3.1. Rules

Clinical decision support rules play a key role in the overall delivery of CDS. CDS rules typically follow a common pattern, which has been modeled in several healthcare standards formalisms. The Event-Condition-Action[1] model, as used in the HL7 community, is described below.

Event

A CDS event is the *clinical situation* in which a decision support rule will be applied. First something must happen before the rule can be utilized. Examples of CDS events include:

- A clinician is prescribing a drug to a patient
- A nursing supervisor is reviewing a list of patients previously diagnosed with cancer
- A clinician is assessing a patient enrolled in a jurisdictional diabetes monitoring program

Condition

A CDS condition defines the *question(s) that must be answered* to determine the outcome of the rule. Examples of conditions include:

- Does the usual drug of choice for this patient's condition contain a substance to which the patient is allergic?
- Have any patients with a suspected cancer diagnosis NOT been referred to a specialist within 14 days of diagnosis?
- Has the patient with a previous diagnosis of diabetes type II NOT had HBA1C tested within the last 12 months?

Action

The CDS action describes *what should be done* if the condition evaluates to true. Examples of actions include:

- Alert the clinician and suggest a safe alternative medication
- Refer patients to an oncology specialist
- Order HBA1C test

Event-Condition-Action Model

An informal representation or rule template which captures the Event-Condition-Action pattern is shown below. This pattern can be read as "ON event IF condition THEN action".

Figure 3.1-1: Event-Condition-Action rule template

Rules may reference both EHR data and reference data such as terminology to determine whether or not a specific condition is true. This topic will be explored in more detail in section 4. Inference Engine.

Footnotes

RefNotes

1   http://hl7.org/fhir/2016Sep/cqif/cqif-knowledge-artifact-representation.html#event-condition-action-rule