Pharmacy Automation and Technology

Clinical Decision Support Systems Governance and the Pharmacy Department

Brent I. Fox, PharmD, PhD,* and Bill G. Felkey, MS†

The Meaningful Use criteria include a variety of core requirements that all electronic health record systems must demonstrate. An increasing level of functionality from clinical decision support systems is one of those requirements. In this article, we discuss general and specific aspects of clinical decision support systems, including potential roles for pharmacy in governance.

There are many definitions of clinical decision support (CDS) systems. Generally, CDS systems are thought of as computer-based systems that are intended to improve health-related decision making. Most often, CDS promotes improved decision making by presenting the appropriate information to the appropriate providers during care transactions such that their decisions are more informed. Obvious examples of CDS systems include the drug-drug interaction module of the pharmacy management system and the dose-check module of a computerized provider order entry system. CDS can also include structured history intake forms, links to reference information that is pertinent to the user at a specific time, and action alerts that are based on clinical guidelines for specific patients.

Because of their role as potential aids to improve patient care, CDS systems have been the subject of considerable research. This research has led experts to suggest that there are 5 Rights of CDS, much like the 5 Rights of medication administration. The 5 Rights of CDS are the right information (evidence-based and pertinent) to the right person in the right intervention format (the type of CDS) through the right channel at the right point in the workflow.¹ Although there is considerable variation in the types of CDS systems, these systems have the ability to impact a large number of people, both providers and patients.

Due to the variety of intervention types and their impact on patient care, it is important for pharmacy staff to be familiar with the broad categories of CDS. The Agency for Healthcare Research and Quality provides a useful categorization for the 6 types of CDS²:

1. *Documentation forms or templates* limit errors of both commission and omission. By capturing structured data, these forms ensure data are gathered in a manner that allows them to be used in other CDS systems.
2. *Relevant data presentations* allow the decision-maker to efficiently consider all pertinent data.
3. *Order creation facilitators* are organized around specific diagnoses, procedures, or clinical scenarios.
4. *Protocol support* is often disease- or treatment-specific and helps providers manage conditions over time.
5. *Reference information* sources are most often electronic and can link to general or context-specific information.
6. *Alerts and reminders* present information to providers in real-time to prevent a negative action, augment a decision, or update the patient's status. This is the tool that most people think of as a CDS system.

CDS systems are common in today's hospital environment and require considerable input and oversight from a broad representation of hospital personnel. The term *governance* is often used to describe the process by which a hospital ensures the integrity of the content and function of a CDS system. As the country's hospitals continue to push deeper into the Meaningful Use stages, CDS continues to rise in prominence. Accordingly, the process by which a hospital manages its CDS systems grows in importance.

*Associate Professor, Department of Pharmacy Care Systems, Harrison School of Pharmacy, Auburn University, Auburn, Alabama; †Professor Emeritus, Auburn University, Auburn, Alabama

Because medications are a core component of treatment in the acute care environment, CDS systems often focus on appropriate medication use. We believe, therefore, that pharmacy leadership should play an active role in CDS governance. Based on case studies of a variety of institutions, a 2011 article identified 7 domains of CDS governance³:

1. CDS staff – the hospital’s personnel who are devoted to managing the CDS system. Staff size and makeup often varies according to hospital size.
2. Committees – groups of clinicians, administrators, and technical professionals who are responsible for CDS maintenance.
3. Process – mechanism by which CDS content is acquired (purchase from vendor or built internally).
4. Customization – ability for individual practices or services to tailor CDS content.
5. Clinical information system usage requirements – whether or not clinicians are required or encouraged to use CDS systems.
6. Monitoring – the hospital’s process of reviewing and evaluating the effectiveness of CDS systems.
7. Feedback – the hospital’s process of obtaining input from CDS system end users.

CDS governance approaches vary considerably based on hospital resources (both people and technical). Large academic medical centers will usually have dedicated staff that focuses exclusively on CDS, whereas regional or local hospitals may rely on a close relationship with their CDS vendor for many of the governance functions. Regardless of hospital size, pharmacy can play an important role in several of the domains of governance.

Using the framework provided by Wright et al, pharmacy staff can contribute their subject matter expertise in a collaborative approach to the design and maintenance of CDS content. If these processes are performed by a vendor, pharmacists are qualified to serve as liaison for medication-related content. In large medical centers, pharmacy informatics staff focus

exclusively on information systems, including CDS systems. Pharmacists are also well-positioned to contribute to the monitoring domain. They can define metrics and performance measures for medication-related CDS, using their clinical knowledge to identify how users are expected to respond to CDS messages. Ideally, the process of monitoring will be automated and pharmacy will serve to evaluate reports of monitoring activities.

A critical aspect of managing any information system is to routinely gather user feedback on system performance. Although feedback can be obtained in a structured or unstructured manner, it is important for users to have multiple channels through which to submit feedback. For medication-related CDS content and processes, pharmacy staff can play an important role as the first point of contact for feedback. Once feedback is received, pharmacy staff can also have a prominent role in obtaining additional information to enhance medication-related CDS features.

The considerable variety of hospital pharmacy departments likely translates to a similar variety in the roles that pharmacy staff have in CDS system governance. We believe that pharmacy should be involved in CDS system governance to the point that resources allow. We welcome your comments to Brent (foxbren@auburn.edu), to Bill (felkebg@auburn.edu), or on our blog at www.pharmacy-informatics.com.

REFERENCES

1. Agency for Healthcare Research and Quality. Overview of 5 CDS rights. http://healthit.ahrq.gov/images/mar09_cds_book_chapter/CDS_MedMgmt_ch_1_sec_2_five_rights.htm. Accessed May 12, 2013.
2. Agency for Healthcare Research and Quality. Types of CDS interventions. http://healthit.ahrq.gov/images/mar09_cds_book_chapter/CDS_MedMgmt_ch_1_sec_4_interventions.htm. Accessed May 12, 2013.
3. Wright A, Sittig D, Ash JS, et al. Governance for clinical decision support: case studies and recommended practices from leading institutions. *J Am Med Inform Assoc*. 2011;18:187-194. ■