NHIN Core Content Specification for Exchange of the Summary Patient Record

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(see Appendix A for names of WG members)

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I. Introduction

This document is the data specification for the summary patient record exchange, which will be one of the NHIN Trial Implementations demonstrations. This document is intended to be used by members of the NHIN Cooperative aiming to comply with the requirements for the summary patient record exchange. This data specification is intended to be used in conjunction with query and retrieval services that will be specified by the NHIN Cooperative's Technical and Security Services Working Group.

These specifications were developed to serve as a minimum data set for the ER-EHR use case. This is in no way meant to imply that this summary record may not be suitable in other contexts. For example, this specification could be suitable as a patient's minimum data set accompanying a discharge summary, a referral, or as a patient summary in the Wounded Warrior use case, and for other uses.

This single specification addresses the requirements for a semantically processable summary record and a viewable summary record that could be used for look up and retrieval. It is possible to use a single specification for both purposes because CDA-based documents can be used to generate human readable documents. As stated in Section 1.2.3 of the HL7 CDA R2 document: (http://www.hl7.org/v3ballot/html/infrastructure/cda/cda.htm): "The CDA requirement for human readability guarantees that a receiver of a CDA document can algorithmically display the clinical content of the note on a standard Web browser."

The remaining sections of the document cover the following:

- Section 2 is a brief background on the development of the Specification
- Section 3 describes the process the workgroup followed to create the specification
- Section 4 identifies the details of the specifications developed by the workgroup.
- Section 5 explains the representation of specification captured in a Microsoft Excel spreadsheet.
- Section 6: provides guidance to the implementers on how to use this work product in conjunction with the CDA, CCD, and C32 documents.
- Appendix A includes a list of workgroup members,
- Appendix B defines the minimum data set.

- Appendix C includes examples of best practices in implementing a summary patient record.

II. Background on development of specification

The instructions to the Core Services Content Workgroup were to follow the specifications in the Emergency Responder Electronic Health Record (ER-EHR) Use Case. The ER-EHR Use Case is specified in the HITSP ER-EHR Interoperability Specification (HITSP/IS04). IS04 is a description of the requirements and design considerations for a complex set of scenarios that involve care in the emergency setting. In its entirety, IS04 references a broad set of business and technical actors (e.g., 911, dispatchers, law enforcement departments, fire departments, emergency contact registries, emergency medical services, personal health records, electronic health records, physicians and nurses). IS04 references a broad set of HITSP constructs including such summary clinical documents as C32 (Summary Documents Using CCD), C28 (Emergency Care Summary Document), and C48 (Encounter Document). C37 (Lab Results Document) is also one of the documents mentioned in the IS04.

The Core Services Content Working Group focused on the patient summary documents in IS04 as a source for the NHIE specifications for the exchange of the summary patient record. The patient summary documents defined by the HITSP specs listed above reference two primary base standards:

- The HL7 Continuity of Care Document Implementation Guide, and
- The IHE XDS Medical Summaries specification

These two specifications both are based on the HL7 Clinical Document Architecture standard and, while they are harmonized to some degree they are not identical.

After carefully reviewing the IS04 document and the associated base standards, the Core Services Content Working Group chose to focus its attention on HITSP/C32, based on the HL7 Continuity of Care Document (CCD). The workgroup determined that the content of the other summary documents (based on XDS-MS specifications) does not add significant value for summary patient record exchange within the NHIN. While the C28 included an ED Triage Note, ED Physician and an ED Nursing Note, it didn't represent a complete summary patient record. Similarly, the data elements in the C48 Encounter Document, based on the XDS-MS integration profile and used for a "transfer of care" like scenario, could all be represented in the CCD based C32. The C37 Lab document could not be used in lieu of a summary patient record. In short, the Workgroup determined that for the purposes of the NHIN Trial Implementations, the HITSP/C32 specification defines a "summary patient record".

III. Creation of the specification

The C32 document consists of 17 modules, each representing a class of data (e.g., demographics, medications, allergies and sensitivities, vital signs). Modules are groups of related data items; they are not representative of the sequence or format of the document. Each module contains several fields of data. Attributes of each field are ID, name, description, optionality, repeating, data source, constraints and additional specifications. Additional specifications are generally minor sequence and/or format restraints within the data element, and can be found in the corresponding HITSP C32 document section. The data source describes how the data field should be represented, for example, it may be a name or a telephone number or a member of an enumerated code set.

