April 18, 2018

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Health Information Technology Advisory Committee
Office of the National Coordinator for Health Information Technology
Department of Health and Human Services

Dear Dr. Committee Co-Chairs:

The Health Information Technology Advisory Committee (HITAC) asked the U.S. Core Data for Interoperability Task Force (USCDI TF or TF) to provide recommendations around the Draft U.S. Core Data for Interoperability (USCDI) and Proposed Expansion Process. This transmittal offers these recommendations, which are informed by the deliberations among the Task Force subject matter experts.

1   Background

1.1   Charge

The USCDI Task Force will review and provide feedback on the U.S. Core Data for Interoperability (USCDI) structure and process and make specific recommendations on:

- Mechanisms/approaches to receive stakeholder feedback regarding data class priorities;

- The proposed categories to which data classes would be promoted and objective characteristics for promotion;

- How the USCDI would be expanded and by how much; and

- Any factors associated with the frequency with which it would be published.

1.2   Definitions

- **Data Class*:** A high level grouping of similar data types. For example "Demographics". A Data Class is made up of Data Objects

- **Data Object*:** A single item or example within a data class. For example "Address" is a Data Object within the Data Class "Demographics". Data Objects have Attributes.

- **Data Object Attribute***: A specific parameter, characteristic or other description of a data object. For example: "Street name, Street Number, Zip Code" are attributes within the Data Object "Address".

- **Stakeholder:** An individual or entity with an interest in advancing data classes through the USCDI process

- **Data Class Work Group (DCWG):** A group of stakeholders interested in and organized around a data class with the responsibility to define the data class, identify and apply applicable semantic standards, harmonize data elements that are cited in other data classes and produce a data class sufficiently specified to be tested. The DCWG is the steward of the data class through cycles of testing and revision until it is ready for nationwide deployment.

- **Data Class Biography:** The provenance of each data object and class as it moves through the USCDI process including date of submission, supportive stakeholders, value assessment, modifications, and modification resulting from testing.

- **Net Value:** Total attributed stakeholder value of a data class minus the stakeholder cost related to its collection, storage, transmission, use, etc., where the scale can be any type of cost or value (time, money, safety, quality, burden, etc.)

- **USCDI Process:** A data class maturation process with the goal to identify data classes and objects with broad applicability to advance interoperability for and beyond traditional healthcare providers to include a wide variety of use cases and target populations such as patients and their proxies/caregivers, behavioral health, long-term and post-acute care (LTPAC), home care and hospice, public health, emergency medical services (EMS), alternative and complementary care practitioners, and other community based services

- **USCDI Structure:** Composed of four main components: (1) a publicly accessible information technology platform to enable data classes to emerge from proposed data objects to begin the process to widespread adoption, (2) a work group structure (the Data Class Work Group) which defines the data class and assumes the role of steward , (3) a process to map data classes to available semantic standards and oversee the cycles of testing and refinement, including testing in production settings by industry, and (4) the regulatory authority of HHS to promote and assure broad adoption.

Hierarchy of a Data Class
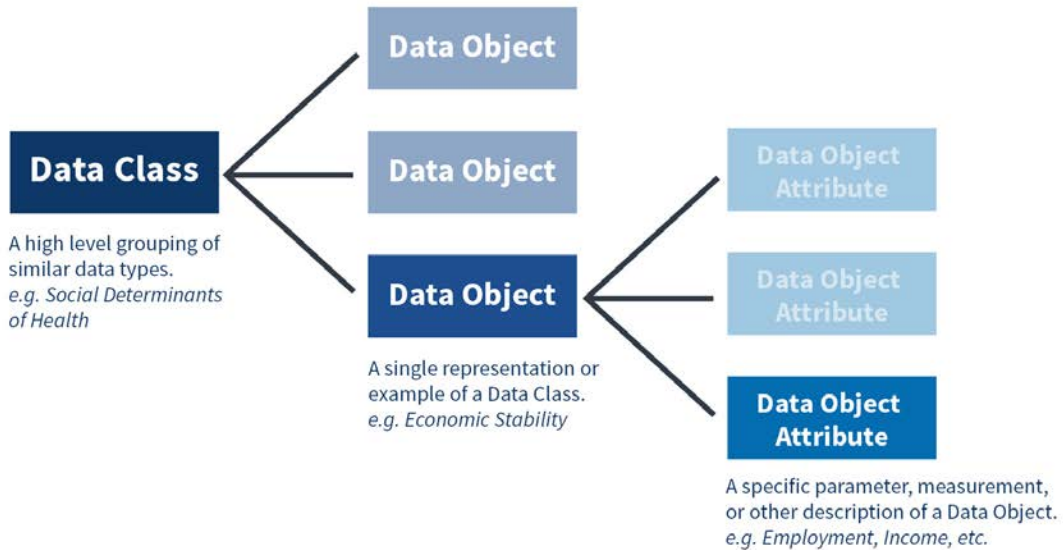
*NOTE: The task force had extensive discussion regarding the definition of the following terms and if they were the correct terms to use: data class, data object, and data attribute. These terms/definitions and the accompanying chart (above) are intended to clarify our recommendations and are one among several alternative terms/definitions.

