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DIGITAL TRANSFORMATION SERIES:

5 Things to Consider When Adopting Handheld Point-of-Care-Ultrasound (POCUS) Devices

Prepared by
Paragon Consulting Partners | 2021

TABLE OF CONTENTS

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INTRODUCTION

Because it is a highly versatile, safe, and low-cost imaging technique the use of ultrasound has expanded into many areas of healthcare organizations and workflows. Recently, the use of handheld point-of-care ultrasound (POCUS) devices has further increased the use of ultrasound because of the simplicity and speed with which they can be used to visually assess patients in time sensitive clinical scenarios.

Handheld POCUS devices are most commonly used in emergency medical services, allowing for greater efficiency in critical moments of assessment. For example, paramedics can easily capture and share images with ED physicians while en-route, sometimes using integrated voice and video through connected Internet of Things (IoT) to enable true tele-presence and remote consultations for complex or severe cases. As well, within emergency departments physicians can quickly perform imaging studies at the bedside, without the need to relocate patients or traditional imaging devices like ultrasound carts or mobile x-ray.

As adoption increases, use cases have begun to make their way into primary and virtual care settings, allowing family physicians or even patients to acquire and share images as part of a more comprehensive monitoring and treatment program. These types of devices introduce new and novel ways of working that can increase efficiency and capacity within the health system, improve quality of care and reduce clinical risk, and lead to greater patient and provider satisfaction.

But what does this mean to implement them in practice? This paper will explore the top considerations for healthcare executives looking to adopt handheld point-of-care imaging into their organizations.

1 Workflow Considerations

From a clinical workflow perspective, handheld POCUS introduces several changes into how imaging is acquired, used, and documented. For example, using POCUS devices to perform routine or emergency clinical examinations can provide more rapid and accurate assessment at the point of care, without requiring movement of patients between departments. This can greatly reduce risk for patients with severe conditions or those who aren't easily moved, as well as potential exposure to other risks during transfer.

Like traditional ultrasound workflow, clinical decisions are made based on images captured in real-time. However, introduction of handheld POCUS introduces yet another image capturing device and application that, if not well integrated, can add complexity to clinical workflow. As has been well demonstrated, technologies that fragment workflow or introduce cumbersome steps rarely achieve successful adoption – especially among busy clinicians. It is therefore important to consider how these devices are integrated into the broader imaging ecosystem to ensure a seamless and efficient workflow.

This begins with user management and image access. Handheld POCUS devices typically come with their own mobile applications to facilitate image capture, cloud repositories for storage, and web portals for later access.

POCUS and COVID-19

Ultrasounds have been proven to be more accurate than both chest radiography and auscultation for diagnosis of COVID-19. POCUS is increasingly becoming the preferred imaging technique in emergency and ICU settings because:

- Physicians can diagnose patients at the bedside more easily, eliminating the need to move or transfer them as with traditional ultrasound procedures.
- ICU intensivists can more quickly assess treatment responsiveness and use POCUS to aid in ventilator management.
- Hospital procurement can more cost effectively match ultrasound device capacity with rapidly increasing patient demand due to the lower cost-per-unit compared to traditional ultrasound carts

This not only introduces yet another set of user management and security requirements, it also adds to the already complex and redundant set of imaging applications that exist across the enterprise – such as PACS or enterprise viewers. Prioritizing mobile POCUS apps that include single sign-on capabilities and barcode scanning for patient identification and linking facilitates a more seamless and efficient workflow for clinicians at the point of care. As well, ensuring the POCUS cloud archive is integrated with the organization's PACS or VNA will ensure images captured at the point-of-care are incorporated into the patient's medical record, avoiding medico-legal risk, and making images more readily accessible for physicians and clinicians within and outside the hospital – without requiring a separate portal.

As well, with the shift from hospital to home – especially in today's ecosystem of rapid virtual care adoption – simply capturing images at the point of care is no longer good enough. What is needed is to better accommodate workflows that allow for live interactions between patients and providers that simulate in-person encounters. This calls for a thoughtful approach to integrating POCUS devices, enterprise viewers, and collaboration tools to not only facilitate effective real-time communication between physicians, but also capture relevant images, findings, and clinical decisions within the EHR. Ultimately, this ensures that information generated from handheld devices has value and life far beyond the point-of-care encounter.

2 Technical Considerations

POCUS devices have varying integration methods that may or may not work well within traditional enterprise imaging infrastructures. Therefore, to ensure POCUS devices realize their full potential consideration must be given to how these devices connect within an organization's:

- EHR, to improve patient and health data management
- Imaging systems, particularly for traditional radiology replacements like US and CT
- Privacy and security infrastructure, to ensure sensitive health information is safe and secure

Before selecting and deploying handheld POCUS devices it is important to perform a comprehensive system inventory to gain a better understanding of available integration points and methods, and how data generated by them can be collected and archived. As well, because POCUS devices follow encounters-based, rather than orders-based, workflows consideration must also be given to ensuring images can be easily and accurately attached to the appropriate patient identifier and record within the enterprise PACS, VNA, and EMR. Handheld devices that include mobile apps, support barcode scanning, and integrate with enterprise systems using standards-based interfaces (HL7, FHIR, DICOM) or API integrations are best suited to automate image collection, association, and validation.