The C32 document was analyzed by members of the Core Services Content WG. For easy navigability, the C32 document was transformed into an Excel spreadsheet. Each data element in the C32 document was given a row in the spreadsheet and each attribute of the element was given a column. Altogether, there are 17 sections, 155 data elements, 48 data elements with a HITSP-specified value set, 58 required data elements ("R"), and 16 that are both required and have a HITSP-specified value set. For data sources that reference a HITSP-specified value set, a hyperlink is provided to another tab in the worksheet that contained the value set. The spreadsheet provides an easy way to navigate around the specifications of the C32 document.

The spreadsheet also includes data elements related to the HITSP C37 (Lab Report Document) specification. The C37 specification is not part of the core services (summary patient record exchange) specification, but is anticipated to be adopted by the NHIN Cooperative as a specification for one or more use cases. These portions of the spreadsheet should be considered as "draft" at this time.

IV. Requirements for the use of C32 in the summary patient record exchange.

IV.A Introduction

Three sets of requirements govern the use of C32 for the specifications for the exchange of a semantically processable summary patient record:

- Identification of required modules as the minimum criteria for a "semantically processable" summary patient record
- Identification of required data elements within each of the required modules
- Identification of required value sets (terminologies) within the required modules

Appendix B of this document is a definition of the minimum data set. These are the data elements that are required for a semantically processable record. Required data elements that have a HITSP specified value set (terminology) are indicated by a bolded value in the optionality field.

Data elements from the optional (non-required) modules can still be included and can be used by a receiving NHIE for display purposes. If data in the optional modules is coded using the HITSP-specified value set, the data element would be semantically processable by the receiving NHIE, however in the optional modules, use of the HITSP-specified value set is not required.

IV.B Required modules

The Core Content Work Group selected 6 modules as "Required" for the minimum data set of a summary patient record. These modules are:

a. Module 1 -- Person Information module
b. Module 3 -- Support module (emergency contact information)
c. Module 6 -- Allergies and Drug Sensitivities module
d. Module 7 -- Conditions module (problem list)
e. Module 8 -- Medications module
f. Module 10 – Information source module

We selected these modules based on text in the IS04 document. Specifically, in HITSP/IS04, V1.0.1, 12/5/2007, on p16, at the bottom, the text states (to paraphrase) "The Emergency Responder Electronic Health Record contains at a minimum: emergency contact info, demographics, special needs, medications, allergy, and problem list information that can be used to support emergency health care activities." Though the C32 doesn't include the special needs module, it is supported by the underlying CCD construct, and hence can be sent if desired. We included the Information Source module because it was felt to be an important component of a summary patient record as it provides information about the source (e.g., hospital, health system, or physician's office) of the medical data.

IV.C Requirements for data elements within modules

The C32 specifies data elements either as required ("R"), required if known ("R2"), or optional ("O"). There was agreement among the workgroup members that the HITSP specified optionality for a field should be adhered to as stated in the C32 document.

IV.D Requirements for use of value sets specified by HITSP in the C32 document

The following requirements related to the use of HITSP-specified value sets were specified by the Workgroup:

- For all the data elements within the six required modules, if HITSP specifies a value set, the use of the value set is required. This will make the required data exchanged within these 6 modules "semantically processable" across care delivery organizations. This is applicable whether the data element has an optionality of "R", "R2", or "O".

- For the 11 optional modules, if HITSP specifies a value set for a data element, the use of the value set is optional. If the specified value set is used, it will allow the data element to be semantically processable by the receiving NHIE. If the specified value set is not used, the data element will still be available to be displayed.
- In most cases, the specification spreadsheet enumerates the coded value sets that are defined by HITSP and/or the base specification (HL7 CCD or XDS-Lab). Where the HITSP or base specification is silent, or where there are discrepancies, this specification (the spreadsheet) takes precedence.
- Some of the CCD data elements have a required or suggested value set. In those cases, the required terminology value can be calculated by translating an NHIE's internal coded value into an equivalent code value in the desired value set. When an NHIE does that translation, both the original NHIE value and the translated value must be supplied in the exchange. A sample code snippet for how to accomplish this is provided in Appendix C., Best Practices, Section A.1.1.
- If the originating system cannot supply the value in a HITSP-specified value set, it should supply its local code as well as the identifier of the terminology that is the source of the local code. Examples of how to do this are included in Appendix C, Best Practices, Examples for Encoding Clinical Documents for the NHIN