2 Recommendations

The Task Force recommends pilot testing the USCDI process detailed below before full implementation. Although the Task Force is confident the process is needed and likely to work, there are many details of the process which lacked consensus and can only be resolved with pilot testing. These issues are flagged in the relevant sections.

Overview:
The Task Force recommendations seek to leverage the USCDI process to address the common causes that prevent data from being shared.

1) Data doesn't exist

2) Data exists but is not collected at all or in part

3) Data is collected but there are no semantic standards for normalizing it

4) Data is collected and there are appropriate semantic standards, but they are not being broadly applied

5) Data is collected and semantic standards are applied; however, inconsistent application of semantic and other standards (e.g., use of local or custom codes) by organizations inhibits interoperability.

6) Detailed and reliable workflows to share the data outside of the originating organization have not been established.

Each barrier to data sharing presents different problems and requires different solutions.
(1) "Data doesn't exist" is generally the most difficult because a sufficient number of users must clearly see the data has value, collect it (at a cost), develop semantic standards to ensure the data is consistent, and move industry to adopt those standards. By introducing a process whereby any interested party may propose a data item or data class for consideration, our recommendations are designed to help solve this challenge and further democratize the process of identifying data of value. However, advancement occurs only when there is sufficient perceived value for a large group of stakeholders.

(2) "Data exists but is not collected", requires a similar value proposition to advance toward general interoperability.

(3) There is a substantial body of data that is collected, but without standards. It already exists in current systems and could be available for sharing with the development and application of new semantic standards: a process that may require significant time for development, testing and adoption. The proposed USCDI process recognizes the need to advocate for missing high value data currently collected and identify where semantic standards are needed. The responsibility to identify, and/or advocate for missing standards rests with the DCWG. The process to develop needed standards rests with the standards development organizations (SDOs). Examples of data currently collected, but without the necessary semantic standards to enable interoperability, include some nursing quality measures, some federally mandated assessment instruments, and some billing data.

(4-6) There is data currently collected within electronic systems for which semantic standards exist, but the existing standards are not consistently applied. One strategy to close this gap is to demonstrate feasibility of applying these standards to this data through testing in pilot and production and to demonstrate readiness for broad deployment. Another strategy is to use incentives built into existing regulation and payment models to drive adoption and consistent use of existing standards. Both strategies are included in the proposed process.

The long cycle times needed to develop and test the standards and workflows needed for interoperable exchange of highly structured data are justified by the value of machine readable data for clinical care, research, public health and reporting. The goal of the proposed USCDI process is to achieve this high level of interoperability. While the process unfolds to achieve this level of interoperability, we recommend a complementary approach seeking to improve sharing of data currently collected but which is not in a structured form. This includes data both with and without available semantic standards.

The process to share such data requires the adoption of a minimum set of semantic standards specifying what data is in the unstructured payload, uniquely identifying the individual whose data is shared, and identifying the intended recipient. With these minimum standards in place, it is possible to share a wide variety of currently available data which is neither structured nor mapped to a specific semantic standards. Examples include radiology reports, clinical notes, care plans, as well as text-based (unstructured) immunization records, and medication lists. The DCWG has the responsibility to develop the data definitions and identify the currently available semantic standards to enable this exchange. While the long range goal is to apply structure and semantic standards to as much data as possible, the USCDI process will support the sharing of minimally structured data as an achievable bridging strategy to accelerate meaningful interoperability.

