

The IHE logo consists of the letters 'IHE' in a bold, dark blue, sans-serif font. A vertical line is positioned to the right of the letters, separating them from the tagline.

IHE

Integrating
the Healthcare
Enterprise

Encounter-Based Imaging Workflow (EBIW)

IHE Radiology Domain

Kevin O'Donnell, Canon Medical Systems

What's Encounter-Based Imaging?

Enterprise Imaging

Encounter-based Imaging

[PoCUS, Camera, iPhone,...]

(Dermatology, Wound Care,
Burn Unit, ER, etc.,
etc., etc.,
etc.)

Order-based Imaging

[CT, MR, PET, XA, MG, Echo]

(Radiology, Cardiology, etc.)

EBI = imaging captured in the context of an encounter between a patient and a care-provider (typically without an imaging order)

So What's the Key?

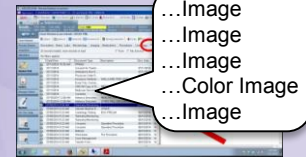


- To manage the images, and readily find & use them again
 - Patient Metadata
 - Name, Date of Birth, Age, ID, Other IDs, ...
 - Encounter Metadata
 - Department, Specialty, Physician, Referring Physician, Admission ID, Admission Date/Time, Reason for Admission, ...
 - Procedure Metadata
 - Modality, Imaging Procedure, Body Part, Reason for Imaging, **Accession #**, Acquisition Date/Time, Device, Operator, Acquisition Parameters (more for PoCUS than cameras), ...
 - Pixel Metadata
 - Rows, Columns, Bit Depth, Pixel Size, Encoding, ...
- ... turning a JPEG into a medical document

What's the Harm?

When acquisition is not integrated, complete and consistent, the quality and efficiency of care is negatively affected:

- Images buried in the paper record
- Images scanned into EMR without metadata
- Images lumped in one "folder" with no differentiation / navigation
- Imaging record fragmented across many departments
- Sharing between affiliated hospitals is limited / non-existent



- Images not readily available to the Care Team
- Time lost to awkward workflow/data capture; lack of automation



Facilitate Clinical Use (and Billing and Analytics)

- Depends on good, consistent metadata
- Retrieval, Decision Support, Hanging Protocols, depend on consistent series names, procedure codes, etc.

Efficient Workflow

- Minimize manual data entry
- Electronic transfers

Use Cases

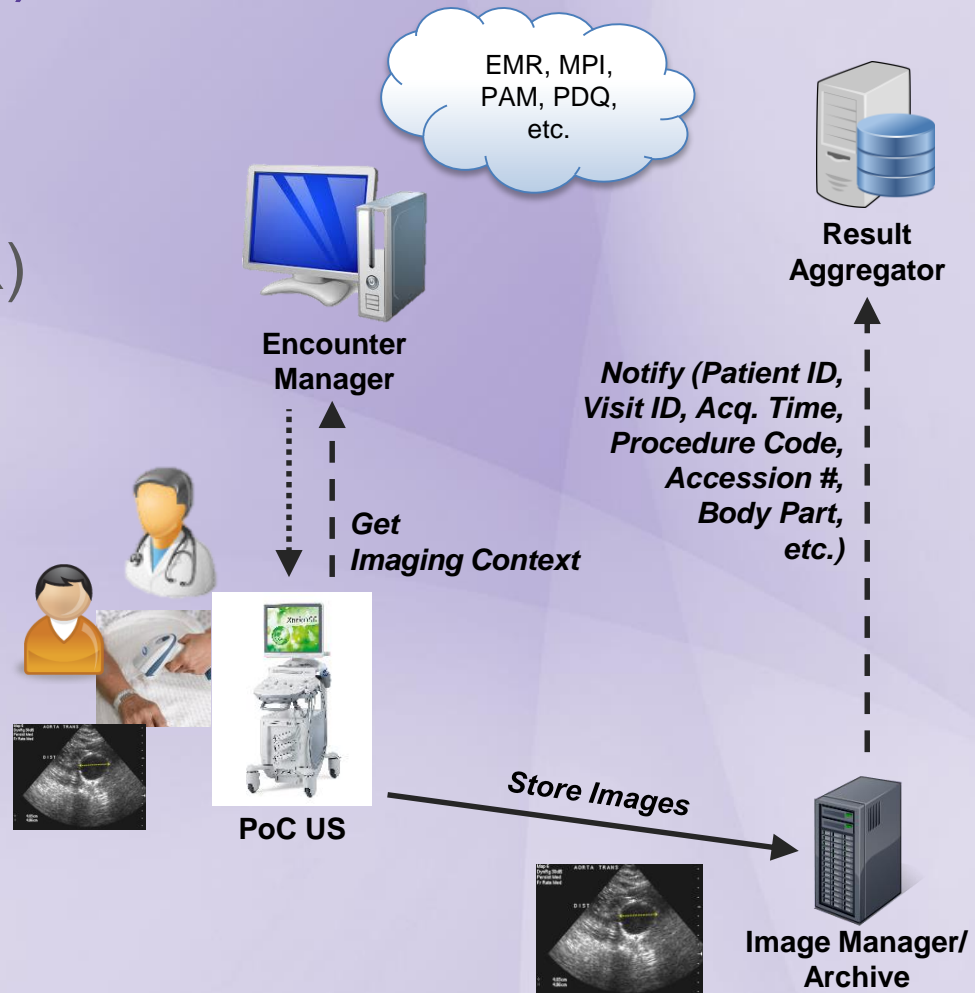
- **Point of Care Ultrasound**
- Dermatology
- Wound Care/Management
- Infectious Diseases
- Burn Care
- Plastic Surgery
- Nursing/Clinic Photography

Encounter-Based Imaging Workflow (EBIW) Profile

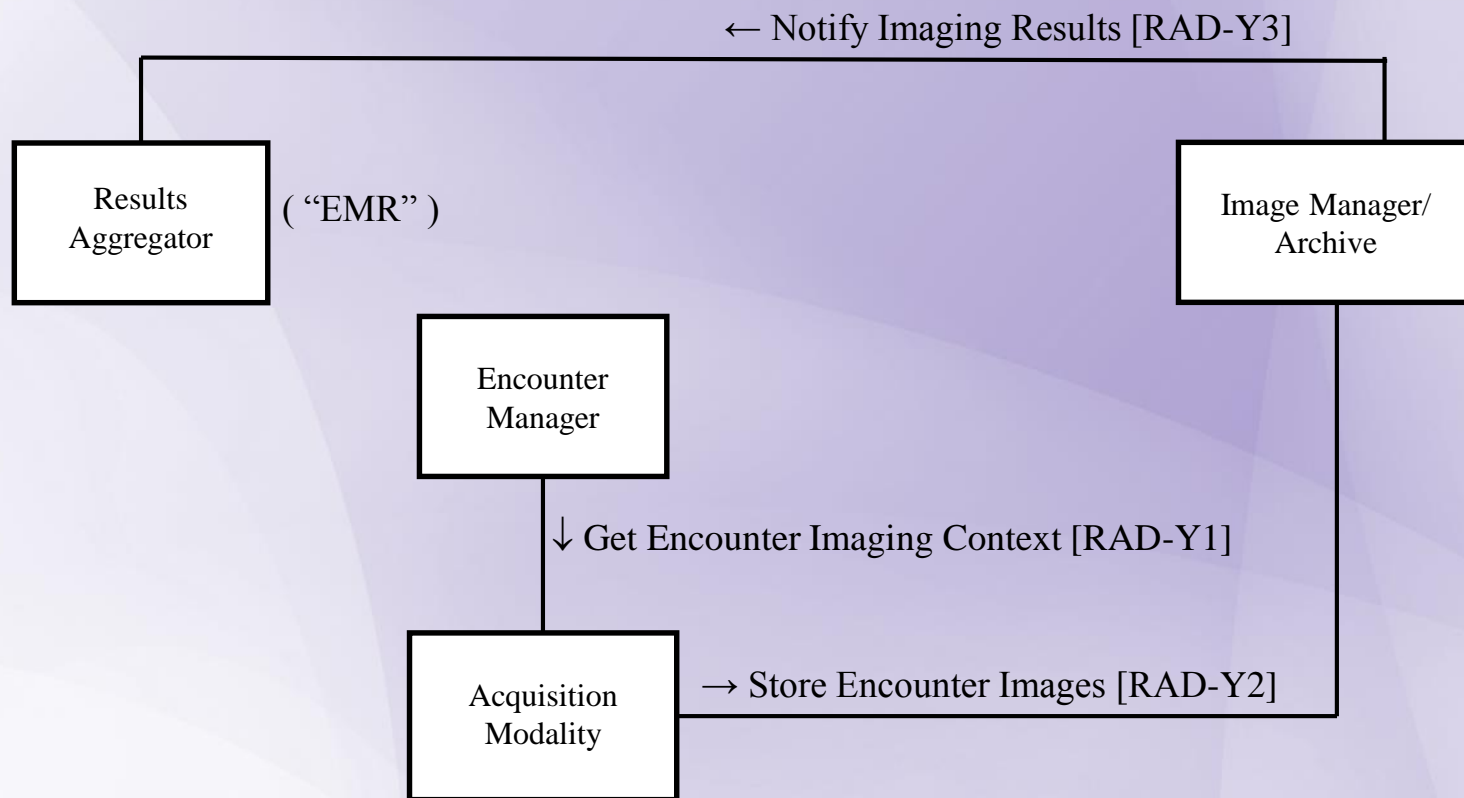
Use Case 1:

Point-of-Care Ultrasound (ER)

- Scan wristband
- [Gets metadata]
- Scan Patient
- [Adds metadata]
- [Stores Images]
- [Notifies EMR]



IHE EBIW Actors



Inpatient Status Check in ward by Nurse / Tech / Clinician

- determine the state of bladder (empty, partial, full)
- confirm placement of needle or catheter (e.g. PICC line)



Emergency Room Evaluation by ER physician

- diagnose, detect or confirm a disorder or disease state (especially localizing fluid and evaluating amount present)
 - e.g. internal bleeding, soft tissue infection, pulmonary edema, pericardial effusion, deep venous thrombosis, gallstones, residual urine, subcutaneous abscess



Procedure Guidance by Operator

- guide a biopsy, venous catheter placement, thoracentesis, ...
- visualize device (needle, catheter, etc.) vs anatomy (tumor, blood vessel, abscess)



Outpatient Supplemental Information by Specialist

- during consultation on identified condition decides to take images
- evaluate/characterize, or document absence of suspected condition
 - e.g. breast surgeon evaluates lump detected by primary physician



www.ihe.net/Technical Frameworks

ihe.net/Technical_Frameworks/#radiology

- Teaching File and Clinical Trial Export (TCE)
- Radiation Exposure Monitoring (REM) - Added 2012-07-24
- Cross-Enterprise Document Sharing for Imaging (XDS-I.b) - Added 2012-07-24
- Cross-Community Access for Imaging (XCA-I) - Added 2013-09-16
- Imaging Object Change Management (IOCM) - Added 2014-07-30
- Digital Breast Tomosynthesis (DBT) - Added 2016-09-09 Rev. 15

Brief descriptions of these profiles are available [here](#).

Supplements for Trial Implementation

The IHE Radiology Technical Committee invites organizations to begin development work based on the following supplements to the Radiology Technical Framework. These trial implementation profiles may be eligible for testing at subsequent IHE Connectathons.

- Basic Image Review (BIR) - Revised 2016-09-09
- Chest X-Ray CAD Display (CXCAD) - Published 2010-06-17
- Clinical Decision Support Order Appropriateness Tracking (CDS-OAT) - Revised 2016-09-09
- Cross-Enterprise Document Reliable Interchange of Images (XDR-I) - Revised 2014-07-30
- Cross-Enterprise Remote Read Workflow Definition (XRR-WD) - Published 2017-01-13
- CT/MR Perfusion Imaging with Contrast (PERF) - Revised 2015-04-21
- Digital Breast Tomosynthesis (DBT) Extension - Published 2016-09-09
- **Encounter-Based Imaging Workflow (EBIW) - Published 2018-06-01**
- Extensions to the Portable Data for Imaging (PDI) Integration Profile - Published 2009-21-06
- Image Fusion (FUS) Integration Profile - Published 2006-04-13
- Imaging Object Change Management Extension (IOCM Extension) - Revised 2017-07-14

- Connectathon is coming ...