CGC Editorial Policies

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PREAMBLE

This document is the distillation of numerous discussions of the Content Governance Committee (CGC), which is composed of representatives of the original member institutions of the Clinical Decision Support Consortium (CDSC). It documents the guidelines and best practices that its members have agreed to abide by in their interactions involving the authorship, translation, and sharing of decision support content. This policy reflects a necessary balance between sometimes conflicting values; such as, promoting free sharing yet respecting intellectual property, and minimizing barriers to participation yet ensuring high quality of submitted artifacts. This policy has been ratified by the CDSC Steering Committee.

MEMBERSHIP OF THE CGC

Details of the membership roles and responsibilities, as well as voting rights, are detailed in the CGC charter. In summary, institutional members of the CDSC have the right and responsibility to select a representative to the CGC. Such representatives have differing privileges and authorities depending on the type of membership of his/her institution, which may be publishers of content and/or consumers of the CDSC decision support service, or another type of CDSC collaborator.

CONTENT SUBMISSION

Unless bound by a separate contract or grant obligations, authoring and submitting content is voluntary. Content may be co-developed or co-authored by any subset of Contributor institutions. The designated representative(s) of the contributing institution(s) must accept and sign a publisher's contract (see Attachment 2) before content from that institution may be uploaded to the Portal.

Until functionality is developed within the portal to support distributed publishing, all submissions will occur via a single hub, Partners Healthcare. Submissions will be over the internet and/or email via a form-based process.

Different types of content may be published (see the section "CONTENT ARTIFACT TYPES" below for details). Submission of an entire level 1 through level 4 chain of documents is encouraged, but not required – submission of an independent artifact at any level is allowed in order to promote sharing. A published artifact may contain content for one or many rules; however, if any rule makes reference to a piece of content in another artifact, then that artifact should also be submitted, or at least be freely available for review, such as by a publically accessible url that is documented in the source artifact.

As part of the initial build of the CDSC Portal, Partners Healthcare will provide a default stylesheet for rendering level 2 and level 3 content. CDSC members are encouraged to develop other stylesheets customized for their own use, or to support different user types; such as subject matter experts, clinicians, knowledge engineers, and CDS developers. Future versions of the Portal will allow these additional stylesheets to be uploaded as well as utilized by Portal visitors for rendering.

OWNERSHIP, ACCESS AND USE OF SUBMITTED CONTENT

The institution that authors a content specification has sole authorship rights and responsibilities; which include: regular updates/maintenance to reflect new knowledge or accepted practice in the relevant domain and to correct errors as they are identified.

By uploading content, an institution grants a license to other CGC members to use the content and make derivatives of that content with reasonable indemnification clauses. CDSC members agree not to use another's content or any derivative for monetary profit. It is strongly encouraged that all derivative works be widely disseminated (whether they be content artifacts appropriate for publishing to the Portal, or other forms of work, such as peer-reviewed journal articles or professional society presentations), and that they cite their sources. The details of this license can be found in Attachment 2.

Access to the CDSC Knowledge Portal will be free and public. There will be no user authentication, at least initially. Visitors will be required to view and accept a disclaimer (see Attachment 3) that outlines the publisher's ownership rights and indemnification privileges.

CONTENT ARTIFACT TYPES

The CDSC has proposed a four-level approach to increasingly specify the content of decision support interventions[1]. The rationale for this approach is to transparently separate out issues related to implementation of computer-based decision support from issues related to specifying knowledge about best practice in a given scenario. Therefore, implementation-specific decisions, such as localized workflow decisions about *when* to surface decision support, *to whom*, and with what *user interface*, should ideally be submitted as level 4 artifacts.

[1] Boxwala A. Multilayered knowledge representation as a means to disseminating knowledge for use in clinical decision-support systems. Paper presented at: 2009 AMIA Spring Congress; 2009 May 28-30; Orlando, Florida.

