Meaningful Use Of Electronic Health Records: Electronic Physician Reporting To State Cancer Registries

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CMS and ONC Meaningful Use Final Rules for Cancer Reporting

- **CMS Stage 2 Menu objective for Eligible Professionals:**
  - Capability to identify and report cancer cases to a State cancer registry, except where prohibited, and in accordance with applicable law and practice.

- **ONC 2014 Edition EHR Certification Criteria:**
  - Optional---ambulatory setting only—transmission to cancer registries. EHR technology must be able to electronically create cancer case information for electronic transmission in accordance with the *Implementation Guide for Ambulatory Healthcare Provider Reporting to Central Cancer Registries*, HL7 *Clinical Document Architecture (CDA)*

- Implementation began January 2014
- Proposed implementation delay until January 2015
Physician Reporting Workgroup

- Collaborative effort with CDC National Program of Cancer Registries (NPCR) and North American Association of Central Cancer Registries (NAACCR)
- Develop guidelines and procedures, identify software requirements, and perform other tasks needed for central cancer registries to prepare for implementation of electronic physician reporting, especially as part of the Meaningful Use of electronic health records (EHRs).
- Software and workflow requirements sub-group
- External Partner Interaction sub-group
- Mapping sub-group
Physician Reporting Workgroup Objectives

- Identify existing software and/or develop software requirements and tools needed for central cancer registries to successfully implement electronic physician reporting
- Develop guideline documents to assist central cancer registries in addressing issues related to electronic physician reporting
- Develop education and communication tools for central cancer registries to address implementation of electronic physician reporting
Physician Reporting Workgroup Activities

- Develop guidance documents to help registries work with various partners, including EHR vendors, physicians, Health Information Exchanges (HIEs), and Regional Extension Centers (RECs)
- Develop use cases, business requirements, and data element mapping rules and translations to help registries and inform software development for receiving and processing the electronic physician reports
- Develop education and communication tools to help cancer registries prepare for and implement MU cancer reporting
Physician Reporting Workgroup Guidance Documents

- **Identifying Critical External Partnerships Physician Reporting Planning Document**
  - Guidance on estimating the total number of physicians, also specifically MU eligible professionals and/or physician groups.

- **Identifying State EHR Vendors Physician Reporting Planning Document**
  - Guidance on how states can identify EHR vendors, Health Information Exchanges (HIEs), Regional Extension Centers (RECs)/Regional Assistance Centers (RACs), including, but not limited to, surveys, trade Web sites/magazines, and associations.

- **Counting Physicians by Specialty**
  - Guidance on tracking the total number of physicians reporting for MU and non-MU-related cancer reporting.

- **Transport Options**
  - Describes the different transport options and suggests recommendations that states should consider.
Physician Reporting Workgroup Guidance Documents

- **Guidance for Implementing Public Health Agency/State Cancer Registry MU**
  - Checklist that identifies high-level items that states need to address for MU; defines what is included in a state action plan.

- **Provider Site Responsibilities and Contact Information**
  - Template of contact information that each state should collect from each provider.

- **MU Quality Assurance Testing Guide**
  - Guidance document for states to outline the quality assurance testing process for providers' education.

- **Provider Checklist for Achieving MU for Cancer Reporting**
  - Provider checklist for achieving MU for cancer reporting within your state, reviewing eligibility, testing, validating, confirmation, and going live.

Mapping and Software/workflow requirements
Sub-Workgroups Products

- ~ 20 mapping rules documents with hundreds of mapping rules
  - Direct mapping example: CDA element that indicates the time the document is created is mapped to the NAACCR data item Date Case Report Exported
  - Complex mapping rules example:
    To select address for Address at Diagnosis:
    If only one address is reported in the CDA document, use that address. If more than one address is reported, set Address at Diagnosis to be the earliest address where the low value (start date) is before the date of diagnosis and the high value (end date) is either null or after the date of diagnosis…
- ~ 25-30 translation tables
- Provided significant input on data flow requirements, which have been incorporated in eMaRC Plus
Comparative Effectiveness Research (CER) and Patient Centered Outcomes Research (PCOR)

- **CER Special Projects**
  - 2 state cancer registries pilot tested physician reporting from EHRs before start of MU
  - Alpha testing and feedback of eMaRC Plus physician reporting module