2.1   Recommendations Related to Charge

Recommendation 1: Establish a six stage maturation process through which data classes would be promoted, each with objective characteristics for promotion

Stage 1: Proposed (new)

Stage 1 is designed to identify data objects and classes of value to any stakeholder. At the most basic level, it is the end user who assigns value to interoperable data because it contributes to a clinical and/or business need; and it is this value that helps drive adoption.

End users (stakeholders) begin the process by proposing data objects and classes they value to a shared public resource that catalogs submissions, and provides a searchable database of data elements, the contact information of the proposer, a value statement, and a proposed/desired level of interoperability. Using this resource, it is possible to identify all stakeholders who propose similar data objects and thereby identify a community of interest. Members of such a community may later become part of a Data Class Work Group.

This shared resource becomes an evolving database that catalogs data objects of value and enables draft data classes to be assembled around the needs of a stakeholder community. The resulting "shared value" becomes the justification for advancing the data class through the stages toward USCDI adoption.

An example of this process follows using Social Determinants of Health (SDOH) as an evolving set of data objects:

The capability to share information on SDOH has value for many stakeholders including the individual/patient, immediate care givers, home and community based service providers, ambulatory care practices, hospitals, integrated networks, payers and public health organizations among others. Each stakeholder would independently submit the following information to the shared resource (with an example in parentheses):

Date submitted: (1/1/2019)
Proposed Data Class: (SDOH)
Priority: ("high")
Proposed Data objects: (income, education, housing, etc)
Estimated percentage of individuals/patients with data on these objects: (20%)
Objects currently collected as structured information: (none)
Do coding systems exist to represent these objects? (for some)
Cite any applicable semantic standards: (none known)
Are there message systems in use for delivering them? (unstructured text within C-CDA documents)
Contact Information: (Jane Doe, ABC, jdoe@gmail.com)
Value Statement: ("this information needed to modify interventions")
Proposed Use Case(s): (identify high risk patients, refer to or provide applicable services, establish public health priorities, etc)

Stakeholder submissions are used to document the extent of interest in data objects, sort them roughly into a data class (such as the SDOH Data Class), and start the process of identifying potential members of a Data Class Work Group. By aggregating data from these submissions it is possible to create:

- A list of interested stakeholders (including contact information)

- Range of prioritization expressed by interested stakeholders

- An evolving list of data objects proposed for this data class

- Applicable semantic standards known to any stakeholder

- Summary of value statements

- Summary of use cases

This resource will also identify instances when a given data item is cited by more than one proposed data class, alerting the DCWGs there is a need for harmonization early in the process of defining their respective data classes. The data fields used to populate the submission process and the aggregate data derived from them constitute the first entries in the Data Item Biography. (See Appendix B for details of the Data Item Biography by Stage)

Initially, in order to advance to Stage 2, a proposed data class must receive a "high" or greater priority rating from three or more stakeholder groups, or be cited as emergent, urgent, or high by stakeholders representing individuals/patients, providers or government.

For Stage 1, the issues to be clarified during pilot testing of the USCDI process include: the cost and resources required to stand-up a public resource, the ease with which stakeholder communities can be identified and engaged, and a process to identify and specify "value".

Stage 2: Preparation (new)

Stage 2 addresses two related issues: (1) creating data classes with broad value and (2) defining and specifying data objects sufficiently to support interoperability. Stage 2 is in many ways the most complex of all the stages because it requires data objects to retain value as they become more specifically defined, a process that may lead to a reduction in value for some stakeholders whose use cases may not be supported by more constrained data sets. This stage supports the development of consensus to achieve the most tightly defined and constrained data class will provide value to the stakeholders.

Recommended Process (Draft):
Invite stakeholders indicating an interest in specific data objects or data class to join a "Data Class Work Group" (DCWG) as a volunteer participant. This is envisioned to be a formal process supported by ONC in which volunteer stakeholders are brought together to serve as the stewards of the data class.

Proposed Data Class Work Group process:

1. Establish a work group whose membership is broadly representative of the stakeholders who proposed the data objects/data class in Stage 1 or otherwise need to be involved. In particular, each DCWG should include patient advocates to ensure the patient's perspective is well represented in defining and advancing relevant data classes.