The 4-level approach also recognizes that knowledge intended for human consumption is often incompletely specified for the purpose of computer-based decision support interventions, and not always intended to be applied without interpretation and customization. Moving from level 1 (narrative), through level 2 (semi-structured) and level 3 (structured), to level 4 (implementation-specific) is as much a *transformation* as it is a *translation*, and often requires compromises that ideally remain faithful to the spirit of the source knowledge, but may differ in the details. To this end, it is expected that level 2 artifacts will closely reflect their level 1 sources, as ideally a semi-structured artifact is a mark-up or annotation of one or more narrative artifacts, without introduction of new recommendations or logic. Likewise, level 4 artifacts should closely reflect their level 3 sources, differing mostly in implementation-specific considerations.

But there may be a more significant divide between level 2 and level 3, as the intended target of the former are providers of care, while that of the latter are implementers of computer-based interventions. This transition is where most disambiguation and operationalization of the content is intended to occur. Therefore, this committee recommends that especially for level 3 artifacts, such disambiguation should be adequately documented and significant discrepancies from the source justified in the artifacts' metadata.

Reflecting the different levels of content specification, the structure of the content artifact also differs by level. Level 1 artifacts are the most expressive and human-readable but the least structured – they can be text-based documents, tables, figures, or diagrams in a variety of MIME formats (such as doc, pdf, xls, etc.). Level 1 artifacts are often the original sources of decision support interventions, such as the clinical practice guidelines published by a professional society.

Level 2 and 3 artifacts are structured and codified XML documents which follow a schema developed by the CDSC.[2] Even with a well-defined schema, how rules are organized into sets, as well as naming conventions and authoring styles may vary considerably between different publishers. Over time, best practices may emerge for this, too; but in the interim, Partners Healthcare has shared its authoring guidelines in Attachment 5.

Because of the diversity of implementation technologies and platforms, there is no single representation schema for Level 4 artifacts. These may include illustrations such as screen shots, extracts or exports of content, or even samples of computer code. As with Level 1, there is no restriction on the format of Level 4 artifacts except that they are a commonly accepted (and renderable) MIME type.

ASSURANCES OF QUALITY

The representative of the institution submitting content to the portal endorses that the content has been developed in accordance with the quality measures in place for other decision support interventions at their own institution; that all level 2 (semi-structured) and level 3 (structured) documents are valid according to the schemas developed by the Knowledge Translation and Specification (KTS) team of the CDSC, and that all level 4

[2] Wright A, Sittig D, Tsurikova R, Middleton B. Knowledge Management for Clinical Decision Support. Panel session presented at: 2009 AMIA Spring Congress; 2009 May 28-30; Orlando, Florida.

(implementation-specific) artifacts reflect content that is live and active within production systems at the time of submission. Exceptions will be reviewed on a case-by-case basis and allowed only by majority vote of the CGC.

Further, before an item is posted to the portal, the submitter is responsible for accurately specifying, at the minimum, the following required metadata elements:

- Title
- Level
- Submitting entity
- Clinical domain
- Dependencies on other content assets.

Please see attachment 4 for a full list of metadata elements that may be defined.

All submitted content will be screened to ensure that it meets the minimum criteria specified above, but no additional content review will be performed by the CGC, nor will additional authorization to publish be required from the CGC. However, the submitter agrees to be responsible for ensuring that all the content they submit is reviewed and updated at least every three years, or else indicate before then via amendment to the metadata that an item is no longer being actively maintained. An authoring institution has an ethical and professional obligation to upload a new version of content to the portal whenever any change or update is made to the previously posted content; furthermore, for any change in rule logic or intent, an explanation or description of the change is required to be entered in the relevant metadata of the content.

If content has not been reviewed within 3 years, it will automatically be tagged with a status of deprecated, but it will not be removed from the Portal, as another artifact may exist on the Portal which references it. An owner of a content asset can manually deprecate the asset at any time, implying that they are no longer actively maintaining the content.