Of course, privacy and security is also a top concern, particularly for IoT connected devices. The first line of defence is robust policies and procedures related to the use of handheld POCUS devices, including how images should be acquired and archived. Additionally, as with other IT systems in the hospital, it is important to maintain an inventory of POCUS devices to ensure they can be monitored and controlled according to facility biomedical, security, and privacy policies.

3 Operational Considerations

Due to the relatively low price-points compared to the convenience handheld POCUS tools offer, many physicians have taken it upon themselves to circumvent their organization's procurement processes and have purchased these devices for themselves. The resulting 'wild west' of connected devices leads to non-standardized workflows between care providers and departments and operational issues such as:

- Difficulty performing quality audits
- Increasingly challenging information management as images used for point-of-care diagnosis and treatment decisions are isolated on these devices or in non-connected cloud apps
- Gaps in information within a patient's clinical history
- Exposure to medico-legal risk, given that images captured through these devices are directly informing diagnosis and treatment decisions without standardization or protocols.

Moreover, whether physician or hospital provided, asset management becomes more of a challenge – especially as use cases expand from in-hospital to at-home use cases. This again calls for new policies and procedures to clearly define the conditions and situations when the use of handheld POCUS is most appropriate, how workflows should be conducted, and what steps must be taken to ensure resulting imaging is integrated into the patient's longitudinal imaging record. As well, as with other IT systems in the hospital, it is important to maintain a device inventory to ensure they can be tracked to prevent loss and controlled according to facility biomedical, security, and privacy policies

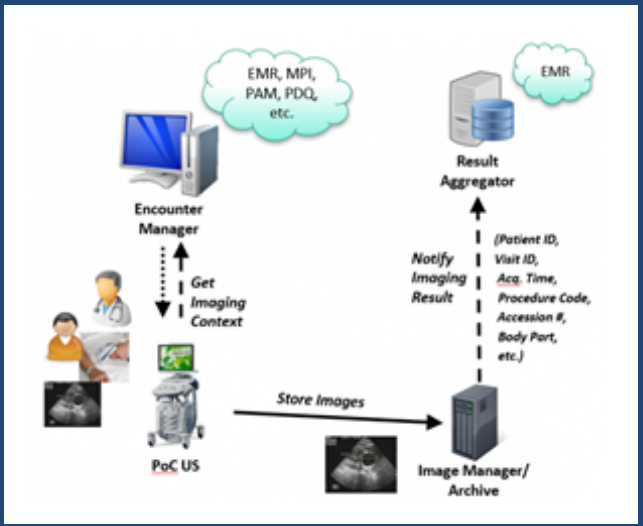
4 Financial Considerations

The capital cost of handheld POCUS devices is considerably lower than traditional ultrasound modalities, which makes them easier for budget-constrained organizations to acquire using residual capital from either large projects or operational budgets. However, although traditional diagnostic and procedural ultrasounds have straightforward billing, POC devices are notoriously unaccounted for from a financial reimbursement perspective. Because encounters-based procedures are typically done ad-hoc in emergent or bedside situations and are not ordered or tracked within the EHR or RIS this often results in potentially significant missed revenue.

CPT codes are available for a number of these types of procedures, resulting in money left on the table for many organizations that fail to integrate them into billing workflows. Ultrasound examinations captured through point-of-care devices can be reported using the same CPT codes applicable to traditional ultrasound procedures, provided requirements including documentation, completeness, necessity, and accurate code selection have been met. By implementing automatic triggering to the billing system, as defined by IHE's encounters-based imaging workflow (EBIW), procedures performed using handheld devices at the point-of-care can be automatically captured, tracked, and incorporated into the patient record and billing workflows.

This not only ensures maximum revenue capture associated with POCUS procedures, but also leads to increased operational efficiency and throughput, which in turn drives in further revenue growth and cost reduction – driving increased overall ROI.

Figure 2: IHE Encounters Based Imaging Workflow (EBIW)



Source: IHE.net

5 Successful Adoption of Handheld POCUS

Handheld POCUS devices have achieved widespread adoption and become an invaluable technology for performing safe and efficient diagnosis and treatment in emergency, primary care, and remote settings. However, adoption of these devices into your healthcare IT and imaging systems requires a thorough understanding of how to best integrate them into clinical workflows, technical infrastructure, operational processes, and financial models. Ensuring successful adoption and optimizing ROI requires a proactive and thoughtful approach to designing a seamless clinical workflow that maximizes provider efficiency and satisfaction, managing imaging data within the broader imaging ecosystem to build a complete and unified patient record, automating billing workflows to maximize financial reimbursements, and ensuring the necessary processes and controls are in place to protect privacy and security.

Is your organization considering the integration of POCUS?

Our team of imaging and healthcare IT experts have decades of direct experience in crafting and executing strategies for designing well-integrated enterprise imaging ecosystems that optimize clinical, operational, and financial performance. We can help you develop a strategy and plan for successful procurement, adoption, and integrating point-of-care ultrasound devices across all care delivery models and settings. Contact us to learn more.

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