OPPORTUNITIES FOR ENGAGING LONG-TERM AND POST-ACUTE CARE PROVIDERS IN HEALTH INFORMATION EXCHANGE ACTIVITIES:

EXCHANGING INTEROPERABLE PATIENT ASSESSMENT INFORMATION

APPENDIX I:
FUNCTIONAL STATUS STANDARDIZATION RECOMMENDATIONS

December 2011
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OVERVIEW

Timely and complete health information exchange is widely recognized as necessary to support quality and continuity of care. The meaningful use electronic health record (EHR) incentive program requires the exchange of a variety of types of health information including patient summary documents. As the meaningful use program evolves, the requirements are expected to become more rigorous. To advance health information exchange, critical gaps will need to be addressed including:

- Functional status observations;
- Patient assessment instruments;
- Patient summary documents including assessment summary and transfer summary documents;
- Care Plans.

Identifying the Gaps

This study has applied standards for the exchange of patient assessment instruments and summary documents. In undertaking this work, key gaps have been identified. The HL7 Clinical Document Architecture (CDA) release 2 standard has been adopted as one of the underlying health information exchange standards for the EHR meaningful use incentive program. The meaningful use program leverages CDA release 2 in its use of the Continuity of Care Document (CCD) standard for the exchange of patient summary documents. This study has: (1) applied the CDA as the standard for the exchange of patient assessment documents; and (2) applied the CCD for the exchange of patient assessment summary documents (in collaboration with Keystone Health Information Exchange, Danville, Pennsylvania). In so doing, the study has identified the following gaps:

- CDA, CCD and Health Information Technology Standards Panel (HITSP) C32 Summary Document Using HL7 CCD Components that will not support the interoperable exchange of these document types;
- Functional Status.

Addressing the Gaps

The Federal Health IT Strategic Plan indicates that the Office of the National Coordinator is putting in place policies to support the nationwide health information technology infrastructure (NwHIN). It is recommended that the process established by the Office of the National Coordinator to identify standards, implementation specifications, and certification criteria be leveraged to address the gaps.

- The health IT policy and standards committees address the gaps in standards, implementation specifications and certification criteria needed for the representation and exchange of functional status information.
• The S&I Framework commission the Transition of Care Initiative to focus on patient assessment and summary documents that includes functional status content identifying:

  - Specific CDA sections to support the interoperable exchange of these document types.
  - Content and vocabulary standards needed to support the exchange of functional status information.

Health information exchange is a key component for the meaningful use of the EHRs, and essential in providing services and supporting the continuity of care for persons with chronic illnesses and disabilities. There are several critical gaps that need to be addressed for health information exchange on behalf of LTPAC individuals. These gaps include the need for standards, implementation specifications, and certification criteria related to the exchange of functional status content, various patient summary documents (such as the patient assessment documents and patient assessment summary documents), and care plans.

This project has focused on the standards needed for some of the gap areas -- mainly standards needed for assessment instruments that include functional status content as well as patient assessment summary documents that include functional status. The Office of the National Coordinator has implemented a process for the endorsement of interoperable health IT content and messaging standards. As described below, this process should be used for the endorsement of health IT standards needed for the interoperable exchange of functional status content and assessment information:

• The health IT policy and standards committees should consider gaps in standards, implementation specifications and certification criteria needed for the representation and exchange of functional status information.

• The S&I Framework should undertake work to a standardized approach that can represent functional status assessments, assessment results, and assessment summary documents.

**BACKGROUND**

There is no uniform definition, assessment method or scale for functional status to be communicated consistently across care settings. This creates challenges for representing functional status in a standardized vocabulary to support continuity of care, information exchange and reuse. Functional status information is important to assessing an individual's level of functioning and providing appropriate and needed health and supportive services. Functional status impacts the individual's quality of life, wellness, and ability to care for oneself, and is often a factor in public and private
payment methodologies as well as in quality management and clinical outcome measurement.

Providers and care settings have adopted a variety of instruments and data sets to assess functional status. While there is often some general consistency in the functional status categories covered by many of these instruments and data sets, there is often variation in specific content. This lack of consistency makes sharing and reusing functional status information difficult, including sharing information across care providers as individuals move across the continuum and measuring progress and decline across the continuum.

Several provisions in the Patient Protection and Affordable Care Act (ACA) identify functional status as a key area for which assessment, reporting or information sharing will be needed, including the following sections:

- **Section 2401 Community First Choice Option:** Requires providers to use (when feasible) health IT to report on quality measures in the provision of health home services.

- **Section 3013 Quality Measurement Development:** Prioritize quality measures that allow assessment of health outcomes and functional status of patients.

