How to Promote Best Practice and Safety through the Use of Order Sets

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Description of Order Sets and the Role of the Pharmacist

An order set can be defined as a predetermined, evidence-based prescribing tool to help physicians and other healthcare professionals to effectively and efficiently implement best practices. Order sets are typically prepared for common disease states (e.g., community-acquired pneumonia) or for a general purpose (e.g., general admission orders). Well-designed order sets have the potential to improve pharmaceutical care within an interdisciplinary context; to promote accurate communication; and to reduce variation in care by combining pertinent reminders, safety alerts, and other "best practices" into a just-in-time process. Whether in electronic or paper format, order sets can transform evidence-based knowledge into practice. Hence, order sets have the potential to positively affect care, services, safety, and patient outcomes.

Pharmacists make important contributions to the development of order sets through their knowledge about pharmacology and therapeutics and their ability to interpret evidence from scientific literature. Pharmacists are also well positioned to provide information about relative cost-effectiveness and the possible financial impacts of various drug therapy choices. This type of information helps the pharmacists who are developing order sets to make decisions about restricting or including certain drugs and also whether patients receiving certain drugs should be closely monitored.

This tool kit is intended to help pharmacists implement best practices and improve patient safety through the use of order sets. It outlines some of the challenges faced by pharmacists when developing and implementing order sets and offers suggestions for overcoming these barriers and for measuring the success of order sets.

Development of Order Sets

Are relevant best-practice recommendations available from elsewhere?

When creating order sets for a particular practice area, one of the first steps is to see if relevant best-practice recommendations are available. For example, when writing an order set for patients admitted to the nephrology service, it would be reasonable to consult existing nephrology guidelines (e.g., those of the Kidney Disease Outcomes Quality Initiative and the Canadian Nephrology Association). The writer of the new order set must be cognizant of the various levels of evidence presented for individual recommendations within such guidelines. For example, a recommendation based on a randomized controlled trial would usually carry more weight than one based on expert consensus. It is also important to realize that not all guideline recommendations need to be incorporated into an order set. For example, a recommendation that is based solely on expert opinion can reasonably be excluded from an order set.

Customize order sets to reflect local culture, expertise, clientele, and resources

When applying guidelines to a specific site, the order set must be individualized to reflect local culture, expertise, clientele, and resources. For example, according to the *Canadian Best Practice Recommendations for Stroke Care (Update 2010)*[1], a swallowing assessment should be done as part of the initial assessment of a patient who has had a stroke, when clinically appropriate (e.g., the patient is sufficiently alert). Medications should not be administered orally before the assessment deems it safe to do so. If the assessment cannot be done within the first 24 h because the patient is not alert, the patient should be monitored closely and the assessment performed as soon as it is clinically safe to do so. If a speech language pathologist or other appropriately trained specialist is not available to perform this assessment at a particular site, a basic screening tool can be developed for use by nurses. As a second example, if a protocol for non-ST-segment elevation myocardial infarction is being developed for use in a small hospital, the choice of agents and the algorithm for decision-making may reflect geographic access to a percutaneous coronary intervention lab, as well as level of nursing care and access to specialists.

Create a template for order sets

Style templates for order sets should be developed. Such templates might include the policies and procedures to be followed when developing and reviewing order sets, which will help ensure consistency of process within the pharmacy department. The key elements of order sets should also be considered, such as use of TALLman lettering, avoidance of prohibited abbreviations (for example, see the list of dangerous abbreviations, symbols, and dose designations developed by the Institute for Safe Medication Practices Canada, at: http://www.ismp-canada.org/download/ISMPCanadaListOfDangerousAbbreviations.pdf), and style and formatting. A small group of individuals should be responsible for this process and for editing the resulting order sets. A sample policy pertaining to the development of preprinted order sets is attached here for reference purposes (Appendix 1).

Solicit feedback

Once an order set has been developed, it should be distributed widely (e.g., by email) with a request for feedback, ideally within 1 month. The groups to be consulted at this stage are those directly and indirectly involved with providing the services covered by the order set, including laboratory services staff, rehabilitation therapists, nutritionists, diagnostic imaging technicians, pharmacists, physicians, and nurses. Input should also be sought from administrators and managers, who will be required to oversee the costs of the new order set.

