## Clinical Decision Support: More than Just 'Alerts' Tipsheet

Last Updated: July 2014

### What is Clinical Decision Support?

Clinical decision support (CDS) is a key functionality of health information technology that—when effectively applied— contributes to increased quality of care and enhanced health outcomes, error and adverse event avoidance, improved efficiency, reduced costs, and enhanced provider and patient satisfaction<sup>1</sup>. Recognizing this potential to improve care, Congress included CDS as a centerpiece of the Medicare and Medicaid EHR Incentive Programs ("Meaningful Use," or MU).<sup>2</sup>

CDS is <u>not</u> simply an alert, notification, or explicit care suggestion. CDS encompasses a variety of tools including, but not limited to: computerized alerts and reminders for providers and patients; clinical guidelines; condition-specific order sets; focused patient data reports and summaries; documentation templates; diagnostic support; and contextually relevant reference information. These functionalities may be deployed on a variety of platforms (e.g. mobile, cloud-based, installed).<sup>3</sup> CDS is not intended to replace clinician judgment, but rather is a tool to assist care team members in making timely, informed, higher quality decisions. The "Five Rights" concept<sup>4</sup> provides a best practice framework that providers may consider in considering CDS options appropriate for their practice. The Five Rights concept states that in order to provide these benefits, CDS interventions must provide:

- the right information (evidence-based guidance, response to clinical need),
- to the right people (entire care team including the patient),
- through the right channels (e.g., EHR, mobile device, patient portal),
- in the right intervention formats (e.g., order sets, flow-sheets, dashboards, patient lists),
- at the right points in workflow (for decision making or action).

CDS can be provided in various ways including, but not limited to, interruptive activities such as "pop-up" alerts, information displays or links (such as InfoButton), and targeted highlighting of relevant data. The key is that the information be presented when relevant, to those who can act on the information, and in a way that supports completion of the right action.

While many providers may associate CDS with pop-up alerts, alerts are not the only or necessarily the best method of providing support. For example, a pop-up alert can only fire \*after\* an event has occurred (e.g., a provider has ordered a contraindicated medication). One proven example of CDS is for abnormal blood pressure readings to automatically appear in red text (as opposed to normal blood pressure readings that appear in black) on providers' displays. This method supports clinical workflow, but does not interrupt the provider's thought process or risk that an alert will be ignored due to 'alert fatigue,<sup>5</sup>' which has been identified as a key concern for implementers of CDS programs.

<sup>&</sup>lt;sup>5</sup> "Alert fatigue" occurs when a provider, after receiving too many alerts or reminders (some of which may be irrelevant or unhelpful), begins to override or ignore further alerts without attending to them, thus potentially decreasing the care improvements expected from the tools (www.informatics-review.com/wiki/index.php/Alert\_Fatigue).



<sup>&</sup>lt;sup>1</sup> Food and Drug Administration. "FDASIA Health IT Report, Proposed Strategy and Recommendations for a Risk-Based Framework." http://www.fda.gov/downloads/AboutFDA/CentersOffices/OfficeofMedicalProductsandTobacco/CDRH/CDRHReports/UCM391521.pdf (accessed 5/13/2014).

<sup>&</sup>lt;sup>2</sup> 42 USC 201 § 13101 (13)(B)(2).

<sup>&</sup>lt;sup>3</sup> FDASIA Health IT report

<sup>&</sup>lt;sup>4</sup> Osheroff, Teich, Levick et al., 2012. *Improving outcomes with CDS: an implementer's guide,* Second Edition.