- **Section 3023 National Pilot Program on Payment Bundling:** Quality measures of process, outcome and structure including measures of functional status related to participants of the pilot program.

- **Section 3024 Independence at Home Demonstration Program:** For individuals with two or more functional dependencies requiring assistance of another person.

- **Section 3501 Health Care Delivery System Research; Quality:** Potential impact of processes and systems on health status and function of patients including vulnerable populations and children.

- **Section 2503 Medication Management Services in Treatment of Chronic Disease:** Performing or obtaining necessary assessments of the health and functional status of each patient receiving such MTM services.

- **Section 4106 Improving Access to Preventive Services for Eligible Adults in Medicaid:** Any medical or remedial services (provided in a facility, a home, or other setting) recommended by a physician or other licensed practitioner of the healing arts within the scope of their practice under state law, for the maximum reduction of physical or mental disability and restoration of an individual to the best possible functional level.
Section 10202: Incentives for States to Offer Home and Community-Based Services as a Long-Term Care Alternative to Nursing Homes: Apply for such services, referral services for services and supports otherwise available in the community, and determinations of financial and functional eligibility for such services and supports, or assistance with assessment processes for financial and functional eligibility. Outcome measures for achieving desired outcomes appropriate to a specific beneficiary, including employment, participation in community life, health stability, and prevention of loss in function.

Section 10331 Public Reporting of Performance Information: Scientifically sound measures that shall include an assessment of patient health outcomes and the functional status of patients.

Further, as new payment models like Accountable Care Organizations emerge, the ability to exchange and re-use functional status information of individuals who are transitioning across care settings and between providers will become critical. This paper provides a brief background on functional status and recommendations on representing functional status in the absence of a standard framework.

What is Functional Status?

A search for definitions indicates some level of consistency in the broad categories included in concept of “functional status.” The HL7 standard for CDA provides a comprehensive summary of the type of information that falls under functional status:

- Ambulatory ability;
- Mental status or competency;
- Activities of Daily Living (ADLs), including bathing, dressing, feeding, grooming;
- Home/living situation having an effect on the health status of the patient;
- Ability to care for self;
- Social activity, including issues with social cognition, participation with friends and acquaintances other than family members;
- Occupation activity, including activities partly or directly related to working, housework or volunteering, family and home responsibilities or activities related to home and family;
- Communication ability, including issues with speech, writing or cognition required for communication;
- Perception, including sight, hearing, taste, skin sensation, kinesthetic sense, proprioception, or balance.

How Functional Status is Assessed by Health Care Provider

The challenge for applying health IT standards occurs with the assessment questions, scales and data used to collect and measure the multiple categories embedded in the concept of functional status. At present, the Federal Government has
identified three different assessment instruments for use in nursing homes, home care agencies and rehabilitation units/hospitals -- each collects and measures functional status information differently. In addition to the federally required assessment instruments, a multitude of other instruments are used with no level of consistency. To illustrate the challenge of standardization, the CAST Continuity of Care Workgroup identified 47 different assessment instruments used in the long-term and post-acute care sector for functional status (See Table I-1).

<table>
<thead>
<tr>
<th>TABLE I-1: CAST Continuity of Care Workgroup: Functional Status Assessment Instruments Used in LTPC</th>
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<tr>
<td>Center for Epidemiologic Studies Depression Scale (CES-D) <a href="http://continuityofcaretaskgroup.pbworks.com/CES-D">http://continuityofcaretaskgroup.pbworks.com/CES-D</a></td>
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%20Post%20Acute%20Care |
<p>| interRAI Post Acute Care <a href="http://continuityofcaretaskgroup.pbworks.com/interRAI%20Post%20Acute%20Care">http://continuityofcaretaskgroup.pbworks.com/interRAI%20Post%20Acute%20Care</a> | interRAI for Mental Health <a href="http://continuityofcaretaskgroup.pbworks.com/interRAI%20for%20Mental%20Health">http://continuityofcaretaskgroup.pbworks.com/interRAI%20for%20Mental%20Health</a> |</p>
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<th>interRAI Home Care</th>
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<td>IRF-PAI</td>
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<td></td>
<td></td>
<td>Rehab Assessment (Required by CMS)</td>
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<td>Lawton's Morale Scale</td>
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<td>Major ICD-10 Depression Inventory</td>
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<tr>
<td>MDS Long Term Care</td>
<td>MDS Minimum Data Set (Required by CMS)</td>
<td>Medicare Health Outcomes Survey (HOS)</td>
</tr>
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<td>Mood Disorder Questionnaire (MDQ)</td>
<td><a href="http://continuityofcaretaskgroup.pbworks.com/Mood%20Disorder%20Questionnaire">http://continuityofcaretaskgroup.pbworks.com/Mood%20Disorder%20Questionnaire</a></td>
<td>Nursing Home Behavior Problem Scale</td>
</tr>
<tr>
<td>OASIS Home Health</td>
<td>OASIS-C (Required by CMS)</td>
<td>Pain Subscale</td>
</tr>
<tr>
<td>PRIME-MD PHQ</td>
<td>For evaluation of mental disorders</td>
<td>Rockwood Assessment</td>
</tr>
<tr>
<td>Semi-Annual Assessment of Members (SAAM)</td>
<td>Used for managed long-term care -- adapted from OASIS</td>
<td>SCL-90</td>
</tr>
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<td>SF-36</td>
<td>Self-reported health status</td>
<td>Six Minute Walk Test (6MWT)</td>
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OVERVIEW OF EXISTING STANDARD/SPECIFICATION FOR FUNCTIONAL STATUS