- **PCOR funding received from HHS to expand on Comparative Research Effectiveness project**
  - Extend follow-up of breast, colon, rectum cancer cases through 2014
  - Expand EHR reporting to cancer registries for comparative effectiveness research by addressing requirements to implement Meaningful Use cancer reporting
  - Testing and enhancement of software tools, technical assistance, training, and guidance to cancer registries
Other Guidance and Technical Assistance

- NPCR has provided Town Hall meetings to inform cancer registries about MU topics
  - Slides, documents, recordings and Q&As available at: http://www.naaccr.org/EducationandTraining/CDCMeaningfulUse.aspx
- NPCR held separate bi-monthly technical assistance calls for cancer registries and EHR vendors to ask questions and have open discussion on MU topics
- CDC Meaningful Use Technical Team, MeaningfulUse@cdc.gov
- Stage 2 MU PH Reporting Requirements Task Force
  - Guidance documents and recommendations
  - http://www.phconnect.org/group/ph-reporting-task-force
New Collaborative Cancer Registry/EHR Vendor Calls

- **Purpose:**
  - To facilitate communication and sharing of ideas, NPCR will host a twice monthly teleconference between states and EHR vendors certified for MU Stage 2 Cancer Reporting. These meetings will provide support in setting the groundwork for implementation of MU physician reporting to cancer registries and provide an informal environment for discussions.

- **First Call—Draft Agenda**
  - Purpose and plan for workgroup meetings
  - Possible delay in implementing MU Stage 2
  - Overview of MU Process (Declaration-Registration-Onboarding-Acknowledgement)
  - Discuss any issues with Declaration and/or Registration
  - Review steps for Onboarding
Tools for MU Cancer Reporting (1)

- Electronic Mapping, Reporting, and Coding (eMaRC) Plus—Physician Reporting Module
  - First production Release—June 20, 2014
  - Imports and parses physician cancer HL7 Clinical Document Architecture (CDA) reports
  - For use by cancer registries to receive and process physician reports
  - Maps and translates CDA data elements and values to those used by state cancer registries
  - Consolidates information from multiple cancer reports into a single cancer abstract
  - Enables export in the standard cancer registry format
  - Part of CDC’s Registry Plus suite of free-of-charge software
**eMaRC Plus—Mapping Rules Example**

<table>
<thead>
<tr>
<th>Field</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient's First Name</td>
<td>Amy</td>
</tr>
<tr>
<td>Patient's Last Name</td>
<td>Fowler</td>
</tr>
<tr>
<td>Patient's Middle Name</td>
<td>Farrah</td>
</tr>
<tr>
<td>Patient Name Suffix</td>
<td>King</td>
</tr>
<tr>
<td>Patient's Street Address</td>
<td>4732 Chestnut St</td>
</tr>
<tr>
<td>Patient's City</td>
<td>Madison</td>
</tr>
<tr>
<td>Patient's State</td>
<td>WI</td>
</tr>
<tr>
<td>Patient's Zipcode</td>
<td>53705</td>
</tr>
<tr>
<td>Patient's County</td>
<td>USA</td>
</tr>
<tr>
<td>Patient's Country</td>
<td>USA</td>
</tr>
<tr>
<td>Patient's Address Start Date</td>
<td>20010401</td>
</tr>
<tr>
<td>Patient's Address End Date</td>
<td>20110303</td>
</tr>
</tbody>
</table>

**Address Information:**

- **Addr at DX—No Street**: 14975 Main Street
- **Addr at DX—Supplement**: 14975 Main Street
- **Addr at DX—City**: Menomonie
- **Addr at DX—State**: WI, Wisconsin
- **Addr at DX—Postal Code**: 54751
- **Addr at Current—No Street**: 14975 Main Street
- **Addr at Current—Supplement**: 14975 Main Street
- **Addr at Current—City**: Menomonie
- **Addr at Current—State**: WI, Wisconsin
- **Addr at Current—Postal Code**: 54751
- **Addr at Current—Country**: USA
- **County at DX**: 9999
- **County at Current**: 9999
- **Telephone**: 2629933711
- **Birthplace—State**: IA, Iowa
### eMaRC Plus—Consolidation Example