A note on translating from local code sets to HITSP-specified code sets. The Core Content WG noted that for several data elements in C32 that have a HITSP-specified value set, an NHIE may not natively represent the data element using the HITSP-specified value set for that data element, but rather using a different (local) code system for example, for Problem Code, the HITSP-specified value set is SNOMED but many NHIEs will represent a problem concept using an ICD-9 code. To convert from a local code to a HITSP-specified value set would require some kind a mapping method. The WG noted that if NHIEs differ in the methods they use to perform the mapping, two NHIEs could map an identical local code to different codes in the HITSP-specified value set. The group noted that this may be undesirable. The group noted that inconsistent mapping by NHIEs may lead to a "semantically processable" patient summary record, but not necessarily a "semantically interoperable" patient summary record, in which meaning is preserved consistently across data mapping transformations. If the NHIEs were to use of a common mapping table and/or agreed upon mapping rules, meaning would be preserved more exactly, i.e., semantic interoperability would be obtained.

Although it is beyond the scope of the specification per se, the Work Group agreed to pursue approaches that will preserve meaning across data transformations, i.e., create semantic interoperability in the NHIN Trials Implementation project. The WG will aim to create guidelines for the efficient and reliable mapping of commonly-used local terminologies to HISTP-specified standards that can be used by the Cooperative members and perhaps other groups in future. The WG will also facilitate the sharing of common mapping resources including mapping content and translation tools.

IV. E Requirements for specifying Module 10, Information Source

Given the importance of understanding the source of clinical information when sharing clinical data among practitioners, who do not regularly communicate, the following requirements apply to identifying the source of clinical information in a summary patient document. Examples are included in the Best Practices Appendix.

- Each clinical document **must** have an *author* element at the *ClinicalDocument* level that attributes the source of the information in the document as a whole.
- The *author* element **must** identify either an individual or a system/device, and **should** identify an organization with which the person or device is associated.
- When any piece of information within a Clinical Document is known to come from a source other than that indicated by *ClinicalDocument author* element, that piece of information **must** be attributed to its source using an author element attached to the appropriate data element.

IV. F Differences from the relevant HITSP constructs

The specification differs from the HITSP-recommended value sets as follows:

A. Adverse Event Product. This specification extends the HITSP recommendation for the coded description of the substance that a person is allergic to, to include the entire "substance" hierarchy of SNOMED CT.
    a. RATIONALE: The HITSP-recommended value set includes drug products and food ingredients, but not non-food, non-drug substances. There are several important "substance" allergies that inform clinical practice in both emergency and non-emergency settings, including latex allergies, which is not represented in the HITSP-recommended value set.
B. Problem Status. Although not specified by HITSP, the underlying CCD specification provides a recommended value set for this data element. This specification extends that value set to include status values appropriate for representing the status of a diagnosis.
    a. RATIONALE: The CCD uses the "conditions" module to represent several different types of statements about a patient's condition, including problems, symptoms, and diagnoses. The CCD value set includes status values that would be appropriate for symptoms or conditions, but not diagnoses. The values given by the CCD specification and the values added by this specification come from the same code system, SNOMED CT, so any system that supports the HITSP value set can easily accommodate this extension.
C. Result Type Code. Although not specified by HITSP, the underlying CCD specification recommends a small value set consisting of 17 results domains (e.g. virology, serology, pathology), but also allows any value from LOINC, SNOMED CT, or CPT-4. This specification restricts the value set to the smaller set of 17 values, drawn from SNOEMD CT.

a. RATIONALE: The HITSP value set would allow many thousands of possible values (from LOINC, SNOMED CT, and CPT-4), most of them not meaningful in this context. The selection of relevant results will be easier with a meaningful type code drawn from this more limited set of values.

V. Using the specification spreadsheet

To determine the specifications for the summary patient record exchange, section IV, Requirements (above) should be reviewed.

