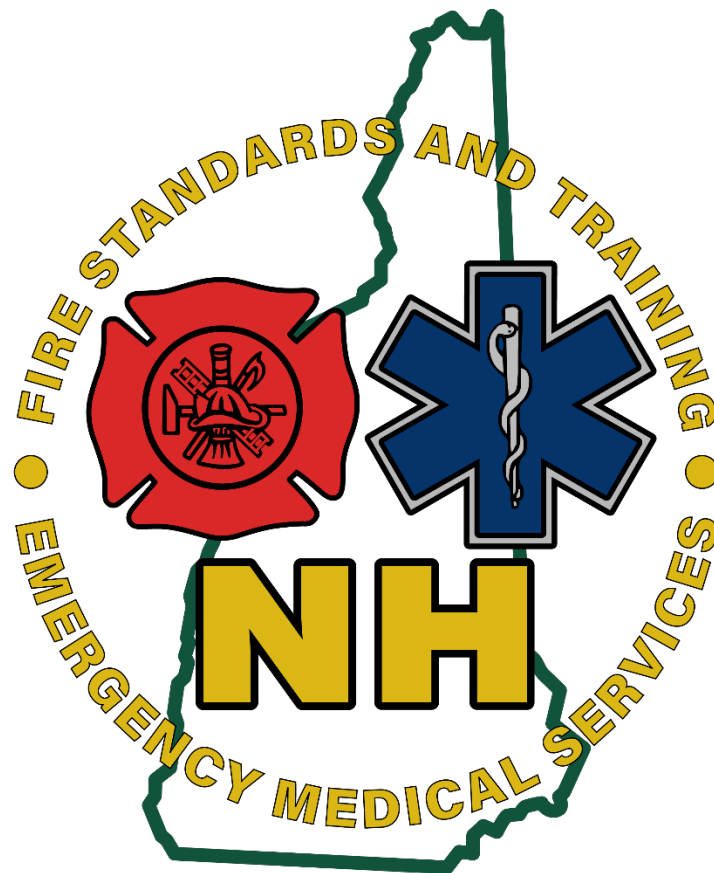


New Hampshire Department of Safety
Division of Fire Standards and Training &
Emergency Medical Services

Point of Care Ultrasound
Prerequisite Protocol
Administrative Packet
2024





NH Department of Safety
Division of Fire Standards and Training &
Emergency Medical Services
Prerequisite Protocol
Application Form

EMS Unit Information

EMS Unit Name:

Address:

Head of Unit:

Title:

Email:

Telephone:

Fax:

Clinical Coordinator (PIFT):

Email:

Telephone:

Medical Direction

Medical Resource Hospital:

Medical Director:

Email:

Telephone:

Prerequisite Protocols (Select all that apply)

- | | |
|---|---|
| <input type="radio"/> Advanced Sepsis, 7.0 | <input type="radio"/> Operational K9, 7.5 |
| <input type="radio"/> Critical Care Transport, 7.1 | <input type="radio"/> Pilot, 7.6 |
| <input type="radio"/> Immunization, 7.2 | <input type="radio"/> Point of Care Ultrasound (POCUS), 7.7 |
| <input type="radio"/> Interfacility Transport (PIFT), 7.3 | <input type="radio"/> Rapid Sequence Intubation (RSI), 7.8 |
| <input type="radio"/> Mobile Integrated Healthcare (MIH), 7.4 | |

Required Documents

1. Written recommendation from the Medical Director.
2. Written recommendation from the EMS Unit leader and testament that the providers completed the required training.
3. Provide list of eligible providers.
4. Provide copy of your Quality Management plan as it pertains to the prerequisite protocol(s) applying for.
5. Any additional documentation required specific to the individual prerequisite protocol.

Unit Head's Signature: _____ Date: _____

Medical Director's Signature: _____ Date: _____

Point of Care Ultrasound (POCUS) Prerequisite Protocol

LICENSURE:

- NH EMS licensed Paramedic.

EXPERIENCE:

- 1 year

EDUCATION:

- Education that meets or exceeds the requirements outlined in this prerequisite protocol.

MEDICAL DIRECTION:

- Medical Director approval.

RECOMMENDATIONS:

- The Medical Director and the EMS Unit leader must mutually agree to participate in the program.
- Written recommendation from the Medical Director.
- Written recommendation from the EMS Unit leader and testament that the providers completed the required training.

