Presenting Members

Jerry Serwer MD, University of Michigan [PC co-chair]
David Slotwiner MD, Weill Cornell Medical College [PC co-chair]
Nick Gawrit, heartbase [TC co-chair]
Chris Melo, Philips Healthcare [TC co-chair]
Paul Dow, American College of Cardiology [TC/PC Secretariat]
2017 Webinar Agenda

1. Cardiology Interoperability: Guiding Principles and Needs
2. Three Ways IHE Can Improve Your Cardiac Service Line Communications with Other Departments
4. Four Ways Interoperability Contributes to Improving Care Delivery in Your Facility
5. Call for Proposals
6. Questions and Answers
1. Cardiology Interoperability: Guiding Principles and Needs
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6. Questions and Answers
• Both inpatient and outpatient settings (increasingly blurred)
• Heavily procedure oriented – diagnostic and interventional
• Many people require data and contribute to data acquisition
  Clinicians
  Nursing/extenderson/technicians/medical assistants
  Anesthesia
• Huge data sets that may be in different “silos”
• Numerous reports generated from same data
  Pre procedure report
  Anesthesia record
  Nursing record
  Procedure report
  Post procedure record
  Discharge report and referring clinician letters
  Patient letter and instructions
Cardiology Needs

- Avoid entering data multiple times
- **EVERYONE** requires access to **ALL** the discrete data
- Report consumers
  - EHR
  - HIE
  - Billing - Payers
  - Regulatory agencies
  - Registries
  - Patients
  - Oh yea - Clinicians
Cardiology Interests for the C-Suite

• Return on investment
• Increased efficiency (decreasing costs)
• Meeting the patient and clinician needs
• Quality Improvement initiatives
• Accreditation Issues
• Rapid response by vendors to new needs
  Data fields and structure
  Changes in practice
  Governmental regulations
Cardiology Needs To Standardize

- Data Models
- Nomenclatures
- Workflows
- Structured Reporting
- Semantic and Syntactic Interoperability
Cardiology Needs to Avoid

- Proprietary, Site Specific Data Elements
- Duplicative Testing
- Manual Data Entry
- Reinventing
- Addressing Only Very Specific Situations
Additional Needs and Goals

- More input from clinicians and industry
- Closer ties with other IHE domains, professional societies, and policy makers
- Proactive customers to encourage use of IHE work by industry
IHE Cardiology Key Message

Goals and Mission

IHE Cardiology is making healthcare IT more interoperable, more effective and less expensive. We need your help in this effort to improve patient care.

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1. Cardiology Interoperability: Guiding Principles and Needs

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Consistent Cardiac Imaging Workflow

Scope:
• Scheduled and unscheduled cardiac imaging exams, including multi-modality exams

Benefit:
• Consistent, robust workflow minimizes manual procedure management tasks

Addresses clinical use cases:
• Patient registered and exam ordered
• Patient registered and procedure not ordered
• Emergency case
• Patient information updated during the procedure
• Room change during procedure
• Procedure cancelled
• Evidence creation during and post-procedure
• Intermittently connected modality
• Staged protocols (e.g. Stress)

IHE defines a standards-based vendor neutral solution!
Support for Most Common Cardiology Exam - ECG

Scope:
• Consistent resting ECG acquisition workflow for multi-vendor solution
  • Supports scheduled, unscheduled and post-exam reconciliation
• Enable access to and display of ECG anywhere in the healthcare environment

Benefits:
• Components and workflow shared with imaging specialties.
• Simplified and standardized Web-based access to ECGs eliminates need for printed ECGs.
Standardized Reporting Workflow

Scope:
- Create, finalize, archive, and distribute reports ready for display
- Create evidence for specific cardiac imaging exams and procedures in structured format and standardized nomenclatures
- Communication between reporting systems and image archive/manager for
  - Access to clinical content to include in report
  - Distribution of report for access by content consumers

Benefits:
- Consistent, robust workflow minimizes manual procedure management tasks
- Provides access to all the data where needed downstream

IHE defines a standards-based vendor neutral solution!
Extending Workflow to Ambulatory Office Setting

Scope:
- Enable physicians office with workflow for production of diagnostic images
  - Supports use cases for explicitly ordered consultation or diagnostic exam/procedure, unordered exam, patient update, procedure update
- Bi-directional integration of imaging suite with office HIT systems
- Supports integration of EMR with image order filler for scheduling and management functions