Approval of Order Sets

A frequent challenge in developing order sets is the approval process. New and revised order sets often become bogged down in endless rounds of revisions and consultations, and the documents may be circulated to hospital departments and programs multiple times, sometimes over a period of a year or more. Although this extended review and revision process may seem onerous, it is important to ensure that all those who might be affected by the order set are involved in the consultation process. This in turn helps to ensure that hospital staff actually use the order set once it is implemented. For example, physicians who feel they were not consulted during the approval process might reject the final version of the order set, but this problem can be avoided or mitigated if physicians participate in review and revision.

Affected departments and programs should take responsibility for choosing appropriate representatives and ensuring their attendance at meetings and their input on various drafts during development of the order set. All parties must also be aware of all anticipated impacts of the order set. All too often, physicians, nurses, and administrators who are part of the development process are unaware of the financial impact or the impact on resource allocation when they sign off on the final version. For example, an order set specifying that prophylaxis for venous thromboembolism should be started for all medical patients will increase the drug costs for individual medical units, and unit managers should be aware of this implication before they approve the order set. Likewise, an order set for infection control that requires swabs and testing for *Clostridium difficile*, methicillin-resistant *Staphylococcus aureus*, or vancomycin-resistant *Enterococcus* will affect workload for laboratory services.

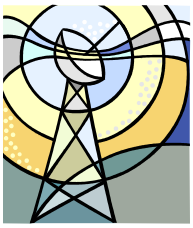
To ensure that the order sets are used once implemented, medical management must have final approval for the order set. In some organizations, a formal process of endorsement by established committees (e.g., the Pharmacy and Therapeutics Committee or the Medical Advisory Committee) should be considered. See Appendix 2 for a sample submission form for an order set and Appendix 3 for a sample preprinted medication order guideline.

Implementation of Order Sets

Assign responsibility to communicate information about the order set

Once an order set has been approved, specific institutional personnel should be assigned responsibility for ensuring that changes to the formulary and introduction of the new or revised order set are communicated effectively. This could be the responsibility of a drug information pharmacist or a clinical education nurse. If existing order sets are affected by the new order sets, the older documents should be edited as required before implementation of the new ones, to avoid confusion or duplication.

Communication and appropriate education are key to successful implementation and usefulness of all order sets within an institution. Educational in-service sessions for pharmacists, physicians, and other patient care staff should be planned and carried out before implementation of new or revised order sets.



For optimal roll-out of order sets and management of associated change, notices, newsletters, and/or memos should be sent to all healthcare providers affected by the new documentation. These notifications should include launch dates, dates and times for in-service sessions, samples of the new order sets, and all other available implementation-related material (e.g., intranet site, information related to hospital order entry systems).

Challenges and Advantages for Smaller Hospitals

Smaller hospitals often lack administrative support and clinical expertise related to specific disease states, which can lead to inconsistencies and outmoded practices. For example, it can be difficult to maintain up-to-date antimicrobial practices if the hospital has no infectious diseases (ID) physician or ID specialist pharmacist. This challenge can be overcome by consulting experts in larger centres. Smaller hospitals can consult larger facilities to ensure that all sites use best evidence in their respective practice settings.

On the other hand, smaller hospitals may have certain advantages over larger institutions in the development of order sets. Often, for example, the approval process can be expedited, because fewer people are involved in the consultations. Nonetheless, the same principles apply for smaller hospitals as for larger ones, such as ensuring buy-in and following an appropriate consultative process.

Evaluation of Order Sets

Before order sets are implemented, members of the health care team should discuss how the process and outcomes will be evaluated. Ideally, such discussions would include everyone who has been involved in developing the order set, as well as representatives of front-line practitioners (nursing staff, prescribers, and pharmacists) who are interested in evaluating outcomes for their specific areas. A formal evaluation will help in identifying when the order sets have achieved the desired outcomes. In addition, information from an evaluation can be used in fine-tuning the order sets and in developing future versions. Nursing and pharmacy students or residents may complete this type of evaluation as a chart review for a required research project. Use of various tests, administration of different medications, and the length of patient stay are among the clinical parameters that can be audited and evaluated.