2. Create a draft data item list including all priority data objects proposed by any of the engaged stakeholders

3. Eliminate data objects with little support

4. Reach consensus on data objects to be included within the data class

5. Identify instances when another DCWG cites identical or similar data items

6. Evaluate previously established definitions for similar data objects and harmonize them with the goal of establishing a common definition

7. Provide an explanation when it is not possible to use a previously proposed definition

8. Identify applicable semantic standards for each data object within the data class

9. Identify gaps in applicable semantic standards to be filled by SDOs

10. Establish a definition for what data class content is appropriate for minimally structured data

Continuing with the example of SDOH cited in Stage 1, once the SDOH Data Class Work Group reaches consensus on data objects to be included, it will search the public resource for examples of similar

objects in other proposed data classes, identify and use currently available proposed lists, adopt currently available semantic standards and identify gaps in those standards. The process of harmonization of definitions and standards may involve a collaborative process with other DCWGs and SDOs.

The presence of some standards based taxonomies for SDOH would likely hasten the progress of this data class through Stage 2 depending on the speed with which applicable semantic standards can be identified or developed, tested and released for use. A standards-based data class for testing will not be produced until semantic standards for all applicable objects are available. However, the SDOH Data Class Work Group will also establish content definitions of the data objects to identify data sources that can be shared as minimally structured data based on identified content, subject/patient and recipient. This is an example of supporting the exchange of data that is available even if it is not yet fully structured or standards-based.

Each Data Class Work Group will produce the following products within Stage 2:

1. Specific and tightly defined data objects making up the data class with associated structure and codes (e.g. LOINC, SNOMED-CT, RxNorm, or subsets thereof) harmonized with other data classes that cite similar data objects

2. Associated C-CDA, FHIR and other applicable transport standards as required for specific use cases and proposed for testing

3. Definitions for content appropriate to be sent as unstructured payload

4. Reassessment of the net value of the proposed data class

In order to advance to Stage 3, the data class must receive "high" prioritization from the majority of the work group participants and all data objects must be defined, associated with applicable semantic standards (draft or established) and harmonized with other cited data classes. This may require coordination with SDOs to ensure applicable standards are available. At this stage the data class is still considered a draft with the expectation that it will undergo further refinement based on limited testing in Stage 3. However it is sufficiently developed, there are no deficiencies noted by the DCWG and it is ready for pilot use.

It should be noted the role each DCWG plays to balance and reconcile value with technical requirements continues through stages 3 and 4 as changes are proposed to the data class as the result of testing. The DCWG maintains its role as the steward for the data class until it is released to the USCDI. By designating the DCWG as the data class steward, ONC can ensure each data class has a steward and not have to rely on individual volunteers to play this role. One of several critical responsibilities ONC assumes in this process is to support the DCWGs, which are composed if volunteers, with a process analogous to the S&I Framework. This is part of a yet to be specified, but essential, governance process.

Well defined data classes that have established semantic standards and have been satisfactorily tested in pilot and commercial settings will move directly to the USCDI once the definition of the data class is confirmed. Demographics is an example of a well-defined and tested data class.

For Stage 2, the issues to be clarified during pilot testing of the USCDI process include: the cost and resources required to stand-up a DCWG, the degree to which stakeholder communities volunteer to participate, whether a DCWG can perform the work assigned to it, whether the criteria for moving to Stage 3 are reasonable, attainable and effective or whether they create too great a barrier to advancement.

Stage 3: Emerging

The purpose of Stage 3 is to test data classes in pilot scenarios as part of specific uses cases to enable end users and developers to identify issues with definitions, semantic and transport standards and workflow prior to broader deployment. This Stage is identical to the original USCDI draft with the additional process details recommended below:

Pilot testing in multiple sites using different use cases is critical in order to avoid the premature deployment of normative standards and data class definitions before they have demonstrated suitability for use. Experience gained in focused testing enables the DCWG to oversee cycles of testing, refinement and retesting until satisfied the data class retains value and is ready for broader commercial testing in Stage 4. The DCWG continues to operate on the same consensus model used in Stage 2.

