Integrating the Healthcare Enterprise International

Webinar Series 2015
Cardiology Domain Update

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2015 Webinar Agenda

1. Cardiology Domain Overview
2. Strategic Planning
3. Trial Implementation Supplements for the 2016 Connectathon
4. Current Projects
5. Q&A Session
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Cardiology Domain Overview

IHE Cardiology was formed in 2003 to address issues specific to clinical workflow, information sharing and improved patient care in the clinical domain of cardiology.

**Care Settings:** hospital and cardiology physician practices

**Sponsor:** American College of Cardiology (ACC)

**Supporters:** American Society of Echocardiography, American Society of Nuclear Cardiology, Heart Rhythm Society

**Closely related domains:**
- Radiology
- Patient Care Coordination
- IT Infrastructure
- Patient Care Devices
- Quality, Research and Public Health
Cardiology Domain – Key Trends

Care Coordination Demands
- Consistent use of HL7 Clinical Document Architecture across all clinical domains
- Common standards based nomenclature
- Support for Meaningful Use objectives and certification criteria
- Investigate use of HL7 FHIR (Fast Healthcare Interoperability Resources) in IHE Cardiology profiles

Registries, quality improvement programs, and research
- Profiling of standard data elements for both clinical and secondary use

Expanded use of Electronic Health Record Systems in both the in-patient and ambulatory environments
- Need to access, exchange, and incorporate cardiology images and imaging information
Cardiology Domain - Current Focus

Discrete data capture and codification profiles leveraging clinical guidelines and C-CDA:

- 2014/16 Structural Heart Additions to CRC
- 2014/15 Registry Content Submission - Electrophysiology (RCS-EP)
- 2013/14 Electrophysiology Report Content – Implant/Explant (EPRC-IE)
- 2013/14 Registry Content Submission - CathPCI (RCS-C)
- 2012 Cath Report Content (CRC) – updated (Rev 1.3) in 2013

Whitepaper and Health Policy Statement for the Electrophysiology Lab

Cardiology workflow profiles with best practice in general imaging:

- Cath/Echo/Nuclear-Medicine/ECG specializations to existing imaging workflow and evidence gathering profiles.
- Displayable Reports (DRPT)
- Image Enabled Office (IEO)
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Strategic Planning

Standardizing and Harmonizing Nomenclatures
- **ACC NCDR** (National Cardiovascular Data Registry)
- **IEEE 11073-10103** (Institute of Electrical and Electronics Engineers)
- **SNOMED** (Systematized Nomenclature of Medicine)
- **LOINC** (Logical Observation Identifiers Names and Codes)

Registry Submission Profiles
- Modality
- Generic Processes

Workflow and Content Profiles
- Shifting Emphasis from Imaging to Data Flow
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Trial Implementation Supplements Discussed Today

Registry Content Submission
- CathPCI (RCS-C)
- Electrophysiology (RCS-EP)

Structured Reporting Content Profiles
- Cath Report Content (CRC)
- Electrophysiology Implant/Explant Report Content (EPRC IE)
- Cardiac Imaging Report Content (CIRC)

Intravascular Imaging Option for Cardiac Catheterization Workflow (CATH)
New Registry Content Submission Profile

Registry Content Submission for Electrophysiology Procedures (RCS-EP) – Brand new supplement for Trial Implementation

Specifies the data structure and vocabulary for submissions to the NCDR® EP Registry™ Suite:

- ICD Registry™ v2.2 (Implantable Cardiac Defibrillator)
- AFib Ablation Registry™ v1.0 (Atrial Fibrillation Ablation)

National Cardiovascular Data Registry (NCDR®) continues to implement strategy for integration, inter-operability (e.g., IHE Profiles), and standards (e.g., PHDSC Source of Payment, SNOMED, LOINC, HL7 CDA)
ICD v2.2 – the national standard for understanding treatment patterns, clinical outcomes, device safety and the overall quality of care provided to implantable cardioverter defibrillator (ICD) patients (i.e., Generator Implant, Explant, Change and Lead Assessment procedures).