<table>
<thead>
<tr>
<th><strong>Spanish/Hispanic Origin</strong></th>
<th><strong>Consolidated Value</strong></th>
<th><strong>AbsrefID.7</strong></th>
<th><strong>AbsrefID.8</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td><strong>Industry Source</strong></td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td><strong>Occupation Source</strong></td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td><strong>Sex</strong></td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td><strong>Diagnostic Confirmation</strong></td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td><strong>Social Security Number</strong></td>
<td>123456789</td>
<td>123456789</td>
<td>123456789</td>
</tr>
<tr>
<td><strong>NPI-Physician—Managing</strong></td>
<td>1407821212</td>
<td>1407821212</td>
<td>1407821212</td>
</tr>
<tr>
<td><strong>NPI-Physician—Follow-Up</strong></td>
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<td>1407821212</td>
<td>1407821212</td>
</tr>
<tr>
<td><strong>Addr Current—No &amp; Street</strong></td>
<td>14979 North Ave</td>
<td>14979 North Ave</td>
<td>14979 North Ave</td>
</tr>
<tr>
<td><strong>NPI-Physician 4</strong></td>
<td>1871569939</td>
<td>1871569939</td>
<td>1871569939</td>
</tr>
<tr>
<td><strong>NPI-Inst Referred To</strong></td>
<td>1891815555</td>
<td>1891815555</td>
<td>1891815555</td>
</tr>
<tr>
<td><strong>Date of Birth</strong></td>
<td>19520613</td>
<td>19520613</td>
<td>19520613</td>
</tr>
<tr>
<td><strong>Marital Status at DX</strong></td>
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<td>2</td>
<td>2</td>
</tr>
<tr>
<td><strong>Primary Payer at DX</strong></td>
<td>20</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td><strong>Date of Diagnosis</strong></td>
<td>20120415</td>
<td>20120415</td>
<td>20120415</td>
</tr>
<tr>
<td><strong>RX Date Surgery</strong></td>
<td>20120511</td>
<td>20120511</td>
<td>20120511</td>
</tr>
<tr>
<td><strong>Date 1st Crs RX CoC</strong></td>
<td>20120511</td>
<td>20120521</td>
<td>20120511</td>
</tr>
<tr>
<td><strong>Date Initial RX SEER</strong></td>
<td>20120511</td>
<td>20120521</td>
<td>20120511</td>
</tr>
<tr>
<td><strong>RX Date Chemo</strong></td>
<td>20120705</td>
<td>20120705</td>
<td>20120705</td>
</tr>
<tr>
<td><strong>Date of 1st Contact</strong></td>
<td>20120705</td>
<td>20120705</td>
<td>20120715</td>
</tr>
<tr>
<td><strong>Data Case Report Exported</strong></td>
<td>20120705</td>
<td>20120705</td>
<td>20120715</td>
</tr>
<tr>
<td><strong>Date of Last Contact</strong></td>
<td>20120715</td>
<td>20120705</td>
<td>20120715</td>
</tr>
<tr>
<td><strong>RX Summ—Surg Prim Site</strong></td>
<td>21</td>
<td>21</td>
<td>15</td>
</tr>
<tr>
<td><strong>RX Hoop—Surg Prim Site</strong></td>
<td>21</td>
<td>21</td>
<td>15</td>
</tr>
</tbody>
</table>
eMaRC Plus—Export Options

Export Physician Abstracts

File

Abstract Export Options
- Export All Abstracts in Database
- Export All Initial Abstracts
- Export All Consolidated Abstracts

- Export Initially Reported Abstracts (For RCA or Followback)
  - Yes
  - No

- Export Consolidated Abstracts
  - Yes
  - No
  - If Yes: [ ] Days After Initial Report
  - OR
  - If Yes: [ ] Days After Last Report
  - OR
  - If Yes: [ ] Days After Last Export

Case-Specific Export Parameters
- Exclude From Abstracts Export
  - [ ] Previously Exported Initial Abstracts

- Exclude From Consolidated Abstracts Export
  - [ ] Previously Exported Consolidated Abstracts

Mark Exported Abstracts As
- [ ] Mark as Exported
- [ ] Mark as Unexported

File Save Option
- [ ] Prompt For Filename
- [ ] Use Reporting Facility Auto-naming Feature

Export... Export Log... Cancel
Tools for MU Cancer Reporting (2)

