<td><strong>Intervention</strong></td>
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| **Comparator**              | Q1: Usual treatment  
Q2: No comparator |
| **Outcomes**                | Q1: Benefit or harms  
Q2: Evidence-based guidelines |
| **Study Designs**           | Health technology assessment, systematic reviews, meta-analyses, randomized controlled trials, non-randomized studies, evidence-based guidelines |
Results

Rapid Response reports are organized so that the higher quality evidence is presented first. Therefore, health technology assessment reports, systematic reviews, and meta-analyses are presented first. These are followed by randomized controlled trials, non-randomized studies, and evidence-based guidelines.

Two systematic reviews were identified regarding the clinical evidence regarding the benefits and harms of automated medication dispensing systems in hospitals. No randomized controlled trials, non-randomized studies, or evidence-based guidelines were identified.

Additional references of potential interest are provided in the appendix.

Overall Summary of Findings

Two systematic reviews\(^1^,2\) were identified regarding the clinical evidence regarding the benefits and harms of automated medication dispensing systems in hospitals. One systematic review\(^1\) identified eight eligible studies which concluded that automated dispensing devices (ADDs) were effective in reducing medication storage errors. ADDs were also effective in reducing the amount of time it took a nurse to take inventory of narcotics and controlled substances; however, there was no evidence that using ADDs increased the time nurses or pharmacists spent with patients. The systematic review\(^1\) recommends carefully examine their current system and possible benefits that may emerge with implementing this technology. Another systematic review\(^2\) identified seven studies. One of the studies within the review found that the ADD user drug treatments were more likely to remain unchanged than with patients using standard dispensing procedures. Another study within the review, found that patients using ADD had fewer drug-drug interactions. The systematic review\(^2\) concluded that there is a lack of evidence for ADD’s safety of medication use and appropriateness.

References Summarized

Health Technology Assessments

No literature identified.

Systematic Reviews and Meta-analyses


Randomized Controlled Trials
No literature identified.

Non-Randomized Studies
No literature identified.

Guidelines and Recommendations
No literature identified.
Appendix — Further Information

Systematic Reviews and Meta-Analyses – Alternative or Unspecified Comparators


Randomized Controlled Trials – Alternative Intervention


Non-Randomized Studies

Alternative Population


Alternative Interventions


Alternative or No Comparator


Economic Evaluations


Review Articles