AFib Ablation v1.0 – ACC’s newest data registry for assessing prevalence, demographics, management and outcomes of patients undergoing atrial fibrillation catheter ablation procedures.
# NCDR® EP Registry™ Suite

## Common clinical sections across AFib and ICD:

<table>
<thead>
<tr>
<th>Patient Demographics</th>
<th>Procedure Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Episode of Care</td>
<td>Device Information</td>
</tr>
<tr>
<td>History and Risk Factors</td>
<td>Intra and Post Procedure Events</td>
</tr>
<tr>
<td>Diagnostic Studies</td>
<td>Discharge Information</td>
</tr>
<tr>
<td>Labs</td>
<td></td>
</tr>
</tbody>
</table>

## Common clinical concepts across AFib and ICD example:

<table>
<thead>
<tr>
<th>Episode of Care:</th>
<th>Procedure Information:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arrival date, Health Insurance</td>
<td>Operator, Procedure End Date/Time</td>
</tr>
<tr>
<td>Patient Demographics:</td>
<td>Device Information:</td>
</tr>
<tr>
<td>Race, Ethnicity</td>
<td>Device ID, Serial #, UDI</td>
</tr>
<tr>
<td>History and Risk Factors:</td>
<td>Procedure Events:</td>
</tr>
<tr>
<td>NYHA Classification, LVEF assessment</td>
<td>Cardiac Arrest, Hemothorax, Pneumothorax, TIA</td>
</tr>
<tr>
<td>Diagnostic Studies:</td>
<td>Discharge observations:</td>
</tr>
<tr>
<td>Atrial Rhythm</td>
<td>Discharge Status, Cause of Death</td>
</tr>
</tbody>
</table>
NCDR® EP Registry™ Suite

Sections (6) for data collection specific to a registry:

<table>
<thead>
<tr>
<th>AFib</th>
<th>ICD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Atrial Fibrillation Effect on Quality-of-Life (AFEQT)</td>
<td>Encounter Procedures Device Observations</td>
</tr>
<tr>
<td>Vital Signs</td>
<td></td>
</tr>
<tr>
<td>Pre-procedure Medications</td>
<td></td>
</tr>
<tr>
<td>Procedure Medications</td>
<td></td>
</tr>
</tbody>
</table>

Clinical concepts specific to a registry, example:

<table>
<thead>
<tr>
<th>AFib</th>
<th>ICD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diagnostic Studies</td>
<td>Diagnostic Studies</td>
</tr>
<tr>
<td>Transthoracic Echo results</td>
<td>ECG Study results</td>
</tr>
<tr>
<td>Labs</td>
<td>Labs</td>
</tr>
<tr>
<td>Bilirubin, AST, ALT</td>
<td>BUN, Sodium, Hemoglobin</td>
</tr>
<tr>
<td>Procedure Event</td>
<td>Procedure Event</td>
</tr>
<tr>
<td>Phrenic Nerve Damage</td>
<td>Lead Dislodgement</td>
</tr>
</tbody>
</table>
IHE RCS-EP Profile

Defines the CDA structured report (XML) submission of two separate clinical documents:
  • ICD Registry v2.2
  • AFib Registry v1.0

Single Use Case: compile and transfer RCS-EP content (i.e., a single registry submission to the Electrophysiology Registry Suite).

Leverages the common structure, templates and shared data elements (clinical concepts) across both data registries:
  • Document
  • Document Participants
  • Section Templates
  • Entry Templates
  • Value Sets
### A. DEMOGRAPHICS

<table>
<thead>
<tr>
<th>Field</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>Last Name</td>
<td>[Blank]</td>
</tr>
<tr>
<td>SSN</td>
<td>[Blank] 2030: - - - - - - - - SN/N/A 2031</td>
</tr>
<tr>
<td>Birth Date</td>
<td>mm / dd / yyyy</td>
</tr>
<tr>
<td>Sex</td>
<td>O Male, O Female</td>
</tr>
<tr>
<td>Race</td>
<td>[Blank] 2070: White 2071, Black/African American 2071, Asian 2072, Native Hawaiian/Pacific Islander 2074</td>
</tr>
<tr>
<td>Hispanic or Latino Ethnicity</td>
<td>O No, O Yes, If Yes, Ethnicity Type: [Blank] 2078: Mexican, Mexican-American, Chico 2100, Puerto Rican 2101, Cuban 2102</td>
</tr>
</tbody>
</table>

