Advancing Clinical Decision Support

CLINICAL DECISION SUPPORT STARTER KIT

Prepared by:

Lauren Mercincavage, MHS
Dylan Sherry, BA
Eric Pan, MD, MSc

Submitted on:
June 10, 2011

Prepared for:
Department of Health and Human Services Contract # HHSP23320095649WC
Task order HHSP23337009T
Office of the National Coordinator ARRA Contract entitled "Advancing Clinical Decision Support"

Principal Investigators:

Douglas Bell, MD, PhD

Blackford Middleton, MD, MPH, MS

Clinical Decision Support Starter Kit: Introduction

The Clinical Decision Support (CDS) Starter Kit is designed to help small practices take the first steps toward implementing CDS tools. This Starter Kit will help implementers become familiar with CDS, and it provides step-by-step examples of how to manage the implementation of a CDS rule. Users of the CDS Starter Kit will gain an understanding of:

- CDS and the rationale for using it;
- Five types of commonly-used CDS
- The relationship between CDS and Meaningful Use goals
- Examples of how to implement CDS rules that relate to Meaningful Use

This Starter Kit is designed for practices that have completed an EHR implementation and are now ready to implement CDS tools.

What is CDS and why should I consider using it?

CDS is broadly defined as: "a process for enhancing health-related decisions and actions with pertinent, organized clinical knowledge and patient information to improve health and healthcare delivery." (1) CDS should be intelligently-filtered and presented at the appropriate times to the appropriate people. With the growing use of technology in healthcare, CDS tools are often included within the EHR. These tools (described in more depth below) include alerts, reminders and documentation templates aimed improve clinical processes and outcomes. Studies on the effects of CDS have shown it to be effective in improving quality of care.(2)

Suggested reading:

- Bates DW, Gawande AA. Improving safety with information technology. N Engl J Med. 2003 Jun 19;348(25):2526-34.— This article by David Bates and Atul Gawande lays out the many ways in which information technology, including clinical decision support, can improve the quality of care.

- Bates DW, Kuperman GJ, Wang S, Gandhi T, Kittler A, Volk L, Spurr C, Khorasani R, Tanasijevic M, Middleton B. Ten commandments for effective clinical decision support: making the practice of evidence-based medicine a reality. J Am Med Inform Assoc. 2003 Nov-Dec;10(6):523-30. Epub 2003 Aug 4.— This study suggest the ways in which CDS can be useful for the practice of evidence-based medicine. Furthermore, the ten commandments lay out key considerations for those who plan to implement CDS systems.

- Agency for Healthcare Research & Quality (AHRQ), Clinical Decision Support Website – This website includes a library of resources that address pre-implementation planning, implementation of CDS, and post-implementation use. A list of implementation tools and resources, as well as stories from past CDS implementations, are available.

Common types of CDS tools

Most CDS tools fall into one of five major categories: 1) alerts & reminders; 2) order sets; 3) infobuttons; 4) data displays; and 5) documentation templates as CDS. In this section, Each of the five categories are described in terms of what they are designed to do; what they look like, and examples of how they are applied.

1) Alerts and reminders

What are they? — Alerts and reminders deliver information at the point of care in a way that gets the provider's attention.

What do they look like? — Alerts and reminders can appear as pop-up boxes, strategically placed reminder lists, or changes in visual presentation such as font or color. The design of an alert or reminder will vary with the type of information being presented and its relative importance. For instance, an alert for a severe medication allergy would appear as a pop-up box, and a less severe alert, such as an indicator for generic vs. name brand medications could appear as a change in font.

How are they used? — Alerts and reminders are commonly used to support prescribing and time-sensitive care like annual preventive care screenings.

2) Order sets

What are they? — Order sets are pre-specified bundles of orders grouped by a clinical purpose. Order sets eliminate the need to specify each individual test, medication, etc., for a given situation. This makes the ordering process more efficient and can reduce human error.

What do they look like? — After an order set is created or specified, it may not appear to be different from any other order, with the exception that an order set will group multiple orders for a particular purpose as defined above.

How are they used? — Order sets are used to make the ordering process more efficient and to standardize a level of care across the practice. Providers should work together to identify which order sets are most relevant to their practice.