- **CDA Validation Plus**
  - Version 2.0 released 4/15/2014
  - Assists EHR vendors and state cancer registries to test and validate HL7 CDA cancer reports for MU Stage 2 cancer reporting
  - Performs structural and content validation based on the specifications in the *Implementation Guide for Ambulatory Healthcare Provider Reporting to Central Cancer Registries, August 2012, Release 1.0*
  - Does NOT replace the testing and validation process that MUST be completed by EHR vendors with the Office of the National Coordinator - Authorized Testing and EHR Certification Bodies (ONC-ATCBs) to receive the required MU certifications
  - It is to be used to augment the validation process and improve interoperability for cancer reporting
  - Part of CDC’s Registry Plus suite of free-of-charge software
CDA Validation Plus

- Content validation includes checks for required elements and valid vocabulary values
- Generates user-friendly reports that can be printed and saved
  - Reports can be saved to an extensive number of file formats
- Stand-alone desktop application
- Validation can be performed manually on a single document or a batch of documents
- Validation of a batch of documents can be automated through a command line interface
CDA Validation Plus: Validation Rule Types

- **Critical missing required fields**
  - Subset of required data elements that are considered critical to cancer registries

- **Missing required fields**
  - Usually required by cancer registries but may not all be present in every CDA message and can be null in certain circumstances

- **Invalid or unexpected null flavor**

- **Invalid Code System OID**

- **Invalid values**

- **Data element formatting, including:**
  - Social security number, telephone number, National Provider Identifier (NPI), and CPT and HCPCS codes

- **Cancer Reportability**
CDA Validation Plus

- See Training Manual for details on validation rules
  - Page 9 describes types of validation rules
  - Pages 10-12 provide examples
  - Appendix B provides list of all rule types applied to data elements
CDA Validation Plus: Validation Window

Validate Cancer CDA Document

- Select a document or multiple documents to validate
- Select a folder to validate
- Copy and paste a CDA document to validate
- Sample CDA documents to validate

List of cancer CDA documents to be validated:

- C:\RegPlus\CDAValidationPlus\IMPORTS\Complete Sample.xml
- C:\RegPlus\CDAValidationPlus\IMPORTS\Example Cancer CDA Message with Errors.xml
- C:\RegPlus\CDAValidationPlus\IMPORTS\Example Valid Cancer CDA Message.xml
Please double click on the row to view the detailed validation report:

3 CDA documents are processed out of 3 CDA documents

<table>
<thead>
<tr>
<th>Status</th>
<th>CDA Document Name</th>
<th>Number Of Errors</th>
<th>View Message</th>
</tr>
</thead>
<tbody>
<tr>
<td>Processed</td>
<td>C:\RegPlus\CDAValidationPlus\IMPORTS\Complete Sample.xml</td>
<td>1</td>
<td>Raw Message</td>
</tr>
<tr>
<td>Processed</td>
<td>C:\RegPlus\CDAValidationPlus\IMPORTS\Example Cancer CDA Message with Errors.xml</td>
<td>4</td>
<td>Raw Message</td>
</tr>
<tr>
<td>Processed</td>
<td>C:\RegPlus\CDAValidationPlus\IMPORTS\Example Valid Cancer CDA Message.xml</td>
<td>0</td>
<td>Raw Message</td>
</tr>
</tbody>
</table>
CDA Validation Plus: Detailed Report

CDA Validation Plus
CDA Document Validation Report

Friday, April 18, 2014 9:33:29 AM
CDA document Name with path: C:\RegPlus\CDAValidationPlus\IMPORTS\Example Cancer CDA Message with Errors.xml

<table>
<thead>
<tr>
<th>Error Type</th>
<th>Number of Errors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Missing required field</td>
<td>1</td>
</tr>
<tr>
<td>Invalid Value</td>
<td>0</td>
</tr>
<tr>
<td>Cancer Reportability</td>
<td>1</td>
</tr>
<tr>
<td>Null Flavor</td>
<td>1</td>
</tr>
<tr>
<td>Invalid Code System OID</td>
<td>1</td>
</tr>
<tr>
<td>Telephone number formatting</td>
<td>0</td>
</tr>
<tr>
<td>Social Security number formatting</td>
<td>0</td>
</tr>
<tr>
<td>NPI number formatting</td>
<td>0</td>
</tr>
<tr>
<td>Total Errors</td>
<td>4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DATA ELEMENT</th>
<th>ERROR MESSAGE</th>
<th>ERROR TYPE</th>
<th>XPATH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient’s Last Name</td>
<td>Critical Field: Patient’s Last Name is not present or is not structurally incorrect</td>
<td>Missing required field</td>
<td>ClinicalDocument\record\Target\Role\Patient\name\family\name[not(@qualifier=&quot;BR&quot;)]</td>
</tr>
<tr>
<td>Active Problem Code</td>
<td>A null flavor is not expected for the required data element Active Problem Code</td>
<td>Null Flavor</td>
<td>ClinicalDocument\component\structuredBody\component\section\template\field [Root=1.3.6.1.4.1.19376.1.8.3.1.3.8]//entry\section\Relation\obs\observation\template\field [Root=1.3.6.1.4.1.19376.1.8.3.1.4.8] and not (template\field [Root=1.3.6.1.4.1.19376.1.7.3.1.4.14.1])//value[@code]</td>
</tr>
</tbody>
</table>
### CDA Validation Plus