### B. EPISODE OF CARE (ADMISSION)

<table>
<thead>
<tr>
<th>Field</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arrival Date</td>
<td>mm / dd / yyyy</td>
</tr>
<tr>
<td>Health Insurance</td>
<td>O No, O Yes, If Yes, Payment Source: [Blank] 3010: Private Health Insurance, State-Specific Plan (non-Medicaid), Indian Health Service</td>
</tr>
<tr>
<td>HIC #</td>
<td>[Blank] 3015:</td>
</tr>
<tr>
<td>Research Study</td>
<td>O No, O Yes, If Yes, Study Name: [Blank] 3025, Patient ID 3030:</td>
</tr>
<tr>
<td>Patient Restriction</td>
<td>[Blank] 3035:</td>
</tr>
</tbody>
</table>
Patient Demographic Observation

Templates

Value set (scoped by registry)

<table>
<thead>
<tr>
<th>Code</th>
<th>Code System</th>
<th>Preferred Name</th>
<th>Value Data Type</th>
<th>VS: Value Set Name / UOM: Unit of Measure</th>
<th>Scope</th>
</tr>
</thead>
<tbody>
<tr>
<td>100001000</td>
<td>ACC NCDR</td>
<td>Ethnic Category</td>
<td>CD</td>
<td>VS: Person Ethnic Category</td>
<td>ALL</td>
</tr>
<tr>
<td>364699009</td>
<td>SNOMED CT</td>
<td>Ethnic group</td>
<td>CD</td>
<td>VS: Person Ethnicity</td>
<td>ALL</td>
</tr>
<tr>
<td>103579009</td>
<td>SNOMED CT</td>
<td>Person Race</td>
<td>CD</td>
<td>VS: Person Racial Category</td>
<td>ALL</td>
</tr>
</tbody>
</table>
### AFib Ablation Registry Data Collection Form v1.0

**CARDIOVASCULAR EVENTS**

<table>
<thead>
<tr>
<th>Event</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cardiac Arrest</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Myocardial Infarction</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Air Embolism</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bradycardia Adverse Events</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heart Failure</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heart Valve Damage</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LA Thrombus</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pericardial Effusion Requiring Antibiotics</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pericardial Effusion Requiring NCDR</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cardiac Thromboembolic Event</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cardiac Surgery</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### ICD Registry Data Collection Form v2.2

**I. INTRA OR POST-PROCEDURE EVENTS (COMPLETE FOR EACH LAB VISIT)**

<table>
<thead>
<tr>
<th>Event</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cardiac Arrest</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Myocardial Infarction</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cardiac Perforation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coronary Venous Dissection</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pericardial Tamponade</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stroke</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TIA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hematoma (Req re-op, evacuation or transfusion)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Infection Requiring Antibiotics</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hemothorax</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pneumothorax</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urgent Cardiac Surgery</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Set Screw Problem</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Peripheral Nerve Injury</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stroke</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**POST PROCEDURE EVENT(S)**

<table>
<thead>
<tr>
<th>Event</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pneumothorax</td>
<td></td>
<td></td>
</tr>
<tr>
<td>If Yes, Req Drainage</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## I. DISCHARGE

**Atrial Rhythm**
- Sinus
- AFib
- Atrial tach
- Atrial flutter
- Sinus arrest
- Atrial paced
- Not Documented

**Discharge Date**
- mm / dd / yyyy

**Discharge Status**
- O Alive
- O Deceased

- If Alive, Discharge Location
  - O Home
  - O Extended care/TCU/rehab
  - O Other acute care hospital

- If Deceased, Death During the Procedure
- O No
- O Yes

- If Deceased, Cause of Death
  - O Acute myocardial infarction
  - O Sudden cardiac death
  - O Heart failure
  - O Stroke
  - O Cardiovascular procedure
  - O Cardiovascular hemorrhage
  - O Other cardiovascular reason
  - O Pulmonary
  - O Renal
  - O Gastrointestinal
  - O Hepatobiliary
  - O Trauma
  - O Infectious
  - O Inflammatory/Immunologic

## J. DISCHARGE (COMPLETE FOR EACH EPISODE OF CARE/ADMISSION)

**CABG**
- (During this admission)
- O No
- O Yes

- If Yes, CABG Date
- mm / dd / yyyy

**PCI**
- (During this admission)
- O No
- O Yes

- If Yes, PCI Date
- mm / dd / yyyy

**Discharge Date**
- mm / dd / yyyy

**Discharge Status**
- O Alive
- O Deceased

- If Alive, Discharge Location
  - O Home
  - O Extended care/TCU/rehab
  - O Other acute care hospital