QUALITY MANAGEMENT:

- The QM program will incorporate all the components of an EMS QM program as specified in Administrative Rule Saf-C 5921.

REPORTING:

- The EMS Unit will participate in electronic data collection as required by FSTEMS and as specified in Administrative Rule Saf-C 5902.08.
- Units utilizing this prerequisite protocol must document medications and procedures performed in their respective NEMSIS fields I.e. (eMedication.03/eProcedures.03).

RESOURCES:

- MRH agreement with participating hospital which includes access to necessary inter-departments. (example: E.R, IV team, O.R, Respiratory, etc.).

- Equipment, as needed.

EXPIRATION:

- 2 years to coincide with the Unit license.

**Point of Care Ultrasound
(POCUS)
Prerequisites Checklist**

- _____ 1. APPLICATION
Provide completed prerequisite application signed by both Medical Director and EMS Unit leader.

- _____ 2. RECOMMENDATIONS
Attach letters of recommendation from Medical Director and Head of EMS Unit.
Provide list of eligible providers and attestation of competencies.

- _____ 3. EDUCATION
Attach unit training plan and attestation that course meets all educational and training requirements.

- _____ 4. QUALITY MANAGEMENT
Provide a copy of your POCUS Quality Management Plan.

- _____ 5. REPORTING
Complete a NHESR report for each POCUS use, as required by FSTEMS and as specified in Administrative Rule Saf-C 5902.08.

- _____ 6. EQUIPMENT AND STAFF SUPPORT RESOURCES NECESSARY
MRH agreement with participating hospital which includes access to necessary inter-departments. (example: ED, IV team, OR, Respiratory, etc.).
Equipment, as needed.

Questions and completed applications should be directed to clinicalsystems@dos.nh.gov

Point of Care Ultrasound (POCUS) Prerequisite Protocol

Additional Requirements

New Hampshire Minimum Training Criteria for Prehospital Point of Care Ultrasound Credentialing

Purpose:

- The goal of this document is to outline minimum training criteria for prehospital providers certified at the paramedic level with at least 1 year clinical experience to use Point of Care Ultrasound (POCUS) in the field.

Point of Care Ultrasound Training:

- Literature from the past two decades contains many prehospital curricular protocols for paramedic level providers, primarily in Europe and more recently in the United States. Some studies demonstrated utilization and diagnostic competency with only a few hours of training while other studies employ a more comprehensive curriculum. We are in agreement with the American College of Emergency Physicians (ACEP) 2023 Ultrasound Guidelines, which supports rigorous training as the foundation for a safe, generalizable, and ultimately successful prehospital POCUS program. Training guidelines contained herein are consistent with 2023 ACEP “practice-based training pathway.”

Applications:

- The most well-studied prehospital POCUS applications are focused cardiac, focused pulmonary, and eFAST exams. This document applies to these three applications and ultrasound-guided peripheral IV access. As other applications are studied and desired this document can be revisited for revisions.

Leadership:

- Development of a prehospital POCUS program must be overseen by the licensed unit’s medical director. This is ideally an emergency physician credentialed to perform POCUS at their hospital or ultrasound fellowship trained emergency physician. This assures that the training standards outlined below are met and receiving facilities are aware of POCUS use, how to receive and integrate the information, and potential for medical control questions regarding ultrasounds performed in the field.

Training and Education Requirements

OVERVIEW

- The purpose of this pre-clinical training is to provide sufficient didactic education followed by hands-on instruction to facilitate supervised and independent educational scanning of patients. Educational scanning, to achieve a set number of Quality Assured studies, is required prior to medical director signoff/credentialing for clinical use.
- All educational objectives must be incorporated into the training program.

RESOURCES:

- Didactic training should cover core information critical to performing and interpreting each application type including detailed video pathology review followed by substantial hands-on instruction to reinforce psychomotor skills essential to image acquisition and diagnostic accuracy. Documentation of competency, ideally through a combination of written testing, observed standardized clinical evaluation through simulation (OSCE), or standardized direct observation tools (SDOT) must be obtained and placed in the learner's permanent record.
- It is strongly advised that after completing either didactic and hands on training pathway, the learner undergo (4) skills assessment stations to demonstrate core POCUS skills (image acquisition, interpretation, and clinical decision making) for each application with a score of $\geq 80\%$. This can help satisfy documentation of competence, as an OSCE, and provides the critical insight into the learner's ability to perform the necessary basic expected skills to apply findings within the established NH EMS POCUS protocols.

