

Maximizing Physician Adoption of Automated Order Sets, Point-of-Care Decision Support

When properly integrated into clinical workflows, automated order sets and other clinical decision support tools have been shown to reduce adverse events, improve patient care and safety, speed patient throughput and increase a facility's return on its investment in health information technology.

Unfortunately, these technology tools often suffer the same fate as electronic health records (EHRs), computerized physician order entry (CPOE) and other clinical information systems: end user rejection, resulting in an estimated 50 percent failure rate.

The problem is not clinician resistance. Rather, it is that decision support software is typically developed by engineers who are not familiar with physician workflows or the clinical context in which the application will be used. The software works from a technical standpoint, but not from a clinical one.

AUTOMATED ORDER SET SOLUTIONS

There are exceptions. One is the emerging niche of applications that automate the authoring, deployment and use of evidence-based order sets.

Central to the practice of evidence-based medicine, order sets bring together established clinical protocols, proven best practices and medical content to guide the care process. By streamlining the delivery of standardized care, they can improve patient safety, outcomes, clinician performance and regulatory compliance.

Achieving these outcomes requires a sufficient library of standardized order sets. Though industry standards call for 200 to 300 order sets integrated into CPOE, many hospitals find they need many more, in some cases, 1,000 or more.

It is very difficult, however, for most hospitals to build such a comprehensive library. According to one survey, hospitals that use order sets reported that their primary challenge is a shortage of time and resources, followed by the difficulty of bringing together decision makers and achieving consensus.

The survey also found that achieving consensus and end user adoption is further hindered by the lack of easy access to the scientific literature supporting order set directives. Keeping order sets current given the constant flow of new medical evidence and other practice-altering clinical developments is also problematic.ⁱ

To counter these challenges, more hospitals are seeking to automate order sets. Achieving high adoption rates and an adequate return on investment, however, require order set software to integrate seamlessly into workflows and deliver the functionality and decision support clinicians want.

DEVELOPMENT: AUTHORIZING & REVIEWING

The first adoption test of any order set solution is how well it impacts the ability of authors and reviewers to achieve consensus.

The software must be designed to streamline and accelerate the development process in a manner that is cohesive with the everyday workflows of a highly diverse group of participants, including physicians, nurses, pharmacists, quality assurance managers, risk managers, administrators, department heads, ancillary staff, etc.

Overcoming time and resource challenges also requires that the software feature robust content to significantly reduce the need to draft order sets from scratch. This includes a sizable library of prebuilt order sets based on nationally recognized best practices and guidelines from respected organizations with significant applicable clinical expertise.

But it is not just the quantity of prebuilt order sets that matters. Quality is the true measure of an order set's value.

Prebuilt order sets must originate from respected organizations with significant applicable clinical expertise. They must also be properly structured and electronically linked to trusted medical sources so authors can quickly and confidently validate their medical appropriateness. Because every hospital's requirements are different – e.g., medication formularies vary

from one facility to the next – the application should also be flexible enough to allow for easy modification of prebuilt order sets, including changes to supporting medical content.

Order set software must also allow for variation in order sequencing during actual use, while still delivering an easy-to-use finished product. Most order set applications break down orderable items into categories, i.e. medication, radiology, labs, etc., giving the final order set a structured appearance. While typically a good thing, there are cases when an order set falls outside the normal sequence of clinical events.

Meningitis is a prime example. When a patient presents with symptoms of meningitis, the first order is antibiotics. The second is a CT scan to determine if it is safe to proceed with a lumbar puncture. When the lumbar puncture is performed, multiple tests are ordered on the fluid to confirm the diagnosis.

This sequence is outside the norm for most clinical events, yet any deviation could result in death.

To ensure the end result is clinically relevant, an order set author must be able to run through the sequence of events as they would unfold at the point of care. Even so, each orderable item must still be mapped to the appropriate category. Unless the software allows for this kind of variance, the final order set could endanger patients.

Intuitive clinical decision support capabilities are, therefore, also key considerations. Clinicians embrace decision support as long as it is constructive and not intrusive. This requires medical evidence and decision support tools that evaluate data within a specific clinical context and deliver valid, useful advice back to the clinician.

Convenience is also critical, as most clinicians' must juggle their order set authoring and review responsibilities with their regular medical and/or administrative duties. They value the ability to access a draft order set via a secure web portal or intranet anytime, anywhere, as well as one-click access to medical evidence. They also appreciate the ability to attach new or additional supporting literature without exiting the application or conducting manual research. Other features, including the software's ability to add comments and alert the author when reviews are complete, create additional efficiencies and accelerate the completion process.

DEPLOYMENT: MAPPING & INTEGRATION

To avoid nullifying the efficiencies gained by automating the development process, order set software must significantly reduce or eliminate the need for manual intervention during deployment. This requires: 1) a comprehensive catalog of orderable items, 2) an underlying data-based structure and 3) the use of standard identifiers (i.e. SNOMED CT, ICD-9, CPT, RxNorm, LOINC, etc.).