It is desirable to implement mechanisms to rate or measure quality of submissions that go beyond the minimal assurances guaranteed by the policies above. However, this committee feels itself unqualified and understaffed to perform an active and formal quality assessment function, nor was consensus reached about how such an assessment could be implemented in an objective, unbiased, reproducible, transparent and scalable fashion. Therefore, the approach that is recommended is to utilize Web 2.0 techniques that allow consumers to make their own conclusions about quality based on multiple overlapping indicators. These could include:

- Metrics such as how frequently an artifact has been viewed, downloaded, and implemented;
- CDSC Dashboard data about how frequently a recommendation has fired, been acknowledged, been overridden, and been heeded;
- Voluntarily submitted comments and/or ratings from implementers/consumers of artifacts;

- Special endorsements, such as highlighting artifacts that have been implemented at more than 75% of CDSC sites, or that are intended to promote meeting certain regulatory or quality reporting goals, such as JCAHO, Meaningful Use or PQRI.

Over time, and through future phases of CDSC development of the Portal, the CGC will continue to help define these quality indicators.

ATTACHMENTS

Attachment 1: Roles and Responsibilities of CGC Membership

Attachment 2: CDSC Knowledge Portal Publisher's Agreement

Attachment 3: CDSC Knowledge Portal Visitor's Agreement

Attachment 4: Metadata for CDSC Portal Submissions

Attachment 5: Content Authoring Style: Classes, Patterns, and Templates

AHRQ Contract: HHSA290200810010

CGC - Roles and Responsibilities

		Collaborator	Contributor	Consumer	Observer
1.	Submit artifacts to the CDSC KM Portal	x	x		
2.	eRoom access to CGC folder	x		x	
3.	Attend CGC teleconference meetings	x	x	x	x
4.	Host CGC teleconference meetings	x			
5.	Attend CGC Retreats*	x	x	x	x
6.	Vote on CGC policy changes	x			
7.	Vote on new CGC membership applications	x			
8.	Vote on other CGC decisions	x			
9.	Research support from CDSC-funding source	x			
10.	Represent CDSC, use of brand and logo	x			

*May be certain aspects of retreats that are restricted to certain members

THE BRIGHAM AND WOMEN'S HOSPITAL
CLINICAL DECISION SUPPORT ("CDS") PORTAL

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January 2010

CDSC Portal Metadata List.xls - Production Metadata Tags

	ClinicalSpecialties
1	All Clinical Specialties
2	Aerospace Medicine
3	Allergy and Immunology
4	Anesthesiology
5	Audiology
6	Chiropractic Medicine
7	Critical Care Medicine
8	Dentistry
9	Dermatology
10	Emergency Medicine
11	Family Medicine
12	General Medicine
13	Internal Medicine
14	Internal Medicine:Cardiovascular Disease
15	Internal Medicine:Endocrinology
16	Internal Medicine:Gastroenterology
17	Internal Medicine:Hematology and Oncology
18	Internal Medicine:Infectious Disease
19	Internal Medicine:Nephrology
20	Internal Medicine:Pulmonary Disease
21	Internal Medicine:Rheumatology
22	Internal Medicine:Sports Medicine
23	Medical Genetics
24	Mental Health
25	Neurological Surgery
26	Neurology
27	Nuclear Medicine
28	Nutrition Dietetics
29	Obstetrics and Gynecology
30	Occupational Therapy

	ClinicalSpecialties (cont.)
31	Ophthalmology
32	Optometry
33	Oral Surgery
34	Orthopedic Surgery
35	Orthotics Prosthetics
36	Otolaryngology
37	Palliative Care
38	Pathology
39	Pharmacy
40	Physical Medicine and Rehabilitation
41	Physical Therapy
42	Plastic Surgery
43	Podiatry
44	Preventive Medicine
45	Primary Care
46	Public Health
47	Radiology
48	Recreational Therapy
49	Respiratory Therapy
50	Social Work
51	Speech Pathology
52	Surgery
53	Surgery:Colon and Rectal Surgery
54	Surgery:Surgery of the Hand
55	Surgery:Surgical Critical Care
56	Surgery:Thoracic Surgery
57	Surgery:Transplant Surgery
58	Surgery:Vascular Surgery
59	Urology
60	Womens Health