Appendices

Appendix A: Kingston General Hospital Policy on Pre-Printed Orders
3.1DAppendixA_KGHPre-PrintedOrders.pdf

Appendix B: Kingston General Hospital Pre-Printed Order Submission Form
3.1DAppendixB_KGHSubmissionForm.pdf

Appendix C: Fraser Health Pre-Printed Medication Order Guidelines
3.1DAppendixC_FraserHealthPre-PrintedMedOrderGuidelines.pdf

Useful Websites

http://www.ordersets.com/

- This website offers open-source order sets to institutions on a subscription basis. One problem with the order sets provided is that they do not include references. In addition, each order set must be assessed for appropriateness and suitability for each institution and to ensure compliance with current evidence.

http://www.ismp.org/Tools/guidelines/StandardOrderSets.pdf

- Guidelines for order sets developed by the Institute for Safe Medication Practices (US).

http://www.diabetes.ca/for-professionals/resources/2008-cpg/

- 2008 clinical practice guidelines of the Canadian Diabetes Association

http://www.cma.ca/index.php/ci_id/54316/la_id/1.htm

- CMA [Canadian Medical Association] Infobase: Clinical Practice Guidelines (CPGs)

http://www.guideline.gov/

- National Guideline Clearinghouse, a public resource for evidence-based clinical practice guidelines, published by the US Agency for Healthcare Research and Quality

http://www.bcguidelines.ca/gpac/

- Clinical Practice Guidelines and Protocols, published by the BC Ministry of Health

Annotated Bibliography

Micek ST, Roubinian N, Heuring T, Bode M, Williams J, Harrison C, et al. Before-after study of a standardized hospital order set for the management of septic shock. *Crit Care Med* 2006;34(11):2707-2713.

- The authors of this study found that a standardized order set for the management of septic shock in the ED was associated with significantly more rigorous fluid resuscitation of patients, significantly more frequent administration of appropriate initial antibiotic treatment, and significantly lower 28-day mortality.

Starmer J, Waitman LR. Orders and evidence-based order sets – Vanderbilt's experience with CPOE ordering patterns between 2000 and 2005 [abstract]. Proceedings of the 2006 Annual Symposium of the American Medical Informatics Association; 2006 Nov 11-15; Washington (DC). p. 1108.

- Orders arising from order sets (ranging from simple order lists to complex order entry advisors that included imbedded decision support tools) accounted for more than 60% of all inpatient and ED orders in this study. The authors concluded that ensuring that order sets are evidence-based is an important step in delivering evidence-based guidelines at the point of care.

Gaylis FD, Van SJ, Daneshvar MA, Gaylis GM, Gaylis RB, Sheela RB, et al. Preprinted standardized orders promote venous thromboembolism prophylaxis compared with traditional handwritten orders: an endorsement of standardized evidence-based practice. *Am J Med Qual* 2010;25(6):449-456.

- The study was conducted to determine if a standardized evidence-based medical orders improves physician compliance with prophylaxis for venous thromboembolism (VTE). After an admission standardized evidence-based medical order was introduced, information about VTE prophylaxis was given to a total of 61 physicians. Enhanced presentations about standardized evidence-based medical orders and their value in preventing VTE were given to hospitalists and not to specialists. Data were analyzed for 2 cohorts each consisting of 249 at-risk patients: for one cohort, standardized evidence-based medical orders were used during the admission process, and for the other cohort, handwritten orders were used. The results of the study revealed that VTE prophylaxis was ordered for 70% (173 of 249) of the standardized evidence-based medical order cohort but for only 22% (55 of 249) of the patients whose physicians wrote orders by hand. The specialists were more likely to hand write their orders and were less likely to comply with standards for prophylaxis of VTE. The authors concluded that standardized orders promoted prophylaxis of VTE more effectively than handwritten orders and that more rigorous education is needed to encourage compliance with evidence-based standards of medical practice.

Ehringer G, Duffy B. Promoting Best Practice and Safety Through Preprinted Physician Orders (Vol. 2: Culture and Redesign). 2008Aug.Availavle from: http://www.ahrq.gov/downloads/pub/advances2/vol2/Advances-Ehringer_17.pdf

- This article describes how well designed preprinted physician orders that are developed within a hospital have the potential to translate knowledge into practice and positively affect care, safety, patient outcome, among other aspects of healthcare. It describes how the preprinted orders have the potential to improve interprofessional delivery of care, promote accurate communication, and reduce variation in practice by combining different tools (e.g., safety alerts, and "best practice"). The paper also provides checklists and lists of suggestion to address various concerns that might arise during the development (content, format) of the pre-printed orders and how the pre-printed orders can contribute to education and medication safety.

Literature Cited

1. Lindsay MP, Gubitz G, Bayley M, Hill MD, Davies-Schinkel C, Singh S, and Phillips S. *Canadian Best Practice Recommendations for Stroke Care (Update 2010)*. On behalf of the Canadian Stroke Strategy Best Practices and Standards Writing Group. 2010; Ottawa, Ontario Canada: Canadian Stroke Network.