

Development of a Point-of-Care Ultrasound Educational Curriculum for Pediatric Emergency Medicine Fellows

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List of all core competencies and sub-competencies

Competency 1: Demonstrates knowledge of ultrasound physics and knobology

Basic Skills

- Explains “depth” and how to adjust the US machine “depth” settings
- Explains “gain” and how to adjust the US machine “gain” settings
- Explains “M-mode” and how to adjust the US machine “M-mode” settings
- Demonstrates proper cleaning and handling of ultrasound machine with attention to infection control standards
- Understands the relationship between imaging planes of the body and images on the screen
- Defines an ultrasound artifact

Intermediate Skills

- Explains “color doppler” and how to adjust the US machine “color doppler” settings
- Demonstrates how to adjust machine settings and presets for image optimization
- Understands the relationship between frequency, penetration and resolution
- Characterizes common ultrasound artifacts like shadowing, enhancement, mirror images, etc.

Advanced Skills

- Understands and is able to explain the theoretical safety risks involving the use of ultrasound
- Applies clinical uses for, and principles of color Doppler
- Demonstrates effective teaching of the basic and intermediate POCUS concepts and skills to other learners

Competency 2: Demonstrates knowledge and correct technique with regard to point-of-care ultrasound image acquisition

Basic Skills

- Illustrates consideration for patient comfort when positioning, draping, or applying gel

Intermediate Skills

- Selects the correct transducer for specific ultrasound examinations
- Recognizes normal sonographic anatomy for specific ultrasound examinations
- Demonstrates proper positioning of patient, application of gel, and draping of materials for image optimization
- Labels images accurately
- Appropriately informs the patient and family as to the indications for and benefits/risks of a POCUS examination

Advanced Skills

- Discriminates between normal anatomy and pathology on ultrasound
- Manipulates the transducer properly to obtain the desired image

- Obtains ultrasound images that are of sufficient quality for medical decision making and billing
- Acquires the necessary views for an ultrasound examination and saves appropriate still and video images
- Accurately documents POCUS image findings, including the necessary components needed for billing
- Demonstrates effective teaching of the basic and intermediate POCUS concepts and skills to other learners

Competency 3: Demonstrates accurate image interpretation and effective utilization of POCUS for medical-decision-making as it pertains to your scope of practice

Basic Skills

- Describes the clinical indications for using specific ultrasound studies

Intermediate Skills

- Identifies the contraindications for specific ultrasound studies
- Identifies which ultrasound study to obtain based on patient presentation

Advanced Skills

- Properly integrates POCUS studies into medical decision making
- Describes the “pearls” (advantages) and “pitfalls” (cautions) when using ultrasound across specific applications
- Accurately interprets the ultrasound image
- Clearly and effectively communicates ultrasound results to patients, families, and the medical team
- Has working understanding of the basic relevant pediatric POCUS literature
- Has awareness of the test characteristics of published data for specific ultrasound indications,(e.g. sensitivity, specificity.)
- Demonstrates effective teaching of basic and intermediate POCUS concepts and skills to other learners

Competency 4: Demonstrates a broad understanding of the administrative elements of a comprehensive POCUS Program

Basic Skills

- Recognizes the differences between ED POCUS and radiology ultrasound

Intermediate Skills

- Effectively communicates the distinction between POCUS and comprehensive ultrasound to patients/families

Advanced Skills

- Recognizes the value of a quality assurance database for POCUS examinations
- Describes policy statements pertinent to PEM POCUS, e.g. AAP Policy Statement on point-of-care ultrasonography by pediatric emergency medicine physicians, ACEP emergency ultrasound guidelines)
- Recognizes the need for a standardized process for properly credentialing providers in ultrasound