# Jackson Hole Fire/EMS Operations Manual

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Title: **Point of Care Ultrasound (POCUS)**
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**Point of Care Ultrasound (POCUS)**
**(Procedure Guideline)**

**All EMRs, EMTs, Advanced EMTs and Paramedics shall operate within their authorized Scope of Practice as limited to those skills and medication approved for use by the Physician Medical Director and Physician Task Force on Pre-Hospital Care as approve and authorized by the Wyoming Board of Medicine**

**Scope of Practice:** Paramedic (POCUS as indicated, available, and trained)

**Clinical Indications:**

- Cardiac Arrest - Determine presence of cardiac activity during CPR pulse checks (trauma and medical) to aid in determination of ongoing treatment/transport (reversible causes) or Termination of Resuscitation (TOR).
- Extended Focused Assessment by Sonogram for Trauma (eFAST) to diagnose potentially correctable serious injury (e.g. tension pneumothorax).
- Undifferentiated Shock
- Undifferentiated Dyspnea
- Use POCUS to aid in transport method (air vs. ground) and hospital destination in conjunction with medical control

**Contraindications: None**

**Precautions:**

- POCUS should not delay other primary patient care interventions.
- Do not interrupt CPR to perform a POCUS exam. Perform POCUS during regular pulse check intervals when appropriate number of trained rescuers are present.

**Technique: as trained**

**Procedures:**

- Ensure proper body substance isolation precautions.
- Explain the procedure to the patient, if possible, (e.g. that you are performing a limited ultrasound exam which involves some gel and should not be painful).
- Turn on ultrasound.
- Select appropriate exam preset (eFAST, cardiac activity, lung-pneumothorax).
- Perform and interpret ultrasound exam, record images.

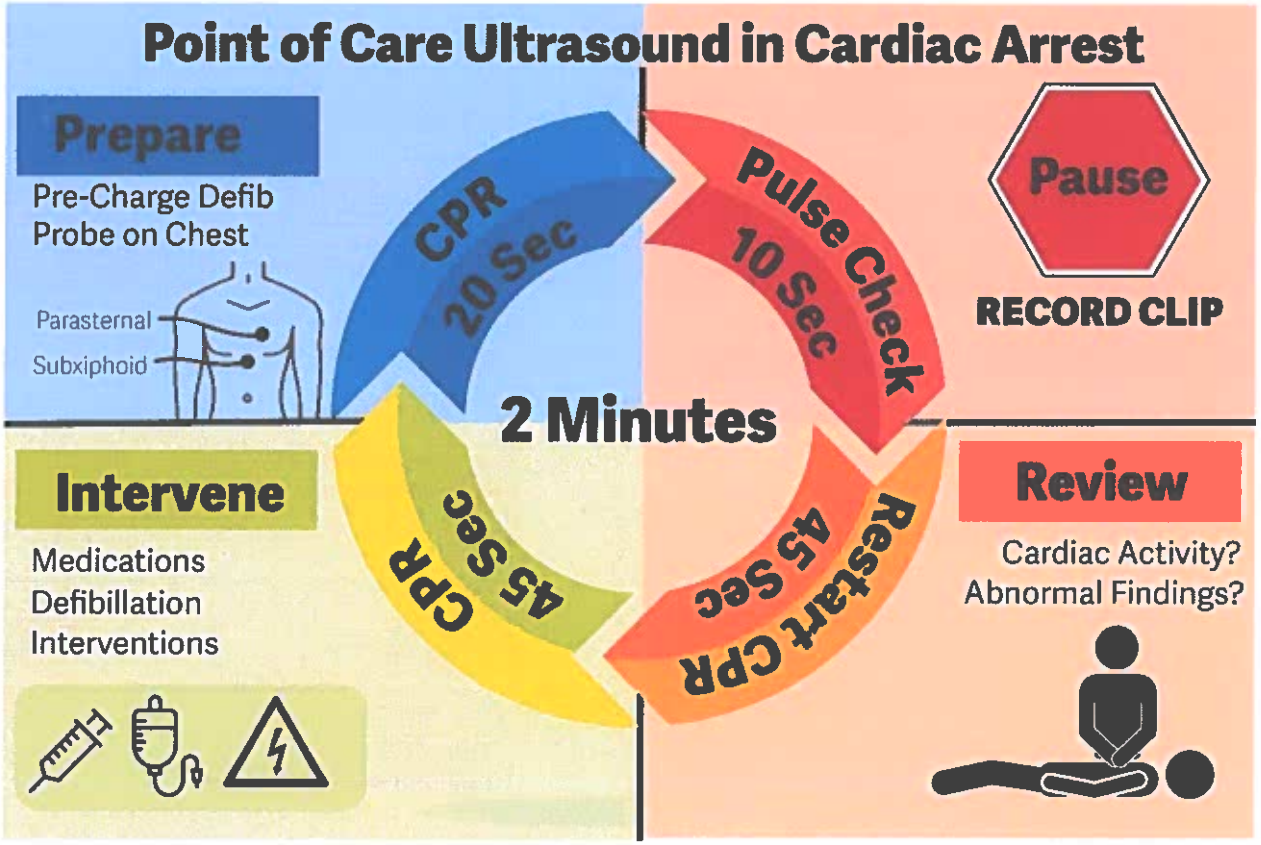
- Provide appropriate clinical interventions as indicated based on findings (i.e. Tension Pneumothorax)
- Clean the probes, cord, screen, with appropriate germicidal wipes.
- Document ultrasound findings and procedure in the ePCR.

**Documentation Examples:**

- "EFAST indicated no pericardial effusion, intraperitoneal fluid, or pneumothorax."
- "Patient in PEA. During pulse check, no mechanical cardiac activity observed with ultrasound."

**Specific Notes regarding each potential patient care setting:**

- Cardiac Arrest
- eFAST



## CARDIAC ULTRASOUND IN OUT-OF-HOSPITAL CARDIAC ARREST

**GENERAL**

- Ultrasonography is a useful diagnostic adjunct for patients in cardiac arrest. While a cardiac monitor provides information about the electrical activity of the heart, ultrasound provides information about the heart's mechanical activity. These tools in combination allow providers to make an accurate assessment of the patient's physiology
- A reversible cause of cardiac arrest may also potentially be identified
- Capturing a visual demonstration of the heart's mechanical activity during out-of-hospital cardiac arrest will contribute to the body of evidence surrounding cardiac activity and the long-term survival after out-of-hospital cardiac arrest

**PARAMEDIC**

- Reference **Adult Cardiac Arrest (Non-Traumatic) Guideline**
- Perform cardiac ultrasound exam by assessing the heart with transducer in one of the following windows:
  - *Sub-xyphoid*
    - Place transducer into subxiphoid space on anterior abdominal wall
  - *Parasternal Long Axis*
    - Place transducer to the left of the sternum in 3rd-5th intercostal space, with the transducer indicator facing the patient's left shoulder
      - View may be inaccessible if mechanical CPR device is in place
- Perform ultrasound during pulse/rhythm check, taking no longer than 6-8 seconds
- Ventilations and chest compressions should be paused while ultrasound is obtained
- Video ultrasound clips, and paramedic's interpretation of each should be captured and saved to the ultrasound device/cloud. These media files should be uploaded to the PCR for QA/QI and review by the medical director(s)

**NOTES**

- Consult On Line Medical Control for assistance interpreting ultrasound images and/or advanced medical decisions regarding treatment and/or possible Termination of Resuscitation (TOR)
- Ultrasound is an adjunct to the primary management of out-of-hospital cardiac arrest. Perseverating on the presence or absence of a given ultrasound finding in lieu of actively monitoring and responding to the patient's actual clinical condition is not beneficial

## EXTENDED - FOCUSED ASSESSMENT WITH SONOGRAPHY FOR TRAUMA (E-FAST)

**GENERAL**

- FAST is a useful diagnostic adjunct for patients with traumatic injuries to the thorax and abdomen. Identifying intra-abdominal or intra-thoracic bleeding in the field can provide advanced notification to the receiving hospital about the potential criticality of a patient, may identify injuries not detectable by history or physical assessment, or reveal potentially serious injuries in a patient whose mechanism of injury may not have initially raised suspicion for serious trauma.
- Ultrasound assessment of the lungs is helpful for identifying causes of respiratory distress. Pneumothorax, hemothorax, pleural effusion, pulmonary edema and viral lower respiratory tract infection have characteristic sonographic appearances that may guide the prehospital management of patients with these conditions manifesting as respiratory difficulty

**PARAMEDIC**

- Perform E-FAST exam by assessing the following body windows with transducer:
  - *Right Abdomen (Hepato-renal - Morrison's Pouch)*
    - Place transducer on right upper flank in mid-axillary line. Identify liver and right kidney. Scan throughout this region, visualizing:
      - liver tip and edge and right kidney
      - posterior inferior aspect of right pleural space
      - thoraco-lumbar vertebral bodies
  - *Left Abdomen (Spleno-renal Space)*
    - Place transducer on left upper flank in mid-axillary line. Identify spleen and left kidney. Scan throughout this region, visualizing:
      - Spleen and left kidney
      - posterior inferior aspect of left pleural space
  - *Sub-xyphoid (Cardiac) or Parasternal Long Axis (if needed)*
    - Place transducer into subxiphoid space on anterior abdominal wall, utilizing liver as a sonographic window if necessary. Evaluate for the presence of free fluid within the pericardium
  - *Suprapubic*
    - Place transducer just superior to pubic symphysis on anterior abdominal wall. Fan the transducer back and forth to image through the bladder and to evaluate the space surrounding it for potential blood loss
  - *Pneumothorax*
    - Absent Lung Sliding Sign
    - Absent Seashore Sign
- Video ultrasound clips should be captured and saved to the ultrasound device/cloud. These media files should be uploaded to the PCR for QA/QI and review by the medical director(s)

**NOTES**

- Consult On Line Medical Control for assistance interpreting ultrasound images and/or advanced medical decisions regarding treatment and transport decisions.
- E-FAST is an adjunct to the primary management of blunt and penetrating trauma patients, as well as evaluating other undifferentiated respiratory / shock states. Perseverating on the presence or absence of a given ultrasound finding in lieu of actively monitoring and responding to the patient's actual clinical condition is not beneficial. POCUS should be performed after the primary survey and after other higher priority patient care/interventions.