- If Deceased, Death During the Procedure
- O No
- O Yes

- If Deceased, Cause of Death
  - O Acute myocardial infarction
  - O Sudden cardiac death
  - O Heart failure
  - O Stroke
  - O Cardiovascular procedure
  - O Cardiovascular hemorrhage
  - O Other cardiovascular reason
  - O Pulmonary
  - O Renal
  - O Gastrointestinal
  - O Hepatobiliary
  - O Trauma
  - O Infectious
  - O Inflammatory/Immunologic
ICD v2.2 Procedure Information

<table>
<thead>
<tr>
<th>Procedure Start Date/Time</th>
<th>Procedure End Date/Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>mm/dd/yyyy / hh:mm</td>
<td>mm/dd/yyyy / hh:mm</td>
</tr>
</tbody>
</table>

**Device Information**

- **Device Implant**: Yes
  - **Final Device Type**: Single chamber
    - **Operator Name**: Operator NPI
    - **Device Implanted**: Yes
      - **Device ID**: 7635
      - **Serial Number**: 7610
      - **UDI**: 7645

**Reason(s) for Re-Implantation**

- End of expected battery life
- Under manufacturer advisory/recalled
  - **Reason for Upgrade**: Single ICD to Dual ICD
- **Device Explanted**: Yes
  - **Explant Date**: mm/dd/yyyy
  - **Device Status**: Previously explanted

**Device Information for Changed or Explanted Devices**

- **Device ID**: 7670
- **Serial Number**: 7610
- **UDI**: 7645

**Complete for Existing Leads Only**

- **Existing Lead Implant Date**: mm/dd/yyyy
- **Existing Lead Status**: Extracted, Abandoned, Reused
# AFib v1.0 Procedure Information

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Organizer</th>
<th>Device</th>
</tr>
</thead>
<tbody>
<tr>
<td>Procedure Start Date/Time</td>
<td>mm/dd/yyyy</td>
<td></td>
</tr>
<tr>
<td>Operator Name</td>
<td>7100, 7105, 7110</td>
<td></td>
</tr>
<tr>
<td>Operator NPI</td>
<td>7115</td>
<td></td>
</tr>
<tr>
<td>Phrenic Nerve Evaluation</td>
<td>O FiO2</td>
<td>O No, O Yes</td>
</tr>
<tr>
<td>Sedation</td>
<td>O Minimal Sedation, O Moderate Sedation, O Deep Sedation, O General Anesthesia, O Conscious Sedation</td>
<td>O Elective, O Urgent</td>
</tr>
<tr>
<td>Current Ablation Strategy(s)</td>
<td>O Pulmonary Vein Isolation</td>
<td></td>
</tr>
<tr>
<td>Adjunctive Ablation Lesions</td>
<td>O No, O Yes</td>
<td></td>
</tr>
<tr>
<td>Transseptal Catheterization</td>
<td>O Single, O Double</td>
<td></td>
</tr>
<tr>
<td>Cardioversion (CV) Performed during Procedure</td>
<td>O No, O Yes</td>
<td></td>
</tr>
<tr>
<td>Atrial Flutter/Tachycardia Present</td>
<td>O No, O Yes</td>
<td></td>
</tr>
<tr>
<td>Guidance Method(s)</td>
<td>O Manual, O Magnetic, O Robotic</td>
<td></td>
</tr>
<tr>
<td>Catheter Manipulation</td>
<td>O Manual, O Magnetic, O Robotic</td>
<td></td>
</tr>
<tr>
<td>Radiation Exposure</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cumulative Air Kerma</td>
<td>O mGy, O Gy</td>
<td></td>
</tr>
<tr>
<td>Dose Area Product</td>
<td>O Gy-cm², O dGy-cm², O cGy-cm², O mGy-cm², O µGy-M²</td>
<td></td>
</tr>
<tr>
<td>Device(s) Used</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Device ID</td>
<td>7205, UDI</td>
<td></td>
</tr>
</tbody>
</table>

*Note: The image includes visual annotations indicating 'Procedure Organizer', 'Procedure', and 'Device Organizer'.*
Procedure Submission Samples
Conditional Constraints for Template

Constraints specific to one document type: "If Document.code=

Example: Procedure Medications only collected for AFib Ablation Procedures

@contextConductionInd="true" (CONF:1166-33625).

d. The entryRelationship, if present, SHALL contain exactly one [1..1] RCS-EP Procedure Observation (identifier: urn:oid:1.3.6.1.4.1.19376.1.4.1.7.4.43110) (CONF:1166-32896).