The complete Excel spreadsheet that is the companion to this document, NHIN_CoreContentSpecification_031408_v5.2.xls, (note: not Appendix B) should be reviewed. The first tab of the spreadsheet includes some introductory material and a table of contents. The second tab of the spreadsheet contains a listing of all modules and data elements in the C32 document. The following structural characteristics of the spreadsheet should be noted to determine the specification:

1) Rows in the data element spreadsheet are module headers, section headers, or data element descriptions.
2) Constraints relevant to the module are contained in the module header.
3) Section headers contain information regarding whether the header is “R”, “R2” or “O”.
4) Section headers contain an XPath expression identifying the location of the element within the CDA. The expressions for each data element must be concatenated with the expression found in the section header(s) containing it to get the complete XPath expression from the document root.
5) Data elements contain the following elements
    a. Data element ID
    b. Data element name
    c. Optional / repeating flags
    d. Data source (pointer to the CDA XPath reference)
    e. The section header from C32 that contains additional constraints (if any)
6) For data elements that have a HITSP specified value set, the “data source” field will be represented as a hyperlink. Clicking on the hyperlink will take the user to a subsequent tab in the workbook that contains the HITSP-specified value set. For example, in row 17 of the spreadsheet, the data element name is Marital Status. The name of the data source is cda:maritalStatusCode, which is implemented as a hyperlink. Clicking on the hyperlink takes one to a worksheet that displays the relevant information for the HITSP specified value set for marital status. This includes the:
    a. Value Set Name
    b. Value Set OID
    c. Value Set Author

d. Value Set Version
e. Base Code Set(s) A value set may be based on more than 1 base code set
f. For each element in the value set
    i. The code
    ii. The code set OID
    iii. The code description

7) Meaning of “missing” in the Data Element ID column
    a. In the spreadsheet, when "missing" appears in the Data Element ID column, this means that the HITSP C32 specification did not mention this data element but it is defined by the HL7 CCD Implementation Guide and has the conformance and cardinality properties indicated in the "Opt/Repeat" column. For the purposes of the summary patient record exchange, these data elements are valid data elements with the C32 specification equal to those data elements numbered with a Data Element ID by HITSP.

The Excel spreadsheet combined with the requirements in section IV of this document comprises the specification.

VI. Creating data formats – instructions for implementers

Implementers can determine the data formats by using this specification to determine which modules, and data items are required, then referring to the CCD implementation guide for use of templates to define modules (maps to one or more CCD sections), and finally to the CDA R2 schema for the exact data formats.

Implementers may refer to examples in the NIST site
http://xreg2.nist.gov/cda-validation/index.html#downloads.html.
Find and click on the first download for HITSP C32 test package which has examples.

VII. Appendix A.

Names of Workgroup members

CareSpark	Matt	Weaver
CareSpark	Jamel	Sparkes
Delaware	Mohammed	Pervaiz
Federal	Omar	Bouhaddou
Federal	Marie	Swall
Indiana	Mike	McCoy
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Long Beach	Paul	Fu
Med Virginia	Sumit	Nagpal
Med Virginia	Gerard	Filicko
NCHICA	Richard	Franck
NCHICA	Geoff	Lawson
New Mexico (Co-Chair)	Jeff	Blair
New Mexico	Dave	Perry
New Mexico	Dave	Handren
NYeC	Ben	Stein
NYeC (Co-Chair)	Gil	Kuperman
NYeC (Coordinator)	Alex	Low
NYeC (Support)	Savithri	Devaraj
West Virginia	Chris	Clark
West Virginia	Mazhar	Shaik
ONC (Liaison)	Carol	Bean
HITSP (Liaison)	Bob	Yencha
CCHIT (Liaison)	Virginia	Riehl

Appendix B. Minimum data set

Data Element ID	Data Element	Opt/ Repeat	Data Source
Person Information Module			
1.01	Document Timestamp	R/N	/cda:ClinicalDocument/cda:effectiveTime
	PATIENT INFORMATION EVENT ENTRY	R/N	/cda:ClinicalDocument/cda:recordTarget/ cda:patientRole
1.02	Person ID	R/N	cda:id
1.03	Person Address	R/Y	cda:addr
1.04	Person Phone/Email/URL	R/Y	cda:telecom
	PERSONAL INFORMATION		cda:patient
1.05	Person Name	R/Y	cda:name
1.06	Gender	**R/N**	cda:administrativeGenderCode
1.07	Person Date of Birth	R/N	cda:birthTime
1.08	Marital Status	**R2/**	cda:maritalStatusCode
Support Module			
	SUPPORT	R2/Y	/cda:ClinicalDocument/cda:participant
3.01	Date	R/N	cda:time
	CONTACT	R2/Y	cda:associatedEntity or cda:patientRole/cda:patient/cda:guardian
3.02	Contact Type	**R/N**	@classCode
3.03	Contact Relationship	**R2/N**	cda:code
3.04	Contact Address	R2/Y	cda:addr
3.05	Contact Phone/Email/URL	R2/Y	cda:telecom
3.06	Contact Name	R/Y	cda:associatedPerson/cda:name or cda:guardianPerson/cda:name
Allergy/Drug Sensitivity Module			
	ADVERSE EVENT ENTRY	R2/Y	cda:act[cda:templateId/@root= '2.16.840.1.113883.10.20.1.27']/ cda:entryRelationship[@typeCode='SUBJ']/ cda:observation[cda:templateId/@root= '2.16.840.1.113883.10.20.1.18']
6.01	Adverse Event Date	R2/N	cda:effectiveTime
6.02	Adverse Event Type	**R/N**	cda:code
	PRODUCT	R2/Y	cda:participant[@typeCode='CSM']/ cda:participantRole[@classCode='MANU']/ cda:playingEntity[@classCode='MMAT']/
6.03	Product Free-Text	R/N	cda:name
6.04	Product Coded	**R2/N**	cda:code