Without a substantial catalog, authors must manually enter each orderable item before it can be mapped into the order set.

Automated mapping of orderable items is further enhanced when software is built upon an underlying data-based structure.

A data-based structure enables a higher level of automation when integrating order sets with a hospital's CPOE or EHR system. Without it, order sets must be manually rebuilt in these systems, a time-consuming process that carries increased opportunities for human error. More significantly, manual integration results in the loss of the clinical decision support capabilities that were so valuable in the authoring process.

Finally, software that uses standard identifiers reduces the need for manual mapping to CPOE/EHR. This process is further streamlined when the application includes an interfacing tool that can distinguish between different data structures. Such a tool makes it possible to construct an interface that delivers order sets and associated clinical decision support directly into the CPOE or EHR system.

IMPLEMENTATION: POINT-OF-CARE USE

Even if order set software succeeds in accelerating development and deployment, things can still fall apart if physicians do not embrace it at the point of care. Software must not interfere with care processes, while still providing physicians with

appropriate guidance to ensure everything necessary is done to achieve the highest quality, safest levels of care.

The software, therefore, must be easy to use and require limited training to achieve proficiency. It should enhance rather than disrupt workflows and deliver order sets that make clinical sense. In fact, electronic order sets that are formatted similarly to their paper counterparts tend to have higher acceptance than those that are not.

Flexibility is also critical. The software should allow a physician to deviate from the pre-selected orderable items when appropriate. But it cannot be so flexible that standardization is jeopardized. Automated order sets are there to guide and assist physicians, not to tell them how to practice medicine. The software should be designed accordingly.

Likewise, decision support at the point of care should provide easy access to medical evidence that assists physicians in determining the most appropriate course of care. To avoid "alert fatigue," the software should deliver only information that is important to the case at hand, as well as take into context other orderable items and patient information to ensure any recommendations are medically valid.

ONGOING USE: MAINTENANCE

Order set development happens once; maintenance is forever. The single greatest long-term challenge hospitals

face with evidence-based order sets, therefore, is keeping them current.

A powerful maintenance component must be integral to an order set solution. The software must provide automated monitoring of medical content and regular software updates that alert users when new evidence or guidelines are available. It should also be powerful enough to intuit when a change necessitates the review of associated order sets.

Finally, the software should maintain a verifiable audit trail of order set changes and archive past versions. Such authentication can go a long way toward instilling confidence in physicians who are expected to integrate order sets into their standard care practices.

CONCLUSION

Automated order sets advance the practice of evidence-based medicine by standardizing care. The key is to identify software that meets clinicians' specific needs. It must accelerate and streamline the creation and maintenance of order sets, as well as enhance the care process. It must also provide clinical decision support that physicians will embrace.

Involving physicians in the evaluation process is imperative. So is identifying solutions that have been designed by engineers with clinical backgrounds, which can result in applications that integrate seamlessly into clinical workflows and improve the quality and safety of patient care.

ProVation® Order Sets is an innovative, customizable order set authoring and management solution that streamlines the delivery of standardized care. Powered by UpToDate® Decision Support, ProVation Order Sets help clinicians, institutions and EHR vendors improve patient safety, outcomes, clinician performance and regulatory compliance with a solution that:

- *Includes hundreds of predefined order sets that span emergency, inpatient and outpatient settings for both adult and pediatric patients across many medical specialties;*
- *Contains sophisticated, easily customizable tools for managing the entire order set library, while coordinating and simplifying the review and approval process;*
- *Makes it easy for clinicians to write and sign orders electronically and to create data reports for regulatory and core measure tracking;*
- *Arms caregivers with the actionable evidence they need to drive documentation, enhance practice, improve patient safety and demonstrate compliance with credentialing and regulatory standards; and*
- *Makes available interdisciplinary Care Plans built on content created by the renowned Lippincott Williams & Wilkins nursing team.*

Built on ProVation Medical's award-winning technology platform, ProVation Order Sets simplify the order set development process with supporting links to UpToDate® and Clin-eGuide™ evidence and decision support. These links help drive consensus among clinicians, allow users to define the review process and create a centralized electronic library and archive for activity related to each order set.

UpToDate, the resource of choice for more than 360,000 physicians, covers more than 7,700 topics in 14 medical specialties. It includes more than 79,000 pages of text, graphics and links to Medline abstracts, as well as more than 260,000 references and a drug database. Content is continuously reviewed and updated by physician editors and authors.

Depending on a user's needs and preferences, ProVation Order Sets have the flexibility to link to additional clinical resources as well. To help facilities achieve the greatest degree of automation, ProVation Order Sets also feature vendor-neutral mapping and export capabilities that allow for easy integration into any facility or vendor EHR or CPOE system.

ⁱ Renaissance Research. (2008). *ProVation Order Sets Research: Report of Findings*. Edwardsville: Renaissance Research and Wolters Kluwer Health.