**CDA Document Validation Report**

**Friday, April 18, 2014 9:33:29 AM**

CDA document Name with path: C:\RegPlus\CDAValidationPlus\IMPORTS\Example Cancer CDA Message with Errors.xml

<table>
<thead>
<tr>
<th>DATA ELEMENT</th>
<th>ERROR MESSAGE</th>
<th>ERROR TYPE</th>
<th>XPATH</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Histology Code System OID</strong></td>
<td>The Code System OID 2.16.840.1.113833.6.43.5 for Histology Code System OID is not valid. Valid Code System OIDs for this field are 2.16.840.1.113833.6.43.1, 2.16.840.1.113833.6.103, 2.16.840.1.113833.6.96</td>
<td>Invalid Code System OID</td>
<td>ClinicalDocument/component/structuredBody/component/section[urn:templateId [root='1.3.6.1.4.1.19376.1.5.3.1.3.8']][entry/act/entryRelationship/observation[urn:templateId [root='1.3.6.1.4.1.19376.1.7.3.1.4.14.1']]][value[@codeSystem]]</td>
</tr>
<tr>
<td><strong>Primary Site Code</strong></td>
<td>Cancer diagnosis entry may not represent a reportable cancer. Manual review to determine reportability is recommended.</td>
<td>Cancer Reportability</td>
<td>ClinicalDocument/component/structuredBody/component/section[urn:templateId [root='1.3.6.1.4.1.19376.1.5.3.1.3.8']][entry/act/entryRelationship/observation[urn:templateId [root='1.3.6.1.4.1.19376.1.7.3.1.4.14.1']]][TargetSiteCode[@code]]</td>
</tr>
</tbody>
</table>
Stage 2 MU Cancer Reporting Implementation Process Flow

- Declaration of Readiness PHA Notifies CMS
- Registration of Intent (by ED to PHA)
- PHA provides registration confirmation and next steps checklist to EP
- Provider waits in a Queue pending invitation from PHA
- Is PHA Resource Ready to invite Provider to start onboarding process
- Develop/Configure HL7 CDA per Cancer IG
- Transport Test
- Corrective Action PHA & EP Communication
- Test HL7 CDA Transmission
- NIST Validator
- CDA Validation Plus
- eMaRC Plus Beta
- Production HL7 CDA Validation
- Production HL7 CDA Transmission
- Test HL7 CDA Validation (Content & Structure)

PHA Process
EP Process
Testing & Ongoing Submission Queues

Draft Version 1.5 December 13, 2013
MU Reporting: Current Status

- 16 EHR vendors (49 total products) have been certified for Stage 2 cancer reporting criteria
- At least 42 state cancer registries have declared readiness and many have developed registration of intent processes
- Several states have received a few EP registrations
- A few states have been testing files with EHR vendors and/or EPs
- At least one state has received and begun to review live test data from an EP
Resources

- If you would like to download either eMaRC Plus or CDA Validation Plus, please contact Lindsay Ryan (viu3@cdc.gov) for instructions.
- For more information about MU Cancer Reporting, or to download the Implementation Guide and guidance documents please see the NPCR MU Web Site: http://www.cdc.gov/cancer/npcr/meaningful_use.htm
- For questions about MU public health reporting, please contact MeaningfulUse@cdc.gov
Thank you!

Wendy Blumenthal
wblumenthal@cdc.gov
770-488-1131

For more information please contact Centers for Disease Control and Prevention
1600 Clifton Road NE, Atlanta, GA 30333
Telephone, 1-800-CDC-INFO (232-4636)/TTY: 1-888-232-6348
E-mail: cdcinfo@cdc.gov Web: www.cdc.gov

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.