Data Element ID	Data Element	Opt/ Repeat	Data Source
	SEVERITY	R2/N	cda:entryRelationship[@typeCode='SUBJ']/ cda:observation[templateId/@root= '2.16.840.1.113883.10.20.1.55'] Subset of SNOMED CT Preferred Terms for Severity
6.07	Severity Free-Text	R2/N	cda:text
6.08	Severity Coded	**R2/N**	cda:value
Condition Module			
	PROBLEM ENTRY	R2/Y	cda:act[cda:templateId/@root= '2.16.840.1.113883.10.20.1.27']/ cda:entryRelationship[@typeCode='SUBJ']/ cda:observation[cda:templateId/@root= '2.16.840.1.113883.10.20.1.28']
7.01	Problem Date	R2/N	cda:effectiveTime
7.02	Problem Type	**R2/N**	cda:code
7.03	Problem Name	R/N	cda:text
Medication (Rx & Non-Rx) Module		See the HL7 Continuity of Care Document section 3.9 for constraints applicable to this module.	
	MEDICATION INFORMATION	R/Y	cda:consumable/cda:manufacturedProduct
8.13	Coded Product Name	**R2/Y**	cda:manufacturedMaterial/cda:code
8.14	Coded Brand Name	R2/Y	cda:translation
8.15	Free Text Product Name	R/N	cda:orginalText
8.16	Free Text Brand Name	R2/N	cda:manufacturedMaterial/cda:name
8.18	Product Concentration	R2/N	
8.19	Type of Medication	R2/N	cda:entryRelationship[@typeCode='SUBJ']/ cda:observation[cda:templateId/@root= '2.16.840.1.113883.3.88.11.32.10']/ cda:value/@code
8.20	Status of Medication	R2/N	cda:entryRelationship[@typeCode='REFR']/ cda:observation[cda:templateId/@root= '2.16.840.1.113883.10.20.1.47']/ cda:value/@code
	ORDER INFORMATION	R2/Y	cda:entryRelationship[@typeCode='REFR']/ cda:supply[moodCode='INT']
8.26	Order Number	R2/N	cda:id
8.28	Quantity Ordered	R2/N	cda:quantity
8.29	Order Expiration Date/Time	R2/N	cda:effectivetime/cda:high
8.34	Prescription Number	R2/N	cda:id
8.38	Quantity Dispensed	R2/N	cda:quantity
8.39	Fill number	R2/N	cda:entryRelationship[@typeCode='COMP']/ cda:sequenceNum
Information Source Module			

Data Element ID	Data Element	Opt/ Repeat	Data Source
	AUTHOR	R/N	ancestor-or-self::./cda:author[1]
10.01	Author Time	R/N	cda:time
10.02	Author Name	R/N	cda:assignedAuthor/cda:assignedPerson/cda:name
10.03	Reference	R2/Y	cda:reference/cda:externalDocument
10.04	Reference Document ID	R/N	cda:id
	INFORMATION SOURCE	O/Y	ancestor-or-self::./cda:informant
10.06	Information Source Name	R/N	cda:assignedPerson/cda:name

Appendix C. Best Practice Examples for Encoding Clinical Documents for the NHIN

Authors: NHIN Cooperative Core Services Content Working Group
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Date: March 21, 2008

A.1 Guidelines for Specifying Coded Values in the CCD

Many CCD nodes have a coded element (CE or CD data type) value. The following example shows how to specify that an observed value is the SNOMED-CT term 40275004 (Contact dermatitis).

```
<value xsi:type=”CD” code=”40275004” codeSystem=”2.16.840.1.113883.6.96"
       codeSystemName="SNOMED CT" displayName="Contact dermatitis"/>
```

Note that we have supplied the attributes “codeSystemName” and “displayName”, although the HL7 standard itself does not require them. All coded value elements **should** include these attributes.