#### I. What Does Meaningful Use Require for CDS?

In Stage 2, eligible providers must implement *five* clinical decision support interventions related to *four* or more clinical quality measures,<sup>6</sup> if applicable, at a relevant point in patient care for the entire EHR reporting period, <u>and</u> have enabled the functionality for drug-drug and drug-allergy interaction checks for the entire EHR reporting period.<sup>7</sup>

The Stage 2 Meaningful Use Final Rule states: "*CDS is <u>not</u> simply an alert, notification, or explicit care suggestion,*" and goes on to describe non-alert CDS examples including disease-specific order sets and documentation forms/templates."<sup>8</sup> The rule also defines CDS as "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."<sup>9</sup> Moreover, the Stage 2 Meaningful Use Final Rule replaces the term "clinical decision support rule" with "clinical decision support intervention" in order to "better align with, and clearly allow for, the variety of decision support mechanisms available to help improve clinical performance and outcomes."<sup>10</sup>

CDS is frequently an integrated part of the provider's EHR system, but may also present in a variety of other mechanisms, including **but not limited to** pharmacy systems, patients' personal health records (PHRs) or portals provided by the practice. Some providers use CEHRT to drive (or, for example, to receive or trigger) CDS in an external system—e.g., by sending data to a registry or immunization forecaster which provides CDS. For MU, such systems must interact with CEHRT in the normal course of the care delivery workflow, ensuring that decision support interventions are delivered at the right point in the workflow, based on relevant patient information (even if the appropriate point in workflow is not during a patient encounter).

#### II. What Kinds of Things Constitute CDS?

<u>There is no definitive or comprehensive list of what can constitute CDS</u>. ONC and CMS broadly interpret CDS, as is stated in the 2012 Final Rule, and understand that there are a wide array of innovative and effective decision support tools available to providers.

The 2012 Health Information Management Systems Society (HIMSS) publication, *Improving Outcomes with CDS: An Implementer's Guide,* describes multiple presently available CDS intervention types, including:

- Smart Documentation Forms, such as intelligent referral forms or templates that help ensure that the referring provider sends all necessary information;
- Order Sets, Care Plans and Protocols;
- Parameter Guidance (e.g., displaying therapeutic ranges based on patient information on prescribing page, drug/dose pick-lists filtered by patient characteristics, and templates which require entry of all necessary documentation);
- Critiques and Warnings "Immediate Alerts" (e.g., a pop-up warning if a provider enters a dangerous contra-indicated prescription order);
- Relevant Data Summaries (Single-patient);
- Multi-patient Monitors;

<sup>&</sup>lt;sup>10</sup> 77 FR 13714





<sup>&</sup>lt;sup>6</sup> <u>Note</u>: the CDS interventions are <u>not</u> required to be related to the same clinical quality measures that an EP has chosen to report. While there is no formal definition of this relationship, in general, the CDS intervention should be aimed at prospectively advancing the same clinical goal or guideline promoted by the measure.

<sup>&</sup>lt;sup>7</sup> Note that the Meaningful Use regulations specify that since these types of CDS are counted in their own separate objective measure, they <u>do</u> <u>not</u> count towards the 5 CDS interventions requirements.

<sup>&</sup>lt;sup>8</sup> 77 FR 53997

<sup>&</sup>lt;sup>9</sup> 75 FR 44350

- Predictive and Retrospective Analytics;
- Filtered Reference Information and Knowledge Resources;
- Expert Workup and Management Advisors; and
- Event-driven Alerts (Data-triggered) and Reminders (time-triggered).

Similarly, the recent FDASIA Health IT Report co-published by FDA, ONC, and the FCC, lists types of CDS interventions consistent with HHS' broad definition including, but are not limited to:

- Evidence-based clinician order sets tailored for a particular condition, disease, or clinician preference;
- Drug-drug interaction and drug-allergy contraindication alerts to avert adverse drug events;
- Drug dosing calculations;
- Drug formulary guidelines;
- Reminders for preventative care (e.g. mammography, colonoscopy, immunizations, etc.);
- Facilitation of access to treatment guidelines and other reference material that can provide information relevant to particular patients;
- Calculation of prediction rules and severity of illness assessments (e.g., APACHE score, AHRQ Pneumonia Severity Index, Charlson Index);
- Duplicate testing alerts; and
- Suggestions for possible diagnoses based on patient-specific information retrieved from a patient's EHR.

Other innovative types of CDS that would meet the MU definition include support for public health reporting and patient safety reporting. For instance, a CDS tool could inform a provider that a patient has a reportable condition (e.g., after entering a diagnostic code for gonorrhea, a fall, or adverse drug event), and then could provide a template to ensure capture of all the information necessary to complete reporting and/or could provide pre-populated forms needed to make the report). <sup>11</sup> Note that in the above case, CDS may not necessarily occur at the point of care, or may not target the provider. Rather, office staff may be responsible for populating and submitting report forms and the CDS would be more appropriately directed toward them.

