



ATSU 1+3 Medical Student POCUS Curriculum - Project Timeline

Portable Ultrasonography in Medical Education, Pilot Project at ATSU

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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:

<u>Useful</u>	<u>Limited Use</u>
Peripheral IV Access – high success rate even with limited user experience	Central IV Access – ICU requires tested US machines
Renal US – quick identification of hydronephrosis and cysts	Echocardiogram – can obtain 4 views but measurements (flow rates, ejection fraction) are inaccurate and valve identification is limited given image quality
Lung US: CHF/PNA/PTX – can differentiate A v B lines and identify poor lung sliding	Lung US: US-guided thoracentesis require image uploads to hospital EMRs
GI US: biliary exam – accurate identification of anatomy / stones / inflammatory changes / measurements of CBD / Doppler use in vessel identification	
Critical care: full RUSH exam for RRT calls and clinical reevaluations on rounds	
To be Tested: OB/GYN, Pediatrics, Outpatient	

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.