Clinical Decision Support: Success Through Smart Deployment

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Through much of the 1980s and 1990s, managed care organizations worked to have clinicians utilize guidelines, protocols and other standardized clinical information in the treatment of their patients. They believed that by providing clinical content, mostly in paper form, they could change clinician behavior; and in turn impact the cost and quality of care.

Although some clinical content, such as InterQual®, criteria was widely adopted by nursing professionals and put into use in acute care settings, there are few examples of successful deployment of clinical content across a wide spectrum of physicians. Although anesthesiologists and some surgical specialties can be cited as having laudable success stories with guideline use, few other organizations or specialties can make such a claim.

It would be easy to place the blame on physicians for failing to adopt clinical content, but that approach is inconsistent with the principles of continuous quality improvement as so eloquently espoused by Don Berwick and others (Berwick, Godfrey, & Roessner, 1990). Clearly, the clinical content as previously provided did not meet the needs of the physician in the treatment of their patients, and probably did not match their workflow to allow the clinical content to be efficiently used.

Clinical Decision Support

Clinical decision support can best be thought of as any information solution that helps a clinician make the best clinical decision possible. Clinical content forms the supporting backbone of clinical decision support. The Institute of Medicine report "To Err is Human" (Kohn, Corrigan, & Donaldson, 1999) placed great emphasis on the application of clinical decision support at the point of care using computerized physician order entry tools.

If the goal of an organization is to utilize clinical content to enhance patient safety, reduce medical errors, and improve clinical and financial outcomes; the organization must take a very broad, yet practical, view of clinical decision support. Although many organizations are rushing to implement computerized physician order entry systems to take advantage of clinical decision support, this might not be the best first step to take, as it is surely not the easiest. There are other initiatives that can yield significant benefit while laying the groundwork necessary for a successful implementation of computerized physician order entry.

Physician Workflow and Needs

When thinking about what physicians do, the very large majority of their time is spent in monitoring test and procedure results. Every decision they make is dependent upon the accuracy and timeliness of those test results, procedure reports and consultant memos. Providing up-to-date, reliable, and easily accessible clinical information about the patient is, in reality, the first and most important step in providing clinical decision support.

Fortunately, recently released Web technology and legacy application enablers allow for the construction of easy to use physician portals. These portals permit physicians, with only a minimum of training, to access patient information through a single personalized user interface. Since these portals can use both public and private networks with HIPAA compliant security levels, physicians can access patient data in the same content rich format in their home or office as they do within the hospital.

In addition to obtaining current patient data, physicians must address the challenge of the ever-increasing volume of new medical information that must be synthesized and incorporated into clinical practice. One partial solution is the implementation of commercially available drug information databases that physicians can employ. These databases are easily integrated into hospital pharmacy or computerized order entry systems forming another level of clinical decision support. Drug-drug, drug-dose and drug-allergy checking occurs automatically in systems that employ these databases. The physician or pharmacist reviews any alerts and then works to change medications when necessary. As the databases are continually updated by commercial clinical content organizations, the clinicians and institutions can be sure that the information they are using to make their decisions is both complete and up-to-date.

Computerized Physician Order Entry

Other types of clinical content, such as order sets, guidelines and alerts, form the basis of clinical decision support that would be used as part of a computerized physician order entry system. This type of clinical decision support has proved most valuable in enhancing such things as antibiotic or radiology test selection, while making several processes in hospitals more consistent and less prone to error (e.g., anticoagulation with heparin).

Unlike providing online access to patient data in a physician portal or performing drug checking in a pharmacy system, introducing a computerized physician order entry system in a hospital places a much greater burden on physicians to change their clinical workflow. Short of forcing physicians to adopt a new system, an approach that has dubious probability

of success, careful implementation planning is necessary to achieve high levels of physician adoption of the computerized physician order entry system. In some instances, implementation of other forms of clinical decision support first (such as those noted above) might prove beneficial in later gaining physician adoption of these valuable computerized physician order entry systems.

Effective Deployment of Clinical Decision Support

Recognizing the multiple forms clinical decision support takes is critical in successfully deploying it and achieving maximal benefits in reduction of medical errors and enhancement of outcomes.

Clinical decision support spans a spectrum of complexity and impact. Items of low complexity include such things as field edits, structured orders and order checking. Middle level complexity includes order-relevant data display and order-relevant data capture. The most complex elements of clinical decision support include rules-based prompting at the time of order entry and rules-based surveillance of results with alerts (Table 1).

Table 1

Type of Clinical Decision Support	Description
Field edits	Sets ranges for data entry into individual fields
Structured orders and predefined orders	Templates that force the entry of specific data elements that will guide order choices and standard orders that are disease specific
Order checking	Evaluation of orders through comparison to medical databases (e.g., drug-drug interactions)
Order-relevant data display	Automatic display of disease and therapy specific patient data
Order-relevant data capture	Automatic prompting for patient and disease specific information that will drive resultant orders (e.g., weight-based drug dosing)
Rules-based prompting at time of order entry	Prompting and alerts at the time of order entry using explicit rules criteria
Rules-based surveillance of results	Monitoring of patient results with automatic data driven alerts including escalation of alerts to proper authority level.

Organizations must structure the implementation of clinical decision support in a way that supports their organizational goals and realities. For some organizations, implementation of clinical decision support within pharmacy systems (e.g., drug checking databases) and then rollout of a physician portal might be the best approach. For others, computerized physician order entry may better address outside market pressures or internal strategic goals. No matter what approach is taken, organizations must stay focused on their goal, continuously monitor their success and execute mid-course corrections based upon their experience.

BIOGRAPHICAL SKETCH

Barry P. Chaiken, MD, MPH, Vice President of Medical Affairs, McKesson Information Solutions, has more than 16 years of experience in medical research, epidemiology, continuous quality improvement, utilization management, risk management, healthcare consulting and public health. Dr. Chaiken is currently on the Board of Directors of ABQAURP.

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