Physician Assistant Program
UNIVERSITY OF WISCONSIN
SCHOOL OF MEDICINE AND PUBLIC HEALTH

Taking a Closer Look – Bringing Point-of-Care Ultrasound Into PA Education

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Introduction

Point-of-care ultrasound (POCUS) is an established bedside skill that can expedite evaluation and treatment of patients. Ultrasound (US) is employed to evaluate a wide variety of conditions across numerous specialties. In addition, US is a useful adjunct for procedures such as line placement, abscess drainage and nerve blocks. US can be a cost-effective modality with additional benefits on measures such as patient throughput, patient safety, and patient satisfaction. The clinical utility of POCUS makes this a skill of interest to teach in a growing number of PA programs. However, incorporating US into program curricula is challenging. Barriers include lack of access to US machines and inadequate training for faculty.

Methods

- To bring POCUS into the University of Wisconsin-Madison Physician Assistant (PA) Program curriculum, the program purchased four Butterfly iQ+ devices. The FDA has approved the Butterfly iQ+ for 13 commonly used tests, making it a cost-effective tool for clinicians.
- Three members of the PA program instructional faculty obtained training on POCUS by attending an introductory ultrasound training conference (16 hours).
- Delivery of the content was accomplished by developing a new module on POCUS within our PA660 Clinical Skills course and implemented incrementally (Table 1).

US Skills Lab Objectives

Upon completion of this laboratory, personal study and skills practice, the PA student will be able to:

- Understand the basic physics of diagnostic ultrasound
- List common ultrasound applications used at the bedside
- Describe the basic components common to ultrasound machines
- Describe the 4 basic types of ultrasound transducers and common applications, advantages and limitations
- Describe limitations associated with the use of bedside ultrasound
- Identify factors that indicate when it is appropriate to discontinue the use of bedside ultrasound and/or seek radiology services for full diagnostic imaging
- Demonstrate the proper use of an ultrasound device to obtain images on live and/or static models

Table 1: Incremental Introduction of US into PA Clinical Courses

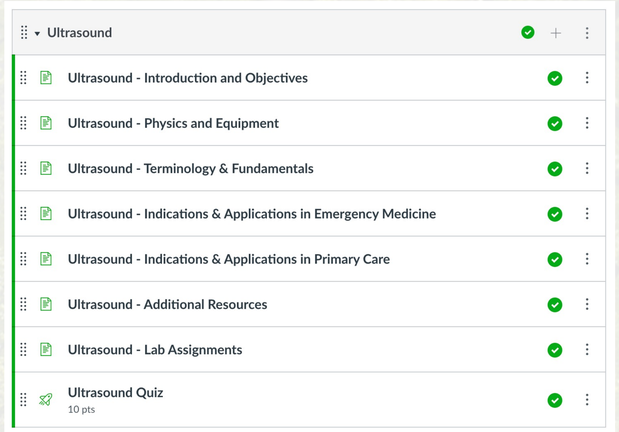
	2019-20	2020-21	2021-22 Planned
Didactic Curriculum	Self-paced US module created in Canvas, PA660 Clinical Skills course, including pre-lab quiz (Image 1)	Continue use of self-paced US module and pre-lab quiz in Canvas	Continue use of self-paced US module and pre-lab quiz in Canvas
Skills Labs	Clinical lab activity cancelled due to COVID	Clinical lab experience with static models (Ballistic gel with embedded targets) Limited clinical lab activity with live models/participants (Self-scanning forearm related to COVID restrictions)	Clinical lab experience with static models (Enhanced ballistic gel with embedded targets) Expanded clinical lab activity with live models/participants (Pending COVID restriction reductions) Future directions: Potential for clinical applications within PA619 History & Physical Exam, PA629 Anatomy, PA670 Surgery

Student comments regarding inaugural US lab experience:

"The US part was really neat for someone who's never used one before. I would love to have another lab/"boot camp" to get more experience on body parts other than arms."

"The Butterfly ultrasound probes were really amazing to work with! I just wish we could've practiced a bit more on one another, so that we could start to get the feel for how to identify and work with real anatomical structures instead of just the models."

Image 1: US Module Homepage on Canvas



Results

We have been successful in our early efforts to introduce fundamental POCUS content into our Clinical Skills curriculum. While progress was slower than originally planned due to necessary COVID cancellations and restrictions, we have made incremental steps to bring this important technology into the classroom.

Challenges remain regarding optimal static models, limited faculty clinical experience with US, and limited lab time to dedicate to US practice and applications.

Discussion & Next Steps

We are excited about plans to continue to improve the clinical lab experience. In particular, we are working to improve the quality and fidelity of the static models used for learning the basics of US image acquisition. Further consideration regarding the optimal use of live models/participants for practicing image acquisition is ongoing. In addition, we are exploring the potential to incorporate POCUS into other courses. Through the lens of additional clinical courses, opportunities to practice applied image acquisition, image interpretation and use in clinical decision support can be enhanced. Courses including Anatomy, Physical Assessment, and Surgery, are examples of courses with potential for integration of US as a supplemental modality to enhance learning and skill acquisition.

References

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