Continuing with the example of SDOH, it is likely minimally structured SDOH data will be the first product to be released by the SDOH DCWG for testing in Stage 3 while semantic standards are being identified for structured data. Testing of the process to share minimally structured data would focus on the following:

1. Are the definitions of SDOH data objects relevant to how this data is and will be captured and stored?

2. Are different definitions required?

3. Can those with SDOH data compile it efficiently?

4. Can they share it using the Trusted Exchange Framework?

5. Does the data make it to the intended receivers?

6. Is the format useful?

7. Is a different format required?

8. Are further modifications and retesting required before Stage 4?

Once the SDOH Data Class Work Group releases its standards-based data class, testing in Stage 3 would focus on the following:

9. Can detailed SDOH data be collected, stored and retrieved using the definitions developed for each data item?

10. Is each data item clearly defined?

11. Are different definitions required?

12. Are the necessary semantic standards available?

13. Are the applicable semantic standards sufficiently constrained to enable semantic interoperability?

14. Are different or other semantic standards required?

15. Can those with SDOH data compile it efficiently?

16. Can they share it using TEFCA?

17. Does the data make it to the intended receivers?

18. Is the format useful?

19. Is a different format required?

20. Are the data machine readable?

21. Is further manipulation required for use?

22. Are further modifications and retesting required before Stage 4?

In Stage 3, a data class is in trial use in pilot scenarios. Before leaving Stage 3, the data class must complete testing and exchange between at least three independently developed systems and leverage at least 80% of the core data elements using data and scenarios based on at least one of the designated use cases. Proposed modifications must be reconciled and retested until there are no further modifications required. Before advancing to Stage 4, the data class must receive a priority designation of "high" from the majority of DCWG participants.

For Stage 3, the issues to be clarified during pilot testing of the USCDI process include: the cost, time, and resources required for pilot testing, whether a DCWG can perform the work assigned to it in this stage, whether the criteria for moving to Stage 4 are reasonable, attainable and effective or whether they create too great a barrier to advancement.

Stage 4: Candidate

The purpose of Stage 4 is to rigorously test the data class in several production settings, identify issues requiring resolution prior to national deployment and ensure the vendor community has adequate advanced notice data classes in this stage are next up in the queue to be released for national adoption. The intent of this stage is to prevent data classes from advancing without clearly defined data items and mature, tested semantic standards. It also addresses the vendor community concerns regarding insufficient time to plan for broader deployment.

Testing at this scale involves the use of standardized testing tool processes required for the roll-out of a commercial application. It is expected testing will involve multiple sites, multiple levels of clinical and organizational sophistication, and several use cases.

In order to advance to the USCDI in Stage 5, a data class must have completed commercial level testing in at least two sites, identify all issues of deployment, and undergo data class modification if necessary. All modifications require additional testing until there are no further modifications required. At the conclusion of this stage, the data class has been tested across its scope, formally published, and implemented in multiple prototype projects. Before advancing to Stage 5, the data class must receive a priority designation of "high" from the majority of work group participants.

For Stage 4, the issues to be clarified during pilot testing of the USCDI process include: how to determine the appropriate extent of testing (and by which criteria) needed to advance, whether a DCWG can perform the work assigned to it in this stage, whether the criteria for moving to Stage 5 are reasonable, attainable and effective or whether they create too great a barrier to advancement.

Stage 5: USCDI

The purpose of Stage 5 is to put industry officially on notice a data class has completed rigorous testing and is a priority for nationwide deployment at scale. All available policy levers will be employed to drive adoption including payment, quality reporting and regulation with the expectation industry make updating its technology to enable interoperable exchange of this data class a priority as well. Progress towards full adoption will be measured by the Trusted Exchange Framework's Recognized Coordinating Entity (RCE) by monitoring data traffic through its networks and reported annually. Data classes achieving full deployment will be designated as Stage 6, Widespread Adoption.

Stage 6: Widespread Adoption (new)

The purpose of Stage 6 is to recognize data classes having attained nationwide adoption. It is the final measure of the USCDI process to created fully deployed data classes to advance interoperability.

Recommendation 2: Expand the USCDI as each data class completes Stages 1-4 without a predetermined timeline

Specific Charge: How the USCDI would be expanded and by how much.

Task Force Recommendations:

- Establish an open process for proposing data items or data classes for consideration without restrictions on what is proposed or who can propose it

- Add a data class to the USCDI only after it has met all criteria and has successfully progressed through all prior stages regardless of timeline

- Add each data class that meets criteria to the USCDI without imposing a limit on the number of data classes to be added

- Establish a process to review the progress of a data class through Stage 5 and establish a timeline for advancement through Stage 5 recognizing that the rate of progress through Stage 5 may be impacted by both vendor and stakeholder capacity and business cases

- Advance a data class to Stage 6 when the RCE determines adoption is widespread and has exceeded 50% of the long term goalConsider using the ratio of available data classes in Stage 5 to those having progressed to Stage 6 in the preceding 12 months as a measure to review the processes for prioritization and implementation

Recommendation 3: Establish an annual publishing cycle for the USCDI with periodic bulletins as data objects/data classes progress from one stage to the next

Specific Charge: Any factors associated with the frequency with which it would be published.

