

# Paramedic POC Ultrasound in Cardiac Arrest

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## Problem Identification

- Out of hospital cardiac arrest (OHCA) without return of spontaneous circulation (ROSC