Similarly, CDS (such as documentation templates and order sets) can not only help providers remember to complete safety event reports, but also may help them more completely capture the data needed to do so. This CDS could be explicit, such as "here is a template for public health [or safety] reporting." Alternatively, the CDS may simply be incorporated into general templates, perhaps by adding important safety data into high-risk order templates (e.g., anticoagulant orders or respirator use).

### **Evaluating Eligible Providers Use of CDS for Meaningful Use**

Auditors should consistently refer to the broad definition of CDS identified in the Final Rule. The definition is "CDS is an 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."<sup>12</sup>

AUDITORS PLEASE NOTE: Because "pop-up" alerts are not always an effective clinical decision support for improving outcomes, ONC and CMS encourage the use of more effective CDS that are not "pop-up" oriented.

<sup>&</sup>lt;sup>12</sup> 75 FR 44350





<sup>&</sup>lt;sup>11</sup> In an excellent example of how CDS can drive improved treatment and public health, CDC conducted a pilot project with the Alliance of Chicago Community Health Centers, in which a link to information on active gastrointestinal public health alerts was added to provider displays when they documented certain symptoms or syndromes

<sup>(</sup>http://www.cdc.gov/osels/phsipo/dippc/docs/PDF/AMIAPHI2011 finalpresentation508.pdf).

### **QUESTIONS AND ANSWERS**

#### Q: How is CDS defined for purposes of the meaningful use program?

**A:** The concept of CDS for Meaningful Use encompasses a wide range of information, which can be presented to providers, clinical/support staff, patients, and/or other caregivers at various points in time. Auditors should consider ONC and CMS' desire to encourage innovative efforts to use CDS to improve care quality, efficiency, and outcomes, and should use the Meaningful Use definition of CDS as an evaluation guide: "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."<sup>13</sup>

#### Q: How should an auditor evaluate non-interruptive CDS?

A: In the realm of interruptive CDS (e.g., "pop-up alerts"), it can be relatively straightforward to view logs of how many times a given CDS triggered. However, auditors must be prepared to evaluate and accept other non-interruptive CDS, including CDS like those described in Sections I and II which may not be 'triggered' in an obvious, event-specific way. For instance, a standard documentation template for a diabetic patient visit that provides for a diabetic foot exam is a form of CDS. It gives the provider information – implicitly, that diabetic patients should receive a foot exam, and (sometimes) explicitly, indicating whether or not the current patient has had one in the required period. In this example, the right information is provided at the right time, to the right person, in the right manner, and through the right channel.

#### Q: Must the CDS be "fired" during the reporting period?

**A:** No. It is also worth noting that while a given CDS may be installed and activated in a provider's practice, it may not 'fire' during a given period. For instance, if a provider has active CDS to improve tuberculosis antibiotic selection, but has not seen any tuberculosis patients since installing the CDS, they should still receive credit for this as one of their 5 interventions for MU. Providers may have printed or electronic screenshots of what the CDS looks like when it is triggered to show auditors.

#### Q: Can screenshots be used to demonstrate CDS?

**A:** Yes. Some providers may not have test environments or 'dummy' patients available to show CDS 'in action' to auditors; again, they may instead present screenshots or other documentation detailing what the CDS is and under what conditions it would be triggered.

# Q: Does CDS directed at support staff, patients, or caregivers "count" for purposes of the meaningful use program?

**A:** Yes. CDS is not only for doctors or nurses, but also for support staff, patients, and other caregivers. For instance, some practices have used 'return to clinic' reminders available in their EHRs to remind front desk staff to proactively call patients due for routine screenings to remind them of upcoming appointments and/or explain pre-visit preparations such as fasting, outside lab work, etc. CDS delivered to patients could take the form of detailed medication instructions, home management tips, or dietary guidelines.

<sup>&</sup>lt;sup>13</sup> 75 FR 44350