Publish USCDI annually (the "Reference Edition") at the end of each calendar year. Similar to the Interoperability Standards Advisory (ISA) Reference Edition, the USCDI Reference Edition should include the most important and relevant information for each data class in each stage. The Reference Edition should strike a balance between too much and too little information, and could also include summary statistics for the USCDI in general and how it changed over the course of the year. For each stage the published information should include:

- Stage 1: data element, summary definition

- Stage 2: stakeholders, use cases

- Stage 3: technical issues resolved and outstanding

- Stage 4: testing status, technical issues resolved and outstanding, scope and requirements for beta implementation (or reference to where to find implementation materials)

- Stage 5: USCDI: scope and requirements for production implementation (or reference to where to find implementation materials)

- Stage 6: Measurements on adoption levels and usage

The Reference Edition should be made available at minimum as a downloadable document on the ONC website; other options could include a sortable, interactive online tool. All relevant resource links should be cross referenced to accommodate easy access to standards bodies, Interoperability Standards Advisory (ISA) and other resources. These links should be pinpointed to the specific data class of interest in the document.

Given the development of data classes expected to occur over the course of a year, we recommend the release of quarterly update bulletins containing only important new information and changes to the USCDI. With the USCDI Reference Edition release at the end of each calendar year, bulletins can be released every three months thereafter, in March, June, and September. These are intended to highlight and summarize new developments for those who are not participating in the day-to-day work. The content of the bulletins should be driven by the DCWG and the larger community of stakeholders with the individuals and entities working on data classes submitting updates including specified information one month in advance of the bulletin's release.

Recommendation 4: Incorporate public feedback in each stage

Specific Charge: Mechanisms/approaches to receive stakeholder feedback regarding data class priorities.

The task force proposes a two-month public comment period following the annual publication of the USCDI Reference Edition. This is intended to provide time for stakeholders to review the USCDI and provide feedback.

More regular feedback and interaction will occur in an online collaboration tool, such as a wiki (like the former S&I Framework) or ticket management tool (such as Jira or Confluence) that fosters collaboration and information sharing. This resource would be the primary location for stakeholders working on data classes at any stage to post results, debate, and share updates. It is intended to be the main repository of information for data classes in development.

2.2   Additional Recommendations

As part of our deliberations, the USCDI TF discussed a number of topics related to interoperability and the USCDI overall in addition to the particular areas of focus we were asked to address. Given the overarching nature of these topics, we felt it would be helpful as we move forward to provide a set of general recommendations to ONC.

Recommendation 5: Test USCDI Process by Addressing Critical Trusted Exchange Framework Requirements

- Create and advance two data classes for the Trusted Exchange Framework:

    ○ items to improve data matching/unique patient identifier

    ○ patient authorizations for permitted uses

- Develop use cases for the 6 permitted uses in Trusted Exchange Framework for testing.

- Measure the effectiveness of the RCE in promoting the voice of the individual/patient

- Review current data classes in the Draft USCDI against the criteria proposed in the taskforce recommendations

Recommendation 6: Ensure the Voice of the Patient is Represented and Heard

Unlike other stakeholders who have national associations to represent their interests, there is no widely recognized existing body serving as the voice of the individual/patient. The current regulatory and practice shift towards person-centered care, makes it more important than ever that the patient perspective is represented when designing tools and processes to advance interoperability. In the absence of an established group with the explicit responsibility to provide this representation, the TF recommends ONC:

- Develop a process that engages patient representatives in data class creation

- Ensure the voice of the individual/patient is adequately represented in each stage of the process
    o RCE will assume some of this responsibility by adding individual/patient representatives to their governance structure
    o Specifically designated representatives may be required for the DCWGs

Recommendation 7: Support the Process of Data Object Object Harmonization as a Condition for Data Class Advancement

It is essential to the USCDI process ONC supports data object object harmonization with sufficient resources to enable harmonization to occur at each stage. Because the DCWGs are volunteers, it is likely that harmonization will occur only if overseen and supported by ONC staff. This will include data classes proposed by other entities. For example, if the National Quality Forum (NQF) has interest in a quality measure that, from inception to mandate, takes 3 years, and in that effort e-measures and corresponding data needs are identified, those should enter the USCDI process at that time and not at the end of the process. In this way e-measures will be more achievable and less burdensome. Another example, data would be required by CMS and the Data Element Library (DEL).