INSTRUCTIONAL PERSONNEL:

- Didactic training & hands-on workshops will be instructed by appropriate personnel with significant experience utilizing POCUS in clinical care, or clinical ultrasound education settings. Instructor selection at all local workshops/course and selection of reputable external POCUS courses will be directly overseen by licensed unit medical director, as defined above or ultrasound fellowship trained emergency physician.

EVALUATION:

- Students must be evaluated on their comprehension of both didact materials and skills/procedures taught as it pertains to the appropriate treatment use of Prehospital Point of Care Ultrasound.

PROGRAM DURATION:

- Didactic must be at minimum four (4) hours in length and can be live, hybrid or in the form of pre-course work to be completed by the student.
- Hands-on training must be at minimum four (4) hours in length.

EDUCATION OBJECTIVES:

- Ultrasound Basics/Physics/Artifacts
 - Recognize the role of presents and knobology to optimize image quality.
 - Apply device and software-specific knowledge using provided equipment.
- Probe Hygiene and Infection Prevention
 - Develop a basic understanding of maintenance for the point-of-care probe.
 - Develop a basic understanding of methods that can be used to optimize probe hygiene and minimize infection transmission.
- EFAST Exam and Interpretation
 - Review relevant anatomy.
 - Recognize the indications for diagnostic, therapeutic (e.g., TXA administration) and procedural (e.g., needle decompression) applications.
 - Recognize normal and abnormal EFAST point-of-care ultrasound image findings.
 - Practice integrating point-of-care image findings into clinical decision-making in the acute care setting.
- Basic Cardiac Exam and Interpretation
 - Review relevant anatomy.
 - Recognize the indications for diagnostic and therapeutic applications.
 - Recognize normal and abnormal point-of-care cardiac ultrasound image findings.
 - Practice integrating point-of-care image findings into clinical decision-making in the acute care setting.
- Basic Lung Exam and Interpretation
 - Review relevant anatomy.
 - Recognize the indications for diagnostic, therapeutic and procedural applications.
 - Recognize normal and abnormal Lung point-of-care ultrasound image findings.
 - Practice integrating point-of-care image findings into clinical decision-making in the acute care setting.
- Peripheral IV
 - Review relevant anatomy.
 - Recognize the indications for using point-of-care ultrasound for placement of peripheral IV.

Final Skills Verification and Sign-Off:

Participants are REQUIRED to obtain 25 unique quality assured ultrasound exams per indication between their hands-on workshop, subsequent supervised clinical shift(s) scanning in the Emergency Department, or *education POCUS* within the course of clinical care in the field. For ultrasound guided peripheral IV at least 5 successful simulated (on phantoms) and 5 live supervised IVs must be demonstrated before independent clinical use.

Education ultrasounds are defined as POCUS studies that are performed in the process of clinical care that: 1) in no way impede performance of any primary paramedic clinical care activities, 2) are not used to change clinical care or deviate from protocols, 3) are submitted for quality assurance and feedback, 4) are verbally consented to by the patient if able to consent. 10 of the 25 required diagnostic exams could be supervised and completed during the hands-on workshop component of training OR during supervised ED scanning shifts. Participants will ideally work under their Medical Director or an appropriate designee and should perform ultrasound exams on patients with potential pathology. If education exams are performed in the field, independent of direct supervision, all studies must be saved with adequate windows for quality assurance review and interpreted via a written/electronic form. To count toward learner's 25 studies for each application, the study must be reviewed and ideally feedback given regarding image quality and accuracy of interpretation, optimally compared to a gold standard study if available.

***Note: Educational studies are studies that are not utilized for patient care as they are performed in the learning phase of a student's credentialing process. Once didactic and hands-on performance criteria are met for each application, the Medical Director may sign-off on credentialing for the paramedic to use clinically in the field.

Field Utilization & Quality Assurance:

Once participants have successfully completed didactic and hands-on training, competency evaluation, and 25 proctored/QA'ed exams per exam type (10 for US guided peripheral IV) then use in the field will be permitted by the Medical Director. Successful completion of all components should be documented in the provider's permanent record and ideally the provider should be awarded a certificate of Pre-Hospital POCUS training completion.