12. If Document.code="AFA", SHOULD contain zero or more [0..*] entryRelationship (CONF:1166-91515).

a. The entryRelationship, if present, SHALL contain exactly one [1..1]@typeCode="COMP" (CONF:1166-91516).

b. The entryRelationship, if present, SHALL contain exactly one [1..1]@contextConductionInd="true" (CONF:1166-91517).

c. The entryRelationship, if present, SHALL contain exactly one [1..1] RCS-EP Procedure Medication (identifier: urn:oid:1.3.6.1.4.1.19376.1.4.1.7.4.43130) (CONF:1166-91518).

13. SHOULD contain at least one [1..*] entryRelationship (CONF:1166-32891).

a. Such entryRelationships SHALL contain exactly one [1..1]@typeCode="COMP" (CONF:1166-33860).
Conditional Constraints for Template Element

Constraints specific to one document type: "If Document.code="

Example: Patient population only collected for ICD

ix. If Document.code="ICD", this serviceEvent shall contain one [1..1] code (CONF:1166-91770).
   1. The code, if present, shall contain exactly one [1..1] @code, which shall be selected from ValueSet Patient Population
      urn:oid:1.3.6.1.4.1.19376.1.4.1.6.5.207 STATIC
      (CONF:1166-91781).
   2. The code, if present, shall contain exactly one [1..1] @codeSystem (CONF:1166-91782).

Note: The population of patients and procedures.
RCS-EP Leverages IHE Cardiology Profiles

**RCS-C** – IHE Registry Content Submission Profile for CathPCI Procedures
  - Closed template, re-use limited to leveraging template containment structure, and general template constraints

**EPRC-IE** – IHE Electrophysiology Implant/Explant Report Content (EPRC-IE) Profile
  - Adaption of procedure and device templates
  - Cross walk of clinical concept codes for procedure and event value sets
IHE Validation Tool

Worked with IHE Europe to develop model based validation tool for registry content submissions

Menu-driven tool to validate XML document against

- Vocabulary
- Profile Constraints
- CDA

Sample output:
Registry Content Submission Profile for CathPCI Procedures (RCS-C)

NCDR CathPCI Registry 4.5 – Currently Undergoing Dataset Update

RCS-C Profile
  • To support updated dataset for new registry version
  • To consider open templates
  • Value Set updates
Registry Content Submission Profiles Next Steps

RCS-EP
- Available in Trial Implementation
- To be tested at 2016 Connectathon(s)
- Provided to vendors as standard for NCDR ICD v2.2 and AFib v1.0 registry submissions

RCS-C
- Update profile to include new elements for next release of NCDR CathPCI v4.5 registry
- Reuse existing templates, value sets

Future
- Additional NCDR registry profiles
Why Structured Reporting for Interoperability?

Patient Care
- EHR, CVIS
- Hospital network
- Physician practice
- HIE

Cost Control
- Reduced FTEs
  - EP/Cath lab
  - data collection
  - transcription

Interoperability Standards Conformance
- HL7 CDA, HL7 C-CDA
- IEEE 11073 MDC IDC,
  SNOMED, LOINC, RxNorm,
  ICD-9/10

Reporting
- Procedure Note
- Device Manufacturers
- ACC NCDR
- Meaningful Use

Quality Improvement
- Device appropriate use
- Accurate reporting
- Check and balance to registry reporting
Structured Reporting for Cardiology

Standardize *report organization* and *representation of clinical information*

- Organize content that is familiar for clinicians
- Looking to provide electronic equivalent of existing hardcopy reports

**Patient Care Use Case**
Report generated to document the imaging exam/procedure for consumption by CVIS or EHR as part of the patient record. Make available to referring physician for subsequent care.