3) Infobuttons

What are they? — Infobuttons provide clickable links to reference information for selected terms or phrases that appear in the EHR. Providers can seek out information using infobuttons, as opposed to alerts and reminders, which automatically deliver information to the provider.

What do they look like? — Infobuttons appear as a small button or icon next to key words in the EHR, such as problem statements or lab results. An infobutton icon may look something like this:  .

How are they used? — Infobuttons can be used in any situation where more information might be needed. For instance, an infobutton might appear after the name of a condition or medication and link to more information on that topic.

4) Data displays

What are they? — Data displays are reference, guidance or patient specific information provided at appropriate times during ordering or chart review. Unlike alerts and reminders, data displays are not triggered by specific user-action, but are triggered by information.

What do they look like? — A data display health information for a particular disease, such as a diabetes flowsheet, or the display of allergy status when writing a new prescription. They may also appear as a dashboard or could even be a unit tracking system like an ED monitor.

How are they used? — A data display will support decision making, not by providing an alert/reminder or facilitating ordering, but by providing information which may guide the clinician toward making a more informed decision.

5) Documentation templates as CDS

What are they? — Documentation templates are structured electronic forms that collect clinical information. Documentation templates are considered a type of CDS if they are used to support general documentation purposes, other CDS tools later in the workflow, or other clinical purposes like quality measurement.

What do they look like? — Documentation templates look like an electronic form with areas where the provider can enter information. Depending on the template and its purpose, information can be entered in a variety of methods, including free text or from a drop-down menu.

How are they used? — Documentation templates can support any data collection effort that the practice wants to standardize.

How does CDS relate to Meaningful Use?

If widely implemented and used, CDS has the potential to improve the quality of care delivered nationwide. While the HIMSS definition cited above defines CDS in a broad sense, for the purposes of Meaningful Use the definition is more specific (3):

> **Clinical Decision Support** – HIT functionality that builds upon the foundation of an EHR to provide persons involved in care processes with general and person-specific information, intelligently filtered and organized, at appropriate times, to enhance health and health care.

The incentive program for the Meaningful Use (MU) of EHRs as set forth by the Centers for Medicare and Medicaid Services and Office of the National Coordinator for Health IT is an important step toward

this goal. Health IT Regional Extension Centers have also been created to help practices implement and use EHRs meaningfully.(4) Under the Meaningful Use program, eligible providers can receive incentive payments for installing a certified EHR and then reporting data that demonstrate they are making effective or "meaningful" use of the EHR. The MU criteria have been set for reporting in 2011-12, and new, more advanced criteria are to be introduced for later phases (2013 and 2015). It is expected that CDS will feature more prominently in the MU criteria over time.

The MU 2011 criteria require the implementation of drug-drug and drug-allergy interaction checks and the implementation of one CDS alerting rule and the ability to track compliance with that rule. Each of the accompanying CDS Starter Kits provide examples of how an eligible provider can fulfill the "one CDS rule" criterion, targeting improvement for either of the specified conditions.

- CDS Starter Kit: Smoking cessation
- CDS Starter Kit: Diabetes follow-up care

References

1. Osheroff, JA, Teich, JM, Levick, D, Saldana, L, Velasco, FT, Sittig, DF, Rogers, K, Jenders, RA. Improving Outcomes with Clinical Decision Support: An Implementer's Guide, Second Edition. Chicago, IL: Healthcare Information and Management Systems Society; 2011.

2. Berner ES. Clinical decision support systems: State of the Art. Rockville, MD: Agency for Healthcare Research and Quality; June 2009. Report No.: 09-0069-EF

3. Eligible Professionals Meaningful Use Core Measures Measure 11 of 15 [Internet]. Centers for Medicaid and Medicare Services November, 7th 2010 cited 05/30/11]; [1]. Available from: http://www.cms.gov/EHRIncentivePrograms/Downloads/11ClinicalDecisionSupportRule.pdf

4. Regional Extension Centers [Internet]. Office of the National Coordinator of Health Information Technology cited 05/30/11]. Available from: http://healthit.hhs.gov/portal/server.pt/community/hit_extension_program/1495/home/17174