

OHTAC Recommendation

Patient Order Sets

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Advisory Committee in July 2009*

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OHTAC Ontario
Health Technology
Advisory Committee

Background

This study was prepared for the Ontario Health Technology Advisory Committee by the Healthcare Human Factors Team based at the Centre for Global eHealth Innovation at the University Health Network, Toronto.

The goals of this study were:

1. To determine whether order sets are effective tools in improving guideline adherence, diagnosis and treatment outcomes, processes of care, efficiency, and/or cost
2. To enable Ontario Hospitals to derive optimal benefit from the development and implementation of order sets

To accomplish this, a multi-disciplinary team was assembled, including experts in: medicine, healthcare IT, human factors, biomedical engineering, and clinical epidemiology.

A systematic review of published evidence on order sets was then undertaken. Inclusion and exclusion criteria were developed and a comprehensive literature search was performed in OVID MEDLINE, MEDLINE In-Process and Other Non-Indexed Citations, EMBASE, CINAHL, The Cochrane Library for studies published between January 01, 1999 and April 18, 2009. This process yielded 22 publications for inclusion in this review, however, none were randomized controlled trials. One paper described a non-randomized study with contemporaneous controls, and the remaining 21 papers described non-randomized studies with historical controls. An assessment of the quality of this evidence was subsequently conducted using the STROBE checklist and GRADE Working Group criteria.

Results

Generally, the studies reported positive outcomes in terms of increased levels of compliance for both diagnosis and treatment using order sets, but the quality of evidence was graded as very low. Only a few of the papers contained an economic analysis of the impact of order sets would have and these were limited in scope. It should be pointed out that in other areas, such the as aviation and the nuclear industry, the methodical use of checklists has been associated with improved compliance and safety outcomes. It is believed that general assumptions of the intrinsic benefits of checklists and order sets explains, at least in part, why more rigorous studies have not been undertaken in the clinical settings (coupled with the intrinsic difficulty of conducting randomized controlled trials).

There are currently three main approaches to the generation and propagation of order sets in medicine:

1. traditional paper forms developed by clinicians in-house,
2. downloadable electronic forms, which are sometimes developed based on input from a number of institutions, and
3. lists that are integrated into computerized physician order entry (CPOE) systems.

Of these, the third approach has a clear advantage in that it allows the institution to assess the level of compliance with the order set, providing important information on the degree of acceptance of the tool, and its potential usefulness. In Ontario, however, most hospitals either do not use order sets or use paper order sets developed by clinicians in-house. A few have shared electronic forms and still others are actively working toward order sets that are embedded in the CPOE system.

OHTAC Recommendation: Patient Order Sets

An additional factor to consider is the need to review and update order sets based on fresh evidence. Modern systems now have the ability to “push” evidence to hospitals in a live manner to continually review and revise order sets. This constant updating prevents hospitals from keeping order sets that no longer represent best practices in place.

Equally important is the question of physician adoption. It’s clear that physicians do not welcome the introduction of order sets that slow down their workflow or otherwise interfere with their ability to care for their patients in a timely manner. Anecdotal comments from users indicate that successful adoption depends on the selection of order set processes that integrate well with physician workflow. Staff consultation and involvement is also an essential step in the development and implementation process. Order sets imposed without such consultations are more likely to face a slow adoption rate.

OHTAC Recommendations

- Given the fact that there is very low quality evidence that order sets improve the rate of guideline adherence, processes of care, treatment outcomes, efficiency and cost, OHTAC recommends that order sets for diagnosis and/or treatment become an important focus for further development through a formal evaluation of existing models
- OHTAC recommends that any future commitment to order sets should be:
 - developed from a common starting framework across Ontario for as many applications as possible which includes all end users in the formative process;
 - overseen and coordinated by a third party;
 - customized by each institution with broad participation by potential institutional and professional end-users;
 - adaptable to paper, electronic form, or embedded in CPOE systems with linked real-time evidence support;
 - gradually incorporated into CPOE systems and linked in real-time to evidence from the literature assessed by end-users to ensure that compliance can be monitored and that fresh evidence is made available.