Table I-2 lists the current standards/specifications related to functional status definition and presentation. The key problems to be resolved include:

- Standardizing the HL7 CDA Functional Status representation to reflect question/answer pattern and assertion patterns. This standardization includes making proposed changes to the new Consolidated CDA Functional Status Section as needed.

- Standardizing the functional status concept value set master file.

- Standardizing the mapping methodology between multiple standard terminologies (for example, the mapping between LOINC functional status answer code to the corresponding SNOMED CT code).

| TABLE I-2: Current Standards/Specifications related to Functional Status |
|-------------------------------------------------|-----------------|----------------|----------------|
| Existing Standard | Selected Terminology | CDA Template | Representation Pattern |
| HL7 CCD | LOINC and SNOMED | CCD problem observation template and CCD result observation template | Question/Answer pattern and Assertion pattern |
| HITSP C32 | LOINC and SNOMED | Constraint CCD result observation template | Question/Answer pattern and Assertion pattern |
| HL7 CDA R2 | LOINC and SNOMED | Functional Status | Question/Answer pattern and Assertion pattern |
| MDS | LOINC and SNOMED | Same as CCD result observation template | Question/Answer pattern |
| IHE Functional Status Assessment Profile (2008) | LOINC and SNOMED | CCD problem observation template and CCD result observation template | Question/Answer pattern and Assertion pattern |

DIFFERENTIATE BETWEEN FUNCTIONAL STATUS AND ASSESSMENT SCALE

Patient assessment instruments often include assessment scale and functional status content. When transmitted in a CCD, assessment scale information is nice to have, but not required. The primary functional status scope for CCD based communication is the functional status observations of interest rather than assessment.
scale information. Differentiation is needed between the functional status and assessment scale. If the primary objective is to communicate a complete report of an assessment instrument, the MDS report (transmitted using the CDA) may be preferred over the CCD functional status section.

**PSYCHOMETRIC UNDERPINNINGS OF VARIOUS ASSESSMENT INSTRUMENTS AND POTENTIAL CONFLICT WITH HITECH GOAL OF REUSE**

In 2006, Tom White and others reviewed the HL7 CCD Ballot and submitted a white paper to the HL7 Structured Document Technical Committee (SDTC) describing a conflict between the CCD Ballot proposal for Functional Status, and psychometric theory and recommendations made by the National Committee for Vital and Health Statistics (NCVHS). The paper describes how the vast number of assessment instruments, particularly those for which psychometric properties were considered in their design, and the dozens of functional status domains across these instruments creates challenges for developing a unique list of functional status values within each of these domains (as was included in the HL7 SDTC CCD Ballot). White states that psychometric and survey theories “dictate that even minor changes to the wording of questions or the allowable response options can significantly change the meaning” of the concept being measured in the assessment form. In his paper, he suggested "supporting the creation of unique codes for all elements of each standard assessment instrument, while at the same time facilitating the creation and use of semantic links -- mappings -- between instrument concepts and external terminology standards-such as SNOMED CT". The paper then describes a process for linking LOINC codes to assessment instruments and the questions and answers embedded in such instruments; and linking these LOINC coded instruments and question/answer pairs to other clinical vocabularies (e.g., SNOMED).

**PRECEDENT TERMINOLOGY STANDARDIZATION WORKS FOR CCD FUNCTIONAL STATUS TO SUPPORT ASSESSMENT INSTRUMENT CONTENT**

HL7 representatives, persons with expertise in the federally-required MDS and OASIS instruments, and others have established precedence by outlining the following terminology integration steps that support the assessment instrument content exchanged in the functional status section of CCD:

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• Step 1: Encode to a standard coding system: encode assessment instruments' functional status and assessment items into LOINC.