Benefit:
- Leverages workflow from in-patient environment to office domain
Existing Cardiology Profiles

http://wiki.ihe.net/index.php/Profiles#IHE_Cardiology_Profiles

- **[CATH] Cardiac Cath Workflow** - integrates ordering, scheduling, imaging acquisition, storage and viewing for Cardiac Catheterization procedures
- **[ECHO] Echocardiography Workflow** - integrates ordering, scheduling, imaging acquisition, storage and viewing for digital echocardiography
- **[ECG] Retrieve ECG for Display** - provides access throughout the enterprise to electrocardiogram (ECG) documents for review purposes
- **[ED] Evidence Documents** - Cardiology-specific options to the Radiology ED profile for DICOM Structured Reports
- **[STRESS] Stress Testing Workflow** - provides ordering and collecting multi-modality data during diagnostic Stress testing procedures
- **[DRPT] Displayable Reports** - manages creation and distribution of “display ready” (PDF or CDA) clinical reports from the creating application, to the department, and to the enterprise.
- **[REWFT] Resting ECG Workflow** - workflow for collecting ECG data in both ordered and unordered procedures, data storage and access, and ECG reporting
- **[IEO] Image-Enabled Office Workflow** - integrates an imaging suite with an EHR system in an ambulatory office setting, including ordering, imaging, report creation, and web-based imaging exam review
Cardiology in the World of Interoperability Standards

IHE Cardiology

- HL7
  - V2
  - CDA/C-CDA
  - FHIR

- DICOM
  - Base
  - Part 20
  - DICOMweb

- Nomenclatures
  - LOINC
  - SNOMED
  - IEEE 11073

- IHE IT Infrastructure
  - ATNA
  - CT
  - XDS
  - RID

- IHE Radiology
  - SWF, RWF
  - PDI, XDS-I
  - ED
  - IID

- IHE Patient Care Coordination
  - CDA
  - PMDT
  - XCHT-WD

- IHE Patient Care Devices
  - IDCO
  - DEC
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Benefits

• Report Templates
• Defined Structure and Content
• Support for Electrophysiology (EP) and the Cath Lab
• Future Imaging Expansion
Cardiac Procedure Note [CPN] Help Clinicians Optimize EP/Cath Lab Workflow

Who implements CPN? Why does it help Workflows?

<table>
<thead>
<tr>
<th>Actor</th>
<th>Option Name</th>
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</thead>
<tbody>
<tr>
<td>Content Creator (Note 1)</td>
<td>Diagnostic Cath</td>
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<tr>
<td></td>
<td>PCI</td>
</tr>
<tr>
<td></td>
<td>Structural Heart Interventions</td>
</tr>
<tr>
<td></td>
<td>Electrophysiology Implant/Explant</td>
</tr>
<tr>
<td>Content Consumer</td>
<td>View Option</td>
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<tr>
<td></td>
<td>Document Import Option</td>
</tr>
<tr>
<td></td>
<td>Section Import Option</td>
</tr>
<tr>
<td></td>
<td>Discrete Data Import Option</td>
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Note 1: The Content Creator shall at least support one of the options listed here.
Cardiac Procedure Note [CPN] Help Clinicians Optimize EP/Cath Lab Workflow

<table>
<thead>
<tr>
<th>CathPCI Registry</th>
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<tbody>
<tr>
<td>STS/ACC TVT Registry</td>
</tr>
<tr>
<td>ICD Registry</td>
</tr>
<tr>
<td>HL7 CDAR2</td>
</tr>
<tr>
<td>HL7 C-CDA</td>
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<tr>
<td>RxNorm</td>
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<td>IEEE 11073 10103</td>
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</table>
Clinical Document Architecture (CDA)

- HL7® CDA format for the cardiac procedure note.
- Human readable narrative historically used for clinical reports.
- Discrete data elements that may be used for longitudinal or population analysis or other computer processing.
- DICOM® Study associated with the procedure.
- Header, Section, Entry templates
- valueSets
## Evolving a Cardiology Procedure Note