	contributingEntity
1	All Contributing Entities
2	Advancing CDS
3	CDS Consortium
4	GE Healthcare
5	Kaiser Permanente Northwest
6	NextGen Healthcare
7	Oregon Health And Science University
8	Partners Healthcare Systems
9	Regenstrief Institute, Inc.
10	Siemens Healthcare
11	Veterans Health Administration

	intendedRecipientRole
1	All Roles
2	Nurse
3	Other Health Professions
4	Patient
5	Pharmacist
6	Physician

	patientPopulation
1	All Patient Population
2	Adolescent
3	Adult
4	Geriatric
5	Neonatal
6	Pediatric
7	Prenatal

	specificationLevel
1	All Levels
2	Level 1 - Unstructured
3	Level 2 - Semi-Structured
4	Level 3 - Structured
5	Level 4 - Description
6	Level 4 - Executable
7	Level 4 - Export
8	Level 4 - Illustration

	knowledgeType
1	All Knowledge Types
2	Alert or Reminder
3	Dictionary or Value Set
4	Documentation Template/Form
5	Order Refinement
6	Order Set
7	Reference Information
8	Relevant Data Presentation

	clinicalInfoSystem
1	All Clinical Info Systems
2	GE
3	Meditech
4	NextGen
5	Partners Healthcare Systems
6	Regenstrief
7	Siemens
8	VA
9	Web Service

9	Report

	Care Setting
1	All Care Settings
2	Acute Care
3	Ambulatory Care
4	Emergency Department
5	Intensive Care
6	Pediatrics
7	Perioperative

	Quality Measure
1	All Quality Measures
2	CMS PQRI Measures
3	JCAHO Core Measures
4	NCQA HEDIS Measures
5	NQF Measures

	Meaningful Use Stage
1	All Stages
2	Stage 1
3	Stage 2
4	Stage 3

CONTENT AUTHORING STYLE: Classes, Patterns, and Templates

Partners Healthcare has authored rules for the CDSC service utilizing an organizational methodology based on classes, patterns, and templates. This methodology is offered here as a suggested style for CDSC submissions, but is not required.

The first element of the Partners methodology is to group rules into classes based on their purpose or function. These classes are different than and independent of the levels of artifacts described in the previous section. The top class consists of knowledge (in the form of rules) which *make recommendations* for action based on patient data and inferred patient states. For example, "if a patient has Diabetes_mellitus and no Hgb A1c measurement in the last 6 months, then recommend that Hgb A1c be checked." Rules in this class are called operational rules.

Operational rules often reference other rules which *infer patient states* from patient data and value sets. These types of rules are called classification rules. For example, "if the patient has an active problem in the Diabetes_mellitus subset, then assert that the patient has Diabetes_mellitus." Other diabetes classification rules may make the same inference based on the medications a patient takes, or based on the results of certain lab test. Having each of these tests in its own rule supports management of the CDS knowledge as they can be organized by method of inference or by conclusion, and they can be maintained independently of each other. It also supports flexibility because an institution may choose or be able to consume a subset of classification rules (only those that are based on problem list entries, for example).

Rules in the third class *define value sets*, which are usually referenced by classification rules. Value sets include problem subsets, such as the list of SNOMED terms which "mean" Diabetes_mellitus; medication classes, such as the RxNorm concepts which "mean" ACE-inhibitor; or sets of related laboratory tests, such as the LOINC codes which "mean" Hgb A1c.

In addition to organizing rules into the classes above, Partners advocates the use of *rule patterns* whenever possible to facilitate the authoring and maintenance of rules. When multiple rules can be identified that follow the same recurring structure, then this usually is an opportunity to create a rule pattern. Examples of rule patterns are:

1) Sets of rules that work to suppress recommendations where there exist absolute contraindications (ex. classification rules that assert when a patient has an allergy to NSAIDS, combined with operational rules that recommend ASA only when the patient does not have such an allergy).

Sets of rules that qualify recommendations where there exist relative contraindications (ex. classification rules that assert when patient has mild renal insufficiency, combined with operational rules that recommend *to consider* an ACE inhibitor if the patient has this state).