**Quality and Safety Metrics Use Case**
- Administrative data processing for QA (including registries)
- Device manufacturer tracking of device information
- Quality metrics
Structured Reporting for Cardiology

Goal: To represent clinical concepts in coded format
Utilize industry standard vocabularies and value sets
Enables semantic interoperability between source and consumer

Leverages HL7 Clinical Document Architecture (CDA) that supports:
  Human readable narrative
  Robust XML encoded data elements
Structured Reporting for Cardiology Imaging

Defines a common structure for the report content organization

- Narrative summary of major highlights of the procedure/exam
- Images and links to supporting external documents/sources
- Structured content for each phase of the procedure/exam

<table>
<thead>
<tr>
<th>Pre-procedure</th>
<th>Procedural</th>
<th>Results and Interpretations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient demographics</td>
<td>Exams/Procedures performed</td>
<td>Anatomical measurements</td>
</tr>
<tr>
<td>Medical history</td>
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<td>Medications administered</td>
<td>Device measurements</td>
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<td>Social history</td>
<td>Anatomical locations addressed</td>
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<td>Additional notes</td>
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<td>Prior procedures and interventions</td>
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<tr>
<td>Pre-procedure/exam details/results</td>
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</tbody>
</table>
Structured Reporting – Content Profiles

Cath Report Content (CRC)

- Focus is clinical reporting for Cardiac Catheterization Laboratory procedures
  - diagnostic catheterization, angiography and PCI procedures
  - Includes representation of lesions and anatomical locations addressed
- Based on NCDR CathPCI Registry v4.4 Coder’s Data Dictionary
- Leverages HL7 Consolidated CDA 1.1 Implementation Guide
- Utilizes SNOMED CT, LOINC
Structured Reporting – Content Profiles

Electrophysiology Report Content (EPRC-IE)

- Focus is EP lab device implant, explant and lead replacement procedures
  
  Implantable Cardiac Defibrillator, Permanent Pacemaker, Implantable Pulse Generator, Implantable Cardiac Monitor

- Based on ACC-NCDR ICD Registry v1.2 Coder’s Data Dictionary

- Leverages HL7 Consolidated CDA 1.1 Implementation Guide

- Utilizes IEEE 11073-10103 MDC IDC Nomenclature for EP device specific concepts

- Will be extended to support ablation and EP studies
Structured Reporting – Content Profiles

Cardiac Imaging Report Content (CIRC)

- Focus is cardiac diagnostic imaging exams recorded in a DICOM study
  - echocardiography (TTE, TEE, TTE stress)
  - cardiac CT (CCTA, CACS)
  - cardiac MR (MRA, MR stress)
  - cardiovascular NM (SPECT, PET)
  - coronary catheter based flouroscopy (ICA/LVG)
- Based on ACC/AHA 2008 Key data Elements for Cardiac Imaging
- Leverages HL7 CDA R2
- Utilizes SNOMED CT, LOINC, DICOM
- Needs to be updated to base on HL7 C-CDA and align with CRC and EPRC-IE (work item to be addressed)
Intravascular Imaging

Intravascular Imaging Option to CATH Workflow

- Addresses workflow to change a modality during the procedure
- Requires support for Intravascular Optical Coherence Tomography (OCT) SOP classes
- Option for Image Manager/Archive and Image Display Actors
  - Image Manager/Archive actors must store the following SOP Classes
    » Intravascular Optical Coherence Tomography Image Storage – For Presentation
    » Intravascular Optical Coherence Tomography Image Storage – For Processing
  - Image Displays have to provide the functionality to display Intravascular Optical Coherence Tomography Image Storage – For Presentation objects

2015 Webinar Agenda

1. Cardiology Domain Overview
2. Strategic Planning
3. Trial Implementation Supplements for the 2016 Connectathon
4. Current Projects
5. Q&A Session
Current IHE Cardiology Projects

- Electrophysiology Whitepaper
- Structural Heart Additions to Cath Report Content Profile
- ACC and HRS Health Policy Statements
Electrophysiology Workflow Whitepaper

Clinical Encounters

Data shared

Interoperability Standard

IHE: IDCO*, EPRC, RCS-EP; IEEE MDC/IDC nomenclature

Actors

*IDCO = Implantable Device – Cardiac - Observation profile
**Issue:** Providers are challenged to deploy a structured reporting solution in the cath lab if all performed procedures are not fully supported by the CRC Profile.

**IHE Cardiology Planning Committee Action:** Addition of structural heart procedures to the CRC Profile was proposed and accepted for the 2015 – 2016 IHE development cycles.

