Starting Off

15 Feb

Project designed. Funding generated via Spark Tank Grant. Partnered with SOMA Faculty (Dr. Makin) to build formal POCUS 1+3 Curriculum.

Obtaining Devices

15 Oct

4 handheld POCUS devices obtained for initial pilot at Arizona CHCs. Also obtained early access to 2 Butterfly devices.

Gaining Leadership Support

15 Feb

Round table meeting with AIUM’s Dr. David Bahner and SOMA Leadership. Received approval for pilot start and project expansion.

Testing Devices

15 Jun

Completed 4 months of Butterfly Device Quality Assurance. Adjusted curriculum based on device capabilities and limitations.

Initiate Pilot

15 Sep

Initiate Pilot for MS II and III at AZ CHCs pending recruitment of proctors to review images.

ATSU 1+3 Medical Student POCUS Curriculum - Project Timeline
Portable Ultrasonography in Medical Education, Pilot Project at ATSU

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PGY-I
Internal Medicine

Phase II: Device Quality Assurance Report

As part of the ATSU Ultrasound Portable Ultrasound initiative, 2 Butterfly IQ devices were obtained through the Spark Tank research grant. These devices were picked for the following reasons:

- costs only $2k/device as compared to the $6-20k for competitive handheld ultrasounds and $60-200k for full-use machines
- utilizes an innovative drum-chip technology that allows a 3-in-1 probe versus the standard crystals requiring 3 different probes
- comes with an innovative iOS app allowing easier access to image review, advanced annotations and collaboration

Before moving onto phase III: pilot programs at the Arizona CHC sites, two steps of Phase II remain: recruiting preceptors to review students’ images and perform a thorough quality assurance of the Butterfly devices to determine capabilities and limitations of the devices. This focused assessment was a four-month trial in the ED, on the medical and surgical floors with use cases to be tested in Critical Care, Internal and Family Medicine, General and Orthopedic Surgery. Further testing has yet to be done for OB/GYN and in the outpatient setting. A summary of the findings included:
<table>
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<tr>
<th>Useful</th>
<th>Limited Use</th>
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<td><strong>Peripheral IV Access</strong> – high success rate even with limited user experience</td>
<td><strong>Central IV Access</strong> – ICU requires tested US machines</td>
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<td><strong>Renal US</strong> – quick identification of hydronephrosis and cysts</td>
<td><strong>Echocardiogram</strong> – can obtain 4 views but measurements (flow rates, ejection fraction) are inaccurate and valve identification is limited given image quality</td>
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<td><strong>Lung US: CHF/PNA/PTX</strong> – can differentiate A v B lines and identify poor lung sliding</td>
<td><strong>Lung US: US-guided thoracentesis</strong> require image uploads to hospital EMRs</td>
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<td><strong>GI US: biliary exam</strong> – accurate identification of anatomy / stones / inflammatory changes / measurements of CBD / Doppler use in vessel identification</td>
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<td><strong>Critical care</strong> – full RUSH exam for RRT calls and clinical reevaluations on rounds</td>
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<tr>
<td>To be Tested:</td>
<td><strong>OB/GYN, Pediatrics, Outpatient</strong></td>
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With these and upcoming considerations in mind, our curriculum will be adjusted to prioritize learning in tested ‘useful’ use cases and find an alternative means for ‘limited use’ use-cases such as more advanced ultrasound training where applicable. The project will move forward as preceptors are recruited at individual sites, with devices being sent to the sites as preceptors are secured.