<table>
<thead>
<tr>
<th>Sections</th>
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<tbody>
<tr>
<td>Document Summary</td>
<td>Procedure Disposition</td>
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<tr>
<td>Medical History</td>
<td>Procedure Results</td>
</tr>
<tr>
<td>Allergies and Intolerances</td>
<td>Complications</td>
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<tr>
<td>Family History</td>
<td>Postprocedure Diagnosis</td>
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<td>Plan of Care</td>
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<td>Physical Exam</td>
<td>Key Images</td>
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<tr>
<td>Vital Signs</td>
<td>DICOM Object Catalog</td>
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<td>Pre-Procedure Results</td>
<td>Procedure Specimens</td>
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<td>Planned Procedure</td>
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<tr>
<td>Procedure Indications</td>
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<td>Anesthesia</td>
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<tr>
<td>Medications Administered</td>
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</tr>
<tr>
<td>Procedure Description</td>
<td></td>
</tr>
</tbody>
</table>
**Good Health EP Clinic**

**Patient Information**
- Name: Ted, Rint A
- Study Date: 03/12/2015
- Medical Record #: EP NOTE1
- Study Number: 123456
- Birth Date: 06/06/1950
- Age: 58
- Gender: Male
- Address: 123 Main St, Anytown, USA
- Phone: (555) 123-4567
- Referring Physician: Dr. James Testa
- Diagnosis: Chronic Obstructive Pulmonary Disease (COPD)
- Allergies: Penicillin, Aspirin
- Medications: Nexium, Lipitor

**Medical History**
- Hypertension: Yes
- Diabetes: Yes
- Cholesterol: Yes
- Asthma: Yes

**Procedure**
- Date: 03/12/2015
- Procedure: Cardiac Catherization
- Procedure Code: 32020
- Procedure Description: Transradial Access

**Procedure Details**
- Access: Transradial
- Access Site: Right Radial Artery
- Access Needle: 5 Fr
- Access Sheath: 6 Fr
- Catheter: 8 Fr
- Device Implanted: Impella 2.5
- Device Size: 2.5
- Device Type: Impella
- Device Description: Impella 2.5

**IABP Details**
- Date Implanted: 03/12/2015
- IABP Description: Impella 2.5
- IABP Size: 2.5
- IABP Type: Impella

**Final Device Programming**
- Ventricular Assist Device (VAD)
- Impella 2.5
- Impella 2.5
- Impella 2.5

**Conclusion**
- The patient underwent successful single chamber ICD implantation for primary prophylaxis from sudden cardiac death.

**Medications**
- Aspirin 81 mg
- Warfarin 5 mg

**Allergies**
- Penicillin
- Aspirin

**Follow-Up**
- Next Follow-Up: 04/12/2015

**Updated by**
- Dr. James Testa
- 03/12/2015

**Device Implanted**
- Impella 2.5

**Device Description**
- Impella 2.5
- Impella 2.5
- Impella 2.5

**Device Size**
- 2.5

**Device Type**
- Impella

**Device Description**
- Impella 2.5

**Device Code**
- 04229349

**IABP Code**
- 04229349
### C-CRC - Templates

#### Family History - Cardiac Section

**History**

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<td>FamilyHistoryCardiacSectionV3</td>
</tr>
</tbody>
</table>
Benefits

Why CPN in the workflow process
• Facilitates workflows
• Standard for interchange in workflow
  Diabetes means diabetes
• Consumable discrete data
  Can view report and consume the data (versus PDF)
  Registry consumption

Device Registries
• Nomenclature Standard
  SNOMED CT, LOINC, RxNorm, IEEE11703, Others
• HIT and Registry consumption
• Standard look for report
• Significant reduction in transcription services
• Quicker turnaround of Procedure Note
• Discrete Data agrees with report
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How Interoperability Contributes to Improving Care Delivery at Your Hospital

- Demographics
- Laboratory Results
- Diagnostic Images
- Electronic Prescriptions
Promote Interoperability in Your Institution

- Purchasing
- Implementation
- Emphasize Quality & Efficiency benefits
- Get Involved
Upcoming Cardiology Events

Call for Proposals
Opens – Aug 4, 2017
Closes – Sept 15, 2017

Registration for Connectathon
Opens – Sept 6, 2017
Closes – Oct 6, 2017
IHE Cardiology Planning Committee

Responsibilities
• Identifying priority issues for the cardiology community
  − Liaison to sponsor organizations
• Soliciting and developing IHE Profile Proposals
• Evaluation of Technical Committee work
• Marketing IHE Cardiology profiles to user community

Contact Information
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pdow@acc.org
Co-Chair, Gerald Serwer, MD
gserwer@med.umich.edu
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
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- Co-Chair, Nick Gawrit
  ngawrit@heartbase.net
- Co-Chair, Chris Melo
  chris.melo@philips.com

Committee’s wiki page
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

The Call for Proposals is open until Friday, Sept 15th, 2017.
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

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