• Step 2: Concept matching to a standard medical terminology: where possible match LOINC codes of the assessment instruments' items with one or more equivalent terms from a standard medical terminology. The suggested medical terminology is often SNOMED.

• Step 3: Insert the LOINC codes of the assessment instrument items (e.g., items from the MDS) (and their SNOMED equivalents) into the functional status section of the CCD.

• Step 4 (Messaging): the CCD is an HL7 CDA document that is sent as a sequence of HL7 messages.

THE PROCESS LEADING TO MEANINGFUL USE INCLUDES THE DEVELOPMENT, ADOPTION, AND MAINTENANCE OF APPROPRIATE STANDARDS

The exchange of functional status content is critically important in providing services and supporting the continuity of care for persons with chronic illnesses and disabilities. The standards development community has identified two approaches for exchange of content related to functional status -- one approach applies to the exchange of question and answer pairs that could include functional content and supports the exchange of functional status observations. The second approach is to exchange functional status assertion pattern -- that is exchange only the assertion of a functional status impairment (See below for XML Examples for Question/Answer Pattern and Assertion Pattern). Additional consideration is needed to determine whether additional messaging specifications are needed for the exchange of functional status content.

Recommendations and Process

• The S&I Framework should undertake work to identify whether approaches to exchange functional status information observations using HL7 -- assertion patterns or question/answer pairs (or whether other approaches could be used). Specifically, the S&I Framework will look at the current CDA Functional Status section and suggest refinements/improvements, and may also suggest potential new CDA sections as needed.

• Meaningful use across the health care continuum will require more complete specifications health IT content and messaging standards. Developing a standard approach to representing functional status is a key step to enable the
inclusion of functional status in meaningful use. The following process is recommended:

- Develop use cases for the exchange of key documents that include functional status content (e.g., exchange of: assessment instruments, assessment summary documents, discharge/transfer documents, and care plans).
- Engage stakeholders -- CMS, quality measure developers, instrument developers, providers, vendors, health information exchange organizations.
- Establish participant roles and responsibilities.
- Ensure that Regenstrief and IHTSDO are participants, so that we can determine how these terminologies overlap, complement one another or conflict with one another.
- Ensure involvement of HL7 (i.e., Structured Documents and Patient Care committees).
- If needed, conduct a precedent analysis.
- Evaluate terminology work related to SNOMED, LOINC and others as appropriate.
- Conduct a content analysis on some or all of the 47 instruments listed in Table I-1.
- Complete CDA (and CCD and C32 mappings) work on functional status observations.
- Develop and ballot the standard.
- Request that the NLM explore the need to and options for maintaining linkages between LOINC, SNOMED and other vocabularies used in standardizing functional assessment content represented in standardized assessment instruments.

**XML Examples for Question/Answer Pattern and Assertion Pattern**

**Question/Answer pattern:**

```xml
<observation classCode="OBS" moodCode="EVN">
  <!-- represent functional status deficit question -->
  <code code="54598-8"
    codeSystem="2.16.840.1.113883.6.1"
    displayName="Hearing"/>
  </code>
  ... 
  <!-- represent functional status deficit's answer -->
  <value xsi:type="CD" code="LA10941-5"
    codeSystem="2.16.840.1.113883.6.1"
    displayName="Adequate – no difficulty...">
    </value>
</observation>
```
Assertion pattern:

```xml
<observation classCode="OBS" moodCode="EVN">
  <!-- assert whether the functional status finding present -->
  <code code="ASSERTION"
       codeSystem="2.16.840.1.113883.5.4"/>
  ...
  <!-- the functional status finding to assess -->
  <value xsi:type="CD" code="105504002"
       codeSystem="2.16.840.1.113883.6.96"
       displayName="Dependence on cane"/>
</observation>
```

REFERENCES

CDA Tools:

CAST Continuity of Care Workgroup:

IHE Profile Wiki 2008:

HITSP C32 Continuity of Care Document Components:

# Opportunities for Engaging Long-Term and Post-Acute Care Providers in Health Information Exchange Activities: Exchanging Interoperable Patient Assessment Information

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APPENDIX G: LTPAC Interoperability Toolkit for Exchanging Interoperable Patient Assessment Instruments [9 PDF pages]

Overview


Several attachments are listed separately at the end of this Appendix.

APPENDIX H: Standards Development and Adoption Recommendations [6 PDF pages]


APPENDIX I: Functional Status Standardization Recommendations [13 PDF pages]


APPENDIX J: Overview of Patient Assessment Summary [23 PDF pages]


APPENDIX K: Rosetta Stone MDS Summary [162 PDF pages]


APPENDIX L: Rosetta Stone OASIS Summary [127 PDF pages]


APPENDIX M: Terms and Acronyms [6 PDF pages]

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