



TITLE: Automated Medication Dispensing Systems: Clinical Benefits and Harms and Cost-Effectiveness

DATE: 2 September 2010

RESEARCH QUESTIONS:

1. What are the clinical benefits and harms of automated medication dispensing systems in hospitals?
2. What is the cost-effectiveness of automated medication dispensing systems in hospitals?

METHODS:

A limited literature search was conducted on key health technology assessment resources, including Ovid Medline, EBSCOhost, CINAHL, The Cochrane Library (Issue 8, 2010), University of York Centre for Reviews and Dissemination (CRD) databases, ECRI (Health Devices Gold), EuroScan, international health technology agencies, and a focused Internet search. The search was limited to English language articles published between January 1, 2005 and August 30, 2010. No filters were applied to limit the retrieval by study type. Internet links were provided, where available.

RESULTS:

HTIS reports are organized so that the higher quality evidence is presented first. Therefore, health technology assessment reports (HTAs), systematic reviews, and meta-analyses are presented first. These are followed by randomized controlled trials, non-randomized studies, and economic evaluations.

This report is an update to the 2009 CADTH report, Perras C, Jacobs P, Boucher M, Murphy G, Hope J, Lefebvre P, et al. Technologies to Reduce Errors in Dispensing and Administration of Medication in Hospitals: Clinical and Economic Analyses [Technology report number 121]. Ottawa ON: Canadian Agency for Drugs and Technologies in Health [Internet]; 2009 [cited 2010 Aug 30]. Available at http://www.cadth.ca/media/pdf/H0472_med-errors_tr_e.pdf. Therefore,

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included studies were limited to those published from January 2009 onward. The literature search identified one non-randomized study pertaining to the clinical benefits and harms, and cost-effectiveness of automated dispensing systems in hospitals. No HTAs, systematic reviews, meta-analyses, randomized controlled trials, or economic analyses were identified. Additional articles of potential interest are provided in the appendix.

Health technology assessments

No literature identified

Systematic reviews and meta-analyses

No literature identified

Randomized controlled trials

No literature identified

Non-randomized studies

1. Temple J, Ludwig B. Implementation and evaluation of carousel dispensing technology in a university medical center pharmacy. *Am J Health-Syst Pharm.* 2010 May 15;67(10):821-9.
[PubMed: PM20479105](#)

Economic evaluations

No literature identified

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APPENDIX – FURTHER INFORMATION:

Guidelines and recommendations

2. ASHP Guidelines on the safe use of automated dispensing devices. *Am J Health-Syst Pharm* [Internet]. 2010 Mar 15 [cited 2010 Aug 30];67(6):483-90. Available from: <http://www.ashp.org/DocLibrary/BestPractices/AutoITGdlADDs.aspx> [PubMed: PM20208056](#)

Review articles

3. Agrawal A. Medication errors: prevention using information technology systems. *Br J Clin Pharmacol* [Internet]. 2009 Jun [cited 2010 Aug 30]; 67(6):681-6. Available from: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2723209> [PubMed: PM19594538](#)
4. Marini SD, Hasman A. Impact of BCMA on medication errors and patient safety: a summary. *Stud Health Technol Inform.* 2009;146:439-44, 2009.: -44. [PubMed: PM19592882](#)

Additional references

5. Bepko RJ, Moore JR, Coleman JR. Implementation of a pharmacy automation system (robotics) to ensure medication safety at Norwalk hospital. *Qual Manag Health Care.* 2009 Apr;18(2):103-14. [PubMed: PM19369853](#)
6. Hanuscak TL, Szeinbach SL, Seoane-Vazquez E, Reichert BJ, McCluskey CF. Evaluation of causes and frequency of medication errors during information technology downtime. *Am J Health-Syst Pharm.* 2009 Jun 15;66(12):1119-24. [PubMed: PM19498129](#)
7. Ardern-Jones J, Hughes DK, Rowe PH, Mottram DR, Green CF. Attitudes and opinions of nursing and medical staff regarding the supply and storage of medicinal products before and after the installation of a drawer-based automated stock-control system. *Int J Pharm Pract.* 2009 Apr;17(2):95-9. [PubMed: PM20214257](#)