

1. Purpose

Emergency Ultrasound (EUS) is an integral skill for emergency physicians in the evaluation and treatment of patients in the emergency department. The goal of the Division of Emergency Ultrasound is to maintain the highest quality of patient care and safety while promoting excellence in emergency ultrasound education and research. These guidelines detail the requirements and procedures related to emergency ultrasound examinations in the Departments of Emergency Medicine at Rhode Island Hospital (RIH), The Miriam Hospital (TMH), Hasbro Children's Hospital (HCH) and Newport Hospital (NPT)

2. Definitions

- 2.1. Emergency Ultrasound (EUS) is defined as any focused ultrasound examination performed at the point-of-care by emergency providers (EP) to answer a specific clinical question pertaining to diagnostic or interventional purposes. In the emergency department and in the emergency medicine literature the several terms are also used to refer to EUS; these terms include bedside ultrasound, point-of-care ultrasound, focused ultrasound, and limited ultrasound. A complete EUS exam consists of image acquisition, image interpretation and documentation of results by the clinician.
- 2.2. Emergency Ultrasound exams for diagnostic and therapeutic purposes (EUS-DT) are EUS applications for which a credentialing pathway is established or which are considered core competencies that do not require individual credentialing.
- 2.3. Emergency Ultrasound exams for educational and research purposes (EUS-ER) are ultrasound exams in addition to those referred in section 2.2. that are pertinent to EUS education and/or research.
- 2.4. The Emergency Ultrasound Quality Assurance (EUS-QA) process is defined as a peer-review mechanism to ensure exam quality, credentialing, and continued education in EUS.

3. Introduction

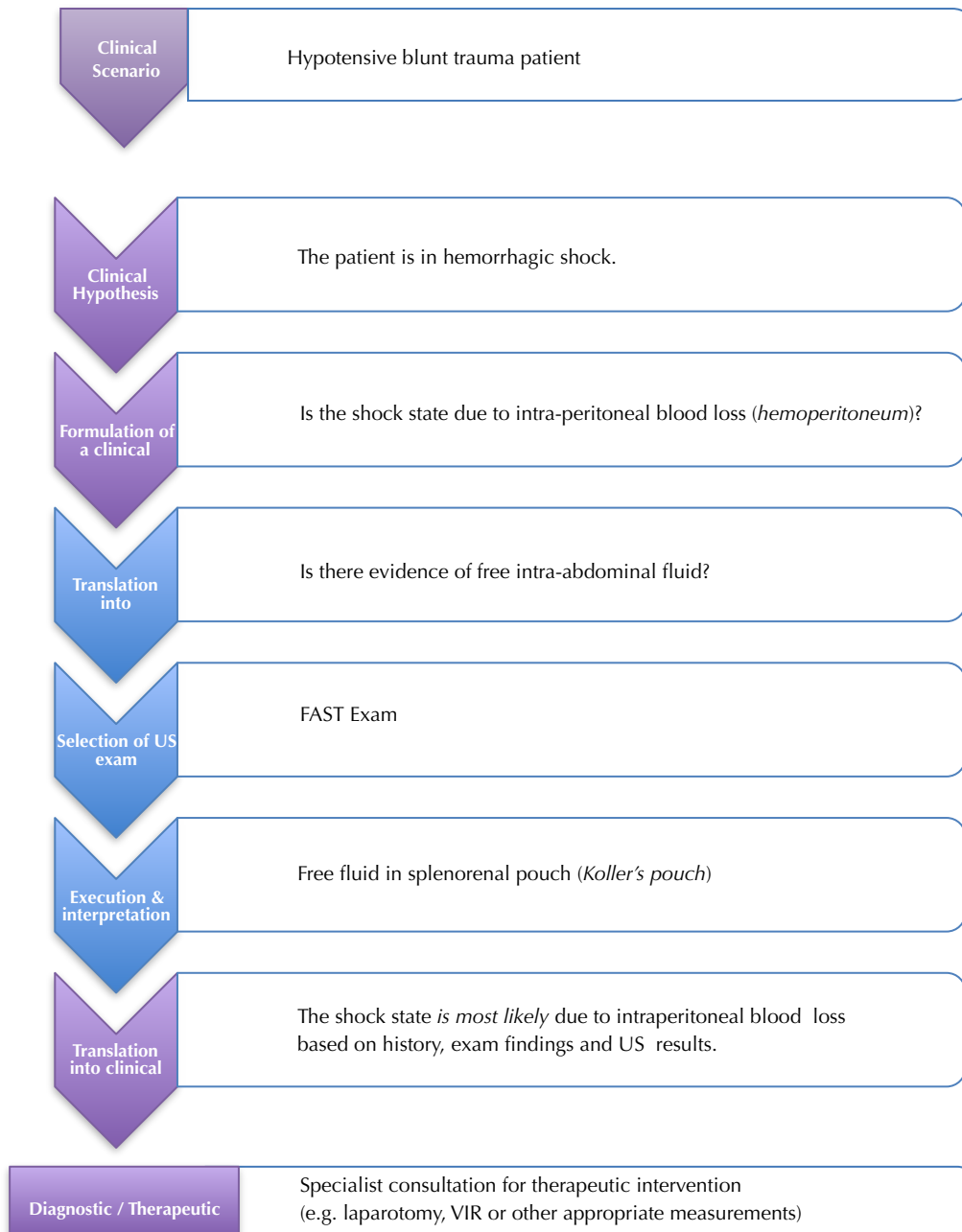
The Division of Emergency Ultrasound is committed to high-quality ultrasound imaging, patient safety and excellence in ultrasound education and research.

Ultrasound examinations are operator-dependent and require theoretical knowledge as well as hands-on experience. The EUS skill set requires expertise in the following areas:

- Indications for Emergency Ultrasound
- Integration of point-of-care ultrasound into clinical care
- Image acquisition and interpretation
- Focused ultrasound examinations
- Procedural ultrasound
- Documentation

Emergency Ultrasound is integrated into Emergency Medicine diagnostic and treatment pathways at the point-of-care and seeks to answer a specific clinical question. Emergency Ultrasound does not replace ultrasound examinations done by the Department of Diagnostic Imaging (DI). DI exams are not performed at the point-of-care but are comprehensive examinations ordered by the emergency physician to acquire additional information about anatomical structures or pathological processes beyond the scope of the focused question of the Emergency Ultrasound exam.

The EUS process flow is based on a clinical hypothesis that is created through the integration of history and physical exam elements with laboratory findings and results of other diagnostic modalities (see Fig. 1). This hypothesis is translated into a sonographic question that is answered through the selection of an appropriate study. After correct execution and interpretation of this US exam the findings are translated back into a clinical answer, integrated into the clinical context and used to guide therapeutic and diagnostic interventions.



4. Emergency US Applications

The Emergency Ultrasound Applications to which these guidelines pertain are described by ACGME/ABEM and ACEP/SAEM core emergency ultrasound documents and are subdivided into the following two categories:

- 4.1. Emergency Ultrasound exams for diagnostic and therapeutic purposes (EUS-DT)

4.2. Emergency Ultrasound exams for educational and research purposes (EUS-ER)

5. Privileging

5.1. Initial privileging and recertification

Initial privileging is available via three pathways depending on prior training. The initial privileging as well as the recertification process is described in the Lifespan *"Delineation of Privileges for Department of Emergency Medicine."* A provider can seek credentialing for each application individually.

5.2. Training exams

Attending physicians seeking credentialing in an EUS application as well as residents and midlevel providers can only perform an ultrasound exam if the patient will have an appropriate follow-up study during the same ED stay as part of their regular work-up. The provider cannot use the findings of the training exam for clinical decision-making. In addition the patient must be made aware that this exam is not part of their regular ED work-up and the provider is not to discuss any findings until confirmed by the follow-up study.

In the case of a **life-threatening emergency** the provider can act on the findings only if a credentialed physician or a confirmatory study is not readily available **and** any further delay of an immediate intervention is expected to be detrimental to the patients health or safety.

5.3. Exam Performance Review

The Division of Emergency Ultrasound will continuously review the Emergency Ultrasound studies and provide feedback on quality indicators to the provider (see section 8). If a provider does not meet the minimum standard for one or multiple exam categories, the provider will be informed and educational material addressing the specific deficiency will be provided. In addition, the studies in the deficient category will be reviewed again after three months.

If the quality criteria are not met at that time, images will be reviewed with the provider and technique will be assessed. The studies will then be reviewed after one month.

In case the criteria are not met at this point, the provider will be required to submit ten consecutive studies in the deficient exam category or submit proof of an attended CME course pertinent to this category. Until this requirement is fulfilled any exam in the deficient category must have an appropriate follow-up study as described in section 5.2.

6. *Emergency Ultrasound Infection Control & Safety*

The Department of Emergency Medicine has detailed guidelines addressing safety and infection control issues. These are described in the separate “*Emergency Ultrasound Infection Control & Safety Guidelines*” document.

7. *Image acquisition and documentation*

7.1. Image acquisition and exam interpretation

All EUS exams performed in the emergency department will be recorded as still images or video clips for QA review. All exams are stored with QPATH (™) software.

7.2. Documentation of exam findings for clinical use

Exam findings used for clinical decisions by a credentialed provider are documented in the medical record.

8. *Quality Assurance (QA)*

8.1. Quality Assurance process

To assure exam quality is maintained at high standard Division faculty review submitted ultrasound images, evaluate for standard views that make up the minimum requirements for a complete study, and provide the opportunity for direct feedback.

8.2. Rating of exam quality

The EUS reviewer will grade the quality of the exam on a five point scale as follows:

- (1) No recognizable structures, no objective data can be gathered
- (2) a) Minimally recognizable structures but insufficient for diagnosis
(e.g. image severely over-/undergained, depth too shallow to allow assessment of the target organ)
b) Not all standard views are obtained.
(e.g. spleno-renal pouch in a FAST exam is not recorded)
- (3) Images meet minimum requirements for interpretation. However, exam quality is suboptimal.
- (4) Standard views with good image quality.
- (5) Exceptional image quality
(e.g. Images could be used for teaching purposes)

Studies that are graded with (1) or (2) are insufficient and require written or verbal feedback to the provider. Images shall not be graded if the provider marked the study as *indeterminate*.

8.3. Types of Review

The studies will be reviewed and rated based on the images submitted unless the provider indicates that a follow-up study has been obtained. In that case this study may be used as an external validation source. This external quality validation should be modality specific.

8.4. Discrepancy

The mechanisms for reporting discrepancies and incidental suspicious findings are defined in the "*Emergency Ultrasound Discrepancy Policy*" document.

8.5. Image usage

The division of emergency ultrasound can use submitted studies for teaching or research purposes after patient identifiers have been removed.

9. Standard views

To assure the quality of the ultrasound examination minimum standard views are required. These are described in the ACGME/ABEM and ACEP/SAEM core emergency ultrasound documents and policy statements.

Date of last review: 3/19/19

Division of Emergency Ultrasound