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.
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>
<thead>
<tr>
<th>Table 1: Summary of Included Studies</th>
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<tbody>
<tr>
<td><strong>Author and Year</strong></td>
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<tr>
<td><strong>Randomized Controlled Trials</strong></td>
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<td>Schnipper et al.¹ (2012)</td>
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<td><strong>Non-Randomized Studies</strong></td>
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<td>Chane et al.² (2011)</td>
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<td>Chen et al.³ (2011)</td>
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<td>Haynes et al.⁴ (2011)</td>
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## Table 1: Summary of Included Studies

<table>
<thead>
<tr>
<th>Author and Year</th>
<th>Condition and Type of Order Set</th>
<th>Conclusions</th>
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<tbody>
<tr>
<td>Munasinghe et al.(^7)  (2011)</td>
<td>General medical admission CPOE order sets</td>
<td>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.</td>
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<td>Walker et al.(^9)   (2011)</td>
<td>End-of-life care PCOS</td>
<td>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.</td>
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<tr>
<td>Ballard et al.(^7)   (2010)</td>
<td>Heart failure order set</td>
<td>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.</td>
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<td>Fleming et al.(^8)   (2009)</td>
<td>Standardized adult pneumonia order set</td>
<td>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.</td>
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<tr>
<td>O’Connor et al.(^7)  (2009)</td>
<td>Paper-based admission order sets for DVT Prophylaxis</td>
<td>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.</td>
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<tr>
<td>Thiel et al.(^10)   (2009)</td>
<td>Standardized order set for the management of bacteremic severe sepsis order set</td>
<td>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.</td>
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<tr>
<td>Ballard et al.(^11)  (2008)</td>
<td>Evidence-based pneumonia order set</td>
<td>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.</td>
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CPOE = computerized provider order entry; DVT = deep venous thrombosis; EHR = electronic health record; PCOS = palliative care order sets; SOS = standardized order set
The Ontario guideline\textsuperscript{12} 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


Non-Randomized Studies


Economic Evaluations
No literature identified.

Guidelines and Recommendations


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APPENDIX – FURTHER INFORMATION:

Randomized Controlled Trials


Non-Randomized Studies


Qualitative (physician opinion)


Usage and implementation of standardized order sets


Guidelines – methodology not specified


Review Articles


Additional References