A.1.1 Coded Values Arrived at via Translation

Some of the CCD values have a required or suggested terminology. In those cases, the required terminology value can be calculated by translating an NHIE’s internal coded value into an equivalent code value in the desired terminology. When an NHIE does that translation, both the original NHIE value and the translated value **must** be supplied in the CCD, as in the following example:

```
<value xsi:type=”CD” code=”40275004” codeSystem=”2.16.840.1.113883.6.96"
              codeSystemName="SNOMED CT" displayName="Contact dermatitis">
       <translation code="692.9" codeSystem="2.16.840.1.113883.6.2"
              codeSystemName="ICD9CM" displayName="DERMATITIS NOS"/>
</value>
```

This example shows that the value in the originating system was the ICD-9-CM coded value 692.9 (Dermatitis NOS) which was been translated into the SNOMED-CT value 40275004 (Contact dermatitis) when represented in the CCD.

A.1.2 Text Values when a Coded Value is Required

Sometimes the NHIE will only have a text value, even though the CCD requires a Coded Value (and perhaps a suggested terminology too). In this case, the CCD **should** be

populated with a null value for the suggested terminology, but with the text value that existed in the NHIE's database, as in the following example:

```
<value xsi:type=”CD” nullFlaver=”OTH”>
       <originalText>dermatitis nos</originalText>
</value>
```

Note: originalText may also be used when a coded value is supplied. The definition of this element is “The text as seen and/or selected by the user who entered the data.”

B.1 Attributing the Source of Information in Clinical Documents

Implementers are urged to pay close attention to section 2.2.1.11 in the HITSP C32 (Summary Documents using HL7 Continuity of Care Document) component. Both the NHIN Use Cases and CCD guidelines require that every piece of information within a CCD document have an attributed “information source”.

B.1.1 Attributing the Source of Information at the Document level

Each clinical document **must** have an author element at the ClinicalDocument level that attributes the source of the information in the document as a whole. The author element **must** identify either an individual (assignedAuthor/assignedPerson) or a system/device (assignedAuthor/assignedAuthoringDevice), and **should** identify an organization with which the person or device is associated (assignedAuthor/representedOrganization). The author element **must** also identify the time at which the document was authored. These uses are illustrated in the following examples:

```
<author>
       <time value="20000407130000+0500"/>
       <assignedAuthor>
              <id root="20cf14fb-b65c-4c8c-a54d-b0cca834c18c"/>
              <assignedPerson>

       <name><prefix>Dr.</prefix><given>Robert</given><family>Dolin
</family></name>
              </assignedPerson>
              <representedOrganization>
                     <id root="2.16.840.1.113883.19.5"/>
                     <name>Good Health Clinic</name>
              </representedOrganization>
       </assignedAuthor>
</author>
```

```
<author>
    <time value="2008032022441+0500"/>
    <assignedAuthor>
        <id root="2.16.840.1.113883.3.18.104"/>
        <assignedAuthoringDevice>
            <softwareName>IBM NHIE Solution</softwareName>
        </assignedAuthoringDevice>
```

```
        <representedOrganization>
            <id root="2.16.840.1.113883.3.18.101"/>
            <name>Morehead Memorial Hospital</name>
        </representedOrganization>
    </assignedAuthor>
</author>
```

B.1.2 Attributing the Source of Information at the Entry level

There may be individual pieces of information within a Clinical Document that come from various sources. These individual pieces of information **may** each have an author element which, if present, indicates the source of information for the information within that element only, overriding the author at the document or any other higher level in the document. The use of the author element at this level is identical to its use a the document level. The author element may be used to attribute the source of information on any of the following pieces of information within a Clinical Document:

- Act
- Encounter
- Observation
- ObservationMedia
- Organizer
- Procedure
- RegionOfInterest
- Section
- SubstanceAdministration
- Supply

(Note: ObservationMedia and RegionOfInterest are related to referenced multi-media elements, such as images.)

When any piece of information within a Clinical Document is known to come from a source other than that indicated by ClinicalDocument/author, that piece of information **must** be attributed to its source using an author element attached to the appropriate data element.