Recommendation 8: Data Class Management

The Task Force identified, but did not make specific recommendations for the following areas of need:

1. A process to modify established USCDI data classes

2. A process to remove or retire data classes

3. A process to create and rapidly advance data classes in response to a public emergency

Recommendation 9: Governance Structure for USCDI

The TF recommends ONC acts as the steward for the USCDI to ensure data classes continue to move through the USCDI process. ONC should facilitate work groups when appropriate and help identify and educate stakeholders regarding how to effectively engage with the USCDI. The TF recommends that the ONC work closely with the RCE to articulate and measure data classes' potential net value, technical readiness and adoption level.

We look forward to discussing with the full Committee.

Respectfully submitted,

Christina Caraballo   Terrance O'Malley
Co-chair, USCDI Task Force   Co-chair, USCDI Task Force

Appendix A: Proposed Data Class Biography

The TF recommends storing each data object and class in the USCDI with the characteristics of that data object/class relevant to each proposed stage. The purpose of this biography is to assist in the re-use of data objects in new data classes, provide context for how the class was developed and to determine how to replace it.

Stage 1

- Start time in Stage 1
- Members of the DCWG while the data class was in Stage 1
- Name of the data class
- Priority (emergent, urgent, high, medium, low)
- Proposed data objects in the class
- Applicable semantic standards if known
- Name/contact information of Proposer
- Value statement of the proposer
- Proposed use case(s)
- Data derived from all related submissions:
- Name/contact information of all interested stakeholders
- List of proposed data objects for this data class
- Applicable semantic standards
- Value statements of interested stakeholders
- Use cases of interested stakeholders
- Additional data derived from analysis of submissions
- Other data classes that cite proposed data objects

Stage 2
- Start time in Stage 2
- Members of the Data Class Work Group during the time that the data class was in Stage 2
- Definition of each item in the proposed data class
- Specification of each item element
- Selection of applicable semantic standards
- Identification of gaps in applicable semantic standards
- Strategy to eliminate gap|(s)
- Required use in regulation or quality measurement
- Substitution of like or similar data items
- Harmonization with use in other data classes
- Definition of content for unstructured payload
- Summary of changes made to data class
- Net value estimate of each data object by stakeholders
- Use cases advanced for testing in Stage 3

Stage 3
- Start time in Stage 3
- Members of the DCWG while the data class was in Stage 3

- Trial of data class in limited production setting
- Site 1 use case
- Site 1 duration of testing
- Modifications proposed on the basis of Site 1 testing
- Site 2 use case
- Site 2 duration of testing
- Modifications proposed on the basis of Site 2 testing
- Site 3 use case
- Site 3 duration of testing
- Modifications proposed on the basis of Site 3 testing
- Modified list of data objects to be retested
- Retest sites
- Retest use cases
- Modifications proposed on the basis of retesting
- Modified list of data objects to be retested
- Net value estimate of each data element by stakeholders

Stage 4
- Start time in Stage 4
- Trials of data class in commercial production
- Modifications to data class based on testing
- Revised, re-specified data class
- Retesting of revisions
- Sites and duration of retesting
- Net value estimate of each data element by stakeholders (avg score H/M/L)

Stage 5

- Start time in Stage 5
- Adoption curve at 6 mo
- Adoption curve at 12 mo
- Adoption curve at 24 mo
- Revision required due to lack of progress

Start time in Stage 6
- Adoption rate trended annually

Appendix B: Acronyms

C-CDA: Consolidated Clinical Document Architecture

CQMs: Clinical Quality Measures

DCWG: Data Class Work Group

EMS: Emergency Medical Services

HITAC: Health Information Technology Advisory Committee

LTPAC: Long-term Post-acute Care

ONC: Office of the National Coordinator for Health Information Technology

RCE: Recognized Coordinating Entity

SDOH: Social Determinants of Health

SDOs: Standard Development Organizations

S&I Framework: Standards and Interoperability Framework

TEFCA: Trusted Exchange Framework for Common Agreement

TF: (USCDI) Task Force

USCDI: United States Core Data for Interoperability