**IHE Technical Committee Action:** Work effort has begun with the goal of delivering an updated CRC for public comment May 2017.
Structural Heart Procedures

Valve Replacement: TAVR, TAMR, TVPR
Valve Repair – Mitral Valve
Atrial and Ventricular Septal Defect Repair
Patent Foramen Ovale (PFO) Closure
Atrial Septal Defect Repair
Ventricular Septal Defect Repair
Mitral Valve Prolapse Repair
Left Atrial Appendage Occlusion
Paravalvular Leak Repair
Valvuloplasty
Pericardiocentesis
Additions to CRC for Structural Heart (SH) Interventions

**Medical History:** Add nomenclature support for conditions relevant to SH interventions (valve defects and diseases; congenital conditions/defects; morphological defects; rhythm defects)

**Planned Procedures:** support all listed SH procedures

**Procedure Indications:** support each SH intervention appropriate use guidelines.

**Procedure Description:** supports SH intervention access methods, implanted devices, implanted device parameters and device deployment observations.

**Procedure Results:** supports SH intervention required pre and post procedure observations and hemodynamic measurements

- Add complications associated with SH interventions
- Harmonize all CRC observations to structural heart data registries
## Cath Lab Report Content Sections to Update

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<tr>
<th>Template Title</th>
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ACC IHE Health Policy Statement

Objective:
- Educate clinicians, industry and regulatory agencies about IHE organization, process, work products available to-date, strategic plans

Take Away Points:
- Data standards aren’t enough
- IHE develops standards and ideas into tools
- Broad range of participants contribute to success
- Profiles work for new equipment installs and upgrades
For More Information

Links to IHE Resources

- [IHE Cardiology Domain Page](#)
- [Technical Committee Wiki](#)

To become an IHE member and contribute to the Planning or Technical Committee contact Paul Dow, IHE Cardiology Secretary [pdow@acc.org](mailto:pdow@acc.org)

*The Call for Proposals is open until Friday, Sept 18th, 2015.*

If you have ideas for work items and would like assistance assembling and submitting the forms please contact Paul Dow, IHE Cardiology Secretary [pdow@acc.org](mailto:pdow@acc.org)
Committee work typically follows the IHE Profile Cycle Annual cycle

- ~18 months from profile proposal to Connectathon
- Each IHE domain has its own independent schedule
- Opportunities for IHE members and non-members to participate in cycle

For a detailed schedule please refer to
IHE Profiles Drafted & Revised

Published For Public Comment

IHE Technical Framework Supplement Developed

months 5-11

Trial Implementation Posted

Test at IHE Connectathons

months 12-18

Publish in IHE’s Product Registry

Demonstrate at a HIMSS Interoperability Showcase or ACC / HRS / ESC ...

Install Interoperable products in Clinical Settings worldwide

Profile Selection by Committees

months 1-4

IHE Call for Proposals Opens

IHE Improves, Safety, Quality and Efficiency in Clinical Settings
IHE Cardiology Planning Committee

Responsibilities
- Identifying priority issues for the cardiology community
  - Liaison to sponsor organizations
- Soliciting and developing IHE Profile Proposals
  - Now soliciting proposals!
- Evaluation of Technical Committee work
- Marketing IHE Cardiology profiles to user community

Contact Information
- Secretary Paul Dow
  pdow@acc.org
- Co-Chair Alan Katz, MD
  alan.katz@chsli.org
- Co-Chair David Slotwiner, MD
  djs2001@med.cornell.edu
- Committee’s wiki page
IHE Cardiology Technical Committee

Responsibilities
• Development of IHE Profiles and white papers
• Maintenance of IHE Cardiology Technical Frameworks
• Liaison with other IHE domains
• Support for Planning Committee marketing

Contact Information
• Secretary Paul Dow pdow@acc.org
• Co-Chair Nick Gawrit ngawrit@heartbase.net
• Co-Chair Antje Schroeder aschroeder@siemens.com
• Committee’s wiki page http://wiki.ihe.net/index.php?title=Cardiology_Technical_Committee
How to Participate in IHE Cardiology?

*IHE International Membership is Open to Everyone.*

- **Apply for IHE International Organizational Membership**
  - Visit: [www.ihe.net/apply](http://www.ihe.net/apply)
  - Approved monthly by IHE International Board
  - [Review IHE's 400+ Organizational Members](http://www.ihe.net/apply)

- **Participate in IHE Domains & Committees**
  - IHE Organizational Members only
  - 14 Clinical and Operational Domains
  - Each Domain has one planning and one technical committee

- Non-members participate in comment periods and implement IHE Technical Frameworks

- For more details on IHE’s domains and its processes please refer to other webinars at [http://www.ihe.net/Webinars/](http://www.ihe.net/Webinars/)
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Thank you for your attention!