IHE Encounter-Based Imaging Workflow (EBIW)

Working DRAFT of PoCUS Update Proposals - Education Use Case

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POCUS Use Cases

IHE Profiles include "Use Cases" which demonstrate typical patterns of use and show how Profile transactions would go together, and sometimes interact with real-world actions, to achieve effective integration.

The following are additions and clarifications from ACEP of typical POCUS workflows and variants.

Use Case #1 Diagnostic Point of Care Ultrasound

The most typical (“normal”) case involves a diagnostic study performed and reported by a privileged HCP for a registered patient.

A diagnostic study is performed to evaluate a specific medical condition (shock), or to evaluate a patient's anatomy or physiology (left ventricle chamber size and function). This could be an initial evaluation or a reassessment/serial study. The Diagnostic POCUS Use Case is intended to generalize the following scenarios:

1. The patient is registered for an inpatient or outpatient encounter in a healthcare facility (e.g., emergency department, critical care unit, cardiology office, obstetrics and gynecology suite, or operating room).
2. The HCP enters their ID in the POCUS device (i.e., with a barcode scanner, RFID, QR code or manual entry)
3. The HCP enters the patient ID in the POCUS device (i.e., with a barcode scanner, RFID, QR code or manual entry)

    Note: depending on the EMR system, the patient ID could also be a medical record number or billing number known. Examples include: CSN (Contact Serial Number), FIN

(Financial Identification Number) or ASN (Appointment Serial Number). See the Compliance section for more information.

4. The POCUS device displays a MWL entry specific to the patient. The HCP confirms the patient demographic information (name, date of birth, gender, etc.). and selects the patient prior to initiating exam specific image capture.
5. The HCP performs a focused POCUS exam (e.g., biliary scan for cholelithiasis). Images are transferred to the POCUS Manager.
6. The HCP accesses the POCUS Manager system (through a client application on a handheld device, client web browser or PC workstation) and searches for the study completed in the previous step.
7. The HCP views the images. The POCUS Manager proposes an interpretation worksheet based on the Study Description. The HCP confirms the worksheet, and completes it, entering the views obtained, indications, findings, and interpretation. The HCP selects a flag indicating that the study is clinically indicated (vs. educational).

    Note: See the Compliance section for more information.

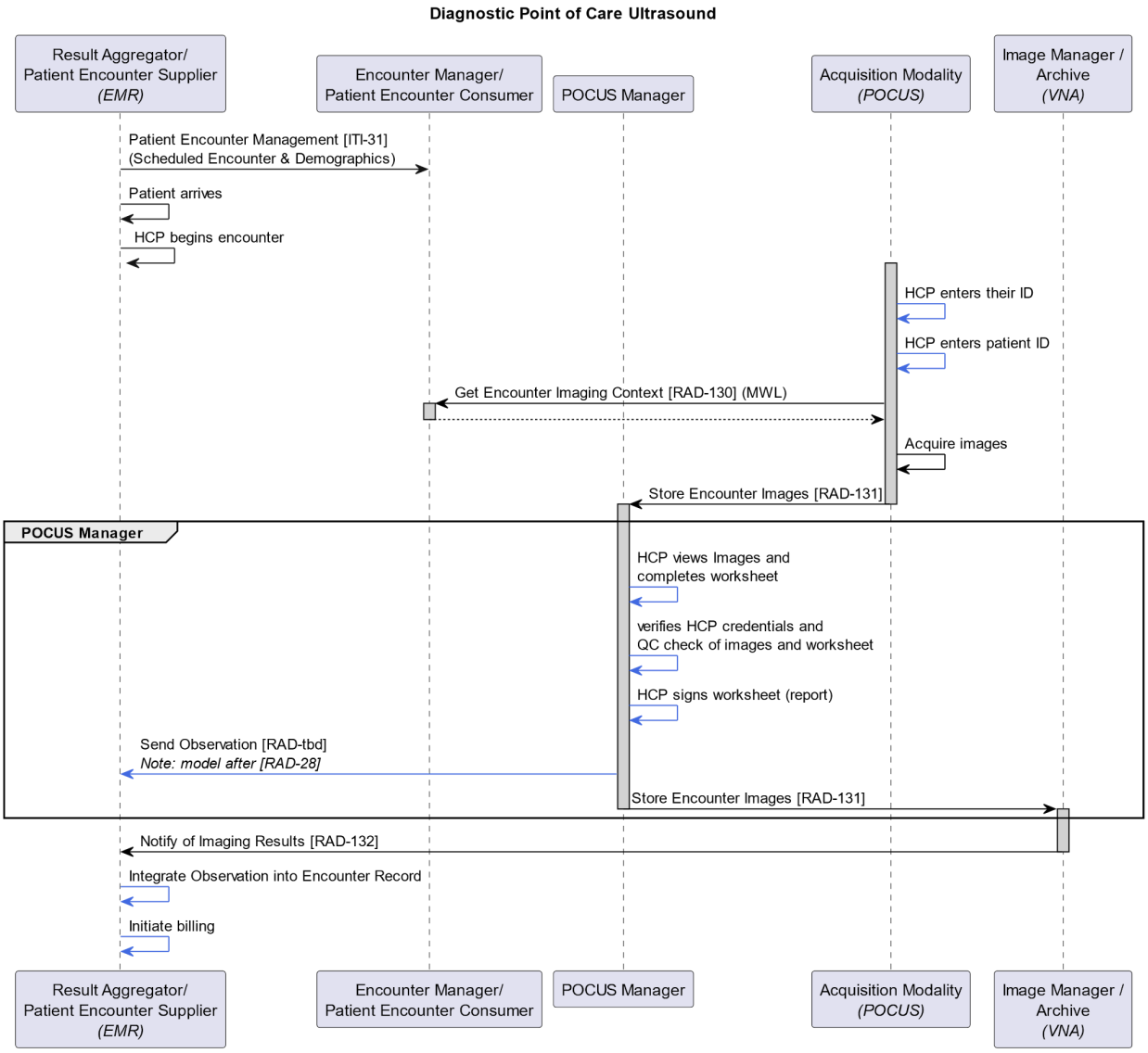
8. The HCP provider applies their electronic signature to the worksheet. This signature is typically generated using a unique identifier tied to the provider's identity within the POCUS Manager.

    Note: Technical requirements for electronic signatures are determined by jurisdiction, institution or payors, and out of scope of this document.

9. The POCUS Manager verifies the HCP credentials, as well as required worksheet elements (i.e., a valid MRN, CSN/FIN, a valid patient name, views, indications, interpretation views, indications, and interpretation).
10. The POCUS Manager also validates that the study contains at least one image, and that all images contain a valid MRN/CSN/FIN, patient name and accession number issued from either the Encounter Manager namespace, or the POCUS Manager namespace.
11. Because the HCP is credentialed, and both the worksheet and images meet validation criteria, the POCUS Manager sends the report (i.e., the signed worksheet) as an unsolicited observation to the EMR, and transfers DICOM images to an Image Manager/Archive (a.k.a. VNA).
12. The Image Manager/Archive sends a notification to the EMR using Notify of Imaging Results [RAD-132].
13. The POCUS report along with hyperlinks to review the study image data in PACS are associated with the patient encounter in the EMR.

    Note: Based on local policy, the EMR may also create an order for billable studies, as well as financial transactions necessary for charging.

Diagnostic Point of Care Ultrasound Use Case Process Flow



Blue arrows: new transactions

Black arrows: existing EBIW transactions

The following terms related to POCUS education will be used throughout this document:

- POCUS learner: a POCUS operator without privileges, who is in process of obtaining them
- Partially Privileged: a POCUS operator with some privileges
- Fully Privileged: a POCUS operator who has obtained (and continues to maintain) local POCUS credentials

- Educational POCUS study: a POCUS exam obtained for teaching purposes and not intended for clinical diagnosis or research

Use Case *nn* Educational Point of Care Ultrasound

During their POCUS rotation, a medical school undergraduate performs POCUS as part of their proficiency assessment in a volunteer scanning session, or a POCUS learner performs POCUS as for credentialing.

From Use Case #1

Step #1 and Step #3: Volunteer may or may not be registered. If the volunteer is registered (i.e. a patient in clinical space), then there is no change to Step #3 above. If the volunteer is not registered (i.e., in non-clinical space, such as a learning lab), the POCUS learner enters a dummy patient ID in Step #3, and in Step #4 the POCUS device displays a MWL entry specific to a dummy patient.

Note: Depending on departmental policy:

- *the POCUS device may be required to toggle between a clinical and non-clinical MWL,*
- *the MWL server may be required to generate, or access dummy patients in the EMR, or*
- *a dummy patient may be entered manually, based on local naming conventions.*

Step #2: In case of multiple POCUS learners (i.e. lab partners) students, the modality allows entry of multiple operators.

Steps #7: No change however, if the worksheet is unremarkable, the POCUS learner selects a flag indicating that the study is educational.

Step #9: The QA reviewer accesses POCUS Manager, evaluates the study, and provides comments on the study, and issues credit, using the POCUS Manager QA functionality.

Note:

Clinical space (registered patinet)- interpretation wrong - QA Reviewer adds an addendum and signs, includes a tag "provider contacted", sent to the EMR

Educational - incidental finding - dictated by local policy, includes a tag "provider contacted"

Step #5, #6, #8: No change

New Step: POCUS learner accesses the POCUS Manager and reviews the QA comments

New Step: Based on the educational flag, the POCUS Manager segregates the study. The report remains and images remain in the POCUS Manager, and are not forwarded to the EMR/VNA.

New Step: Later, a Faculty member generates a report of the number of scans performed by each POCUS learner.

Breakout topics:

- *Does the QA reviewer countersign the worksheet? no*
- *How is feedback conveyed to the POCUS learner? discussed*
- *Could a study have both a clinical and educational flag at the same time? yes*

- *Does this workflow work for medical students and Attending Physicians or APPs that are obtaining credentials (see Glossary) Need separate Use Case for Clinical/Educational (clinical exam by non-credentialed)*

Needs use case for clinical exam performed by non-credentialed user