In keeping with ACEP guidelines, 10% of prehospital POCUS studies performed by paramedics who have completed all aspects of the training and are using POCUS independently, should undergo quality assurance review by the Medical Director or their POCUS credentialed/trained designee.

7.7 Point of Care Ultrasound

This prerequisite protocol is only to be used by EMS Units and their affiliated providers who are authorized by FSTEMS.

This protocol provides guidelines on scope and use of prehospital POCUS but is not comprehensive of all procedures. For full prehospital POCUS guidelines and training/quality assurance standards, refer to the New Hampshire Prehospital POCUS Manual. The guidelines in the manual are part of the prehospital POCUS protocol and are incorporated in this protocol by reference.

PARAMEDIC – PREREQUISITE REQUIRED

Exam Types

- Extended Focused Assessment with Sonography in Trauma (eFAST).
- Focused Pulmonary Exam.
- Focused Echocardiography in Cardiac Arrest.

Procedures

- Ultrasound - Guided Peripheral IV Access.

Decision Support

- Ultrasound is an adjunct diagnostic tool to support decisions in specific clinical situations. Imaging is goal-directed with binary interpretation. POCUS can be used when indications are met and additional clarifying information is desired. If indications are met but clarifying information is not needed, POCUS is not necessary.
- Ultrasound should be used to help rule-in (e.g., identify likely potential for dangerous or actionable conditions). Ultrasound may be used to support decisions already indicated per protocol such as transport method, destination choice, pre-arrival alert, and appropriate prehospital interventions.
- Ultrasound should not be used to rule out potential pathologies or inform decisions not to initiate treatment/transport plans per protocol. Ultrasound should not be used to deviate from existing protocols.
- Contact Medical Control as needed for assistance with interpreting and applying POCUS findings.

General Procedure

1. Identify time and setting when POCUS will not significantly impact on scene time (e.g., during transport, during other interventions on scene).
2. Prepare ultrasound device for use, select appropriate window, apply gel to probe/patient.
3. Capture, record, and interpret the exam as outlined in the POCUS manual.
4. Document exam in the patient care report as outlined in the POCUS manual.

eFAST Exam

Indications:

- Blunt or penetrating trauma to the chest/abdomen/pelvis.
- Suspected pneumothorax.

Contraindications:

- Do not perform an ultrasound exam if it will delay treatment and/or transport of a critical patient.

Protocol Continues 

This prerequisite protocol is only to be used by EMS Units and their affiliated providers who are authorized by FSTEMS.

Protocol Continues

PARAMEDIC – PREREQUISITE REQUIRED - Continued

eFAST Exam continued.

Procedure:

1. Obtain and capture all eFAST views:
 - Fluid Views: RUQ, LUQ, pelvis, pericardial.
 - Bilateral apical lung views to identify lung sliding.
2. Interpret imaging and appropriately apply findings.

Decision Support:

eFAST is a useful decision aid to support determination of appropriate care for trauma patients, including receiving facility choice, pre-arrival alert, and transport modality (ground vs. air ambulance).

- Presence of abdominal, intrathoracic or pericardial free fluid is a rule-in finding only and may support decisions. Consider volume resuscitation and administration of TXA when indicated per [Hemorrhage Control Protocol 4.4](#) and/or [Shock - Traumatic Adult & Pediatric Protocol 4.6](#).
- Always use eFAST findings in conjunction with the clinical picture. Positive findings may support transport decisions indicated by the Trauma Triage and Transport Decision Protocol 8.18.
- Use lung findings in conjunction with history, exam, and [Thoracic Injuries Protocol 4.8](#).
 - Absence of lung sliding does not confirm tension pneumothorax or act as an indication for needle thoracostomy in the absence of other signs and symptoms.
- Contact **Medical Control** with difficulty applying eFAST findings or if findings do not align with conventional information and clinical context.

PEARLS:

- The absence of free fluid does not rule out potential pathology and may not be used to inform decisions.
- Chest needle decompression is contraindicated if lung sliding is present.
- There are circumstances where free fluid is present not due to trauma (e.g., ascites, ovulation and pediatrics).
- Be cautious with findings that do not fit the clinical context. When in doubt rely on conventional tools.

Focused Pulmonary Exam

Indications:

- Suspected CHF or COPD/Asthma/RAD.
- Suspected pneumothorax (see eFAST Exam protocol).

Contraindications:

- Do not perform an ultrasound exam if it will delay treatment and/or transport of a critical patient.

Procedure:

1. Assess apical lung sliding.
2. Examine anterior and lateral lung fields for A or B - line patterns.
3. Interpret imaging and appropriately apply findings.

Protocol Continues

7.7

Point of Care Ultrasound

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Protocol Continues

PARAMEDIC – PREREQUISITE REQUIRED - Continued

Focused Pulmonary Exam continued.

Decision Support:

The lung exam is a useful decision aid when you suspect CHF or COPD and need additional information to differentiate the two, or when you suspect pneumothorax.

- Presence of diffuse, bilateral B-lines with consistent clinical picture of CHF is a rule-in finding for cardiogenic pulmonary edema. Appropriately use lung findings in conjunction with [Congestive Heart Failure Protocol 3.3](#).
- Presence of A-lines and lung sliding and absence of B-lines with consistent clinical picture is a rule-in finding for COPD/Asthma/RAD. Appropriately use lung findings in conjunction with [Asthma, COPD, RAD Protocol 2.3A](#).
- See the eFAST protocol for decision support regarding lung sliding. Use lung findings in conjunction with the [Thoracic Injuries Protocol 4.8](#).

PEARLS:

- Always use B-Line pattern findings in conjunction with history, conventional findings, and clinical presentation.
- B-Lines are not specific to cardiogenic pulmonary edema and may be present in other conditions (e.g., pneumonitis, pulmonary contusion).

Focused Echocardiography in Cardiac Arrest

Non-Shockable Arrest

Indications:

- Evaluation for organized cardiac activity in non-shockable cardiac arrest once initial ACLS interventions are complete [high-quality CPR, IV/IO access, airway management, 1st dose of epinephrine (if indicated)] as per [Cardiac Arrest Adult Protocol 3.2A](#).

Contraindications:

- POCUS should not be used during cardiac arrest with a shockable rhythm (V Fib, V Tach).
- POCUS should not be used outside of ACLS rhythm checks and must not increase the duration of rhythm checks.
- Minimum crew configuration for ultrasound in cardiac arrest is 1 POCUS-trained paramedic and 2 additional providers or 1 additional provider and automated compression device in place and actively compressing. Do not use ultrasound while task-saturated or when crew configuration is not met.

PEA Procedure:

1. Confirm: non-shockable arrest crew configuration met initial ACLS complete.
2. Obtain adequate window during compressions without interrupting compressions.
3. Capture and record clip during rhythm check without extending rhythm check.
4. Resume CPR, review and interpret clip during CPR and apply findings.

Decision Support:

- See Cardiac Arrest POCUS algorithm.

Protocol Continues

PEARLS:

- Early identification of pseudo-PEA is associated with significantly higher rates of survival.



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PARAMEDIC – PREREQUISITE REQUIRED - Continued

Focused Echocardiography in Cardiac Arrest continued.

Termination of Resuscitation

Indication:

- Confirmation of cardiac standstill/agonal motion prior to termination of resuscitation (TOR) when TOR criteria are met per [Resuscitation Initiation and Termination Protocol 8.15](#).

Contraindications:

- POCUS should not be used during cardiac arrest with a shockable rhythm (V Fib, V Tach).
- POCUS should not be used outside of ACLS rhythm checks and must not increase the duration of rhythm checks.

Minimum crew configuration for ultrasound in cardiac arrest is 1 POCUS-trained paramedic and 2 additional providers or 1 additional provider and automated compression device in place and actively compressing. Do not use ultrasound while task-saturated or when crew configuration is not met.

TOR Procedure:

1. Confirm TOR criteria are met.
2. Obtain a subxiphoid or parasternal long axis view and confirm standstill/agonal motion.
3. Use findings in conjunction with conventional information (ECG, EtCO₂, pulse check).

Decision Support:

- Use echo for decision support when TOR criteria are met by confirming cardiac standstill/agonal motion for 15 - 30 seconds.

Ultrasound-Guided Peripheral IV Access

Indications:

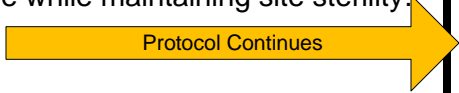
- Any situation where peripheral IV access is indicated per protocol.
- Patients with known or expected difficult vascular access using conventional cannulation techniques.

Contraindications:

- Do not perform ultrasound-guided IV access if it will delay treatment and/or transport of a critical patient.
- Do not perform ultrasound-guided IV access when indications for intraosseous access are met and there is need for rapid vascular access.

Procedure:

- 1: Prepare IV supplies prior to ultrasound use.
- 2: Scan appropriate access site for a target vein, use doppler as needed.
- 3: Confirm target is a vein with compression.
- 4: Perform guided venipuncture using the short or long axis technique while maintaining site sterility.

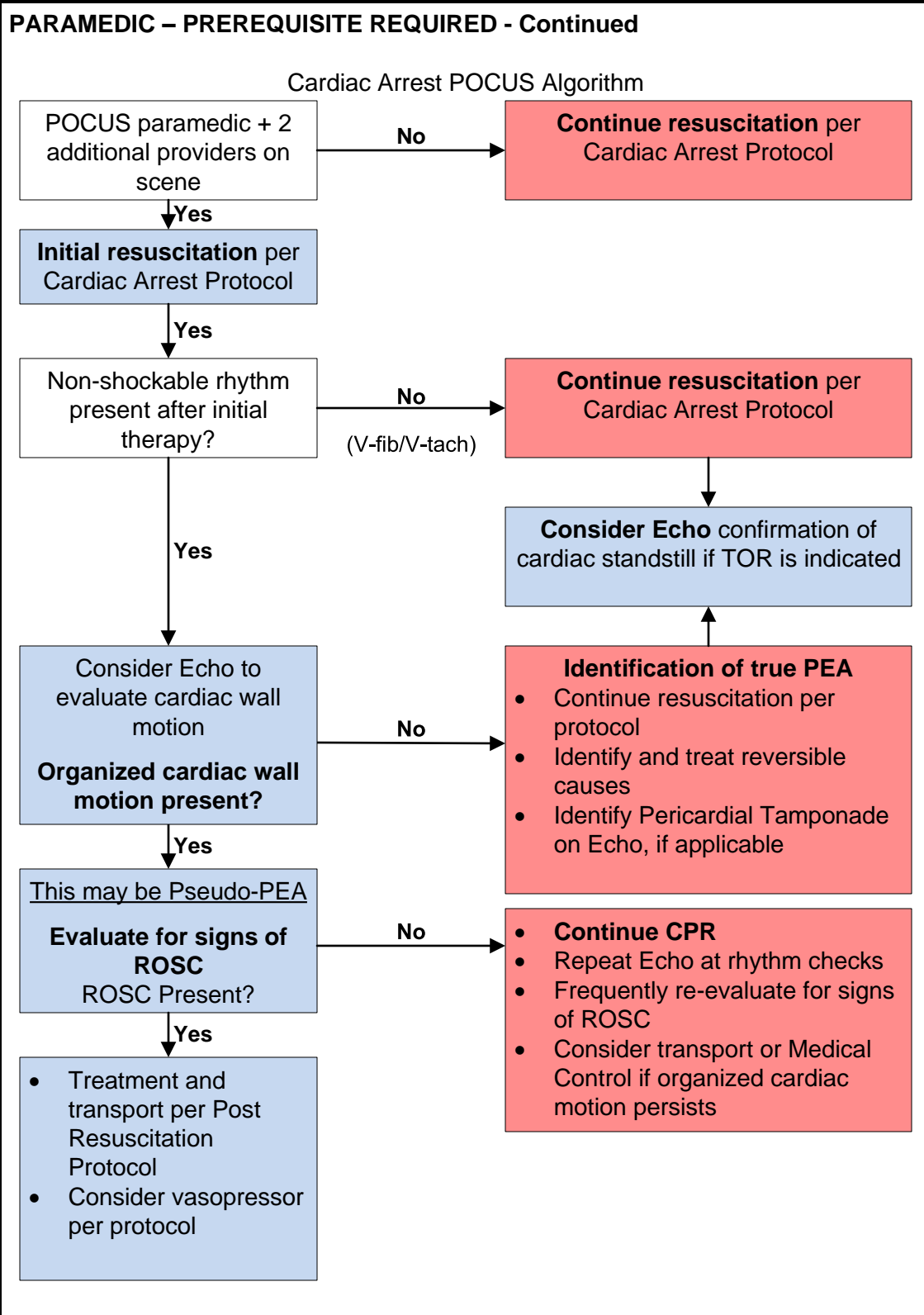


7.7

Point of Care Ultrasound

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Protocol Continues



Prerequisite Protocol 7.7