



TITLE: Standardized Hospital Order Sets in Acute Care: Clinical Evidence, Cost-Effectiveness, and Guidelines

DATE: 14 November 2012

RESEARCH QUESTIONS

1. What is the clinical evidence to support the use of standardized hospital order sets in the acute care setting?
2. What is the cost-effectiveness of the use of standardized hospital order sets in the acute care setting?
3. What are the evidence-based guidelines regarding the use of standardized hospital order sets in the acute care setting?

KEY MESSAGE

One randomized controlled trial, ten non-randomized studies, and one evidence-based guideline were identified regarding the use of standardized hospital order sets in the acute care setting.

METHODS

A limited literature search was conducted on key resources including PubMed, The Cochrane Library (2012, Issue 10), University of York Centre for Reviews and Dissemination (CRD) databases, 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, 2007 and November 2, 2012. Internet links were provided, where available.

Disclaimer: The Rapid Response Service is an information service for those involved in planning and providing health care in Canada. Rapid responses are based on a limited literature search and are not comprehensive, systematic reviews. The intent is to provide a list of sources of the best evidence on the topic that CADTH could identify using all reasonable efforts within the time allowed. Rapid responses should be considered along with other types of information and health care considerations. The information included in this response is not intended to replace professional medical advice, nor should it be construed as a recommendation for or against the use of a particular health technology. Readers are also cautioned that a lack of good quality evidence does not necessarily mean a lack of effectiveness particularly in the case of new and emerging health technologies, for which little information can be found, but which may in future prove to be effective. While CADTH has taken care in the preparation of the report to ensure that its contents are accurate, complete and up to date, CADTH does not make any guarantee to that effect. CADTH is not liable for any loss or damages resulting from use of the information in the report.

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The summary of findings was prepared from the abstracts of the relevant information. Please note that data contained in abstracts may not always be an accurate reflection of the data contained within the full article.

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, economic evaluations, and evidence-based guidelines.

One randomized controlled trial, ten non-randomized studies, and one evidence-based guideline were identified regarding the use of standardized hospital order sets in the acute care setting. No relevant health technology assessments, systematic reviews, or meta-analyses were identified. Additional references of potential interest are provided in the appendix.

OVERALL SUMMARY OF FINDINGS

The identified literature included information about a variety of uses of standardized order sets in the hospital setting. Many were incorporated into existing computerized provider order entry systems within the hospitals. No adverse findings were associated with the use of order sets. Information from the included studies has been summarized in Table 1.

Table 1: Summary of Included Studies		
Author and Year	Condition and Type of Order Set	Conclusions
Randomized Controlled Trials		
Schnipper et al. ¹ (2012)	Hyperglycemia CPOE order sets	Use of a SOS within the CPOE resulted in improved glycemic control and insulin ordering. There was not a significant increase in hypoglycemia. The authors suggested SOS should be considered as part of a glycemic management system.
Non-Randomized Studies		
Chane et al. ² (2011)	CPOE order sets User-centered order sets Pre-printed paper order sets	Physician participants used each type of order set while completing simulated order set tasks. The user-centered design took the least time to fill out and assistance was only requested when using CPOE sets. There were no significant differences in errors between set types. Based on the results, the authors encouraged the use of the user-centered design approach.
Chen et al. ³ (2011)	Pediatric oncology CPOE order sets	As the availability of order sets increased in the pediatric oncology unit, the use of SOS and specific protocols increased as well. Medication-related safety events decreased by 39% after implementation of the CPOE system.
Haynes et al. ⁴ (2011)	Prophylactic antibiotic use following surgery	Use of the CPOE resulted in a significant improvement in the number of patients who were discontinued from antibacterials in the

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Author and Year	Condition and Type of Order Set	Conclusions
	CPOE order sets	appropriate timeframe.
Munasinghe et al. ⁵ (2011)	General medical admission CPOE order sets	The authors developed standardized order sets for the most common diagnoses at their institution and integrated them into the general admission orders in their existing EHR. Use of order sets increased by five times after the integration.
Walker et al. ⁶ (2011)	End-of-life care PCOS	The use of PCOS was compared with no palliative care orders and comfort measures only. The use of PCOS resulted in the use of significantly more palliative medication. Few patients in the other study groups were offered these options. Adherence by physicians to the PCOS was improved.
Ballard et al. ⁷ (2010)	Heart failure order set	An internally developed heart failure order set was implemented via the physician intranet. The use of the order set was associated with significantly increased core measures compliance, reduced inpatient mortality, and increased adherence to treatment guidelines.
Fleming et al. ⁸ (2009)	Standardized adult pneumonia order set	Patients who were treated using the order set showed reductions in in-hospital mortality and 30-day mortality. The order sets were widely adopted by physicians.
O'Connor et al. ⁹ (2009)	Paper-based admission order sets for DVT Prophylaxis	The SOSs were made available to physicians for voluntary use with no education or behavior change interventions. Patients admitted using the order sets were more likely to receive DVT prophylaxis than those admitted with free-text orders. Use of the admission order set also improved many secondary outcomes.
Thiel et al. ¹⁰ (2009)	Standardized order set for the management of bacteremic severe sepsis order set	Patients treated using the order set received more intravenous fluids in the first 24 hours after onset of hypotension and were more likely to receive appropriate antibiotic therapy. There was a significant decrease in in-hospital mortality in the group treated using SOSs.
Ballard et al. ¹¹ (2008)	Evidence-based pneumonia order set	Over the course of the study, use of SOSs increased by 55%. There was a significant improvement in in-hospital mortality and core measures compliance. The authors suggested that evidence-based pneumonia order sets can improve delivery of care.

CPOE = computerized provider order entry; DVT = deep venous thrombosis; EHR = electronic health record; PCOS = palliative care order sets; SOS = standardized order set

The Ontario guideline¹² recommends that lists of orders should be incorporated into computerized provider order systems, should they exist in the institution. There was little evidence to indicate that the implementation of standardized order sets improved:

- rates of guideline adherence,
- process of care,
- treatment outcomes,
- efficiency,
- and cost.

REFERENCES SUMMARIZED**Health Technology Assessments**

No literature identified.

Systematic Reviews and Meta-analyses

No literature identified.

Randomized Controlled Trials

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Non-Randomized Studies

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<http://www.ncbi.nlm.nih.gov/books/NBK43723/>
[PubMed: PM21249907](#)

Economic Evaluations

No literature identified.

Guidelines and Recommendations

12. Ontario Health Technology Advisory Committee. OHTAC recommendation: patient order sets [Internet]. Toronto: Health Quality Ontario; 2010 Jan. [cited 2012 Nov 13]. Available from:
http://www.health.gov.on.ca/english/providers/program/ohtac/tech/recommend/rec_draft_pos.pdf

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APPENDIX – FURTHER INFORMATION:

Randomized Controlled Trials

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Qualitative (physician opinion)

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Guidelines – methodology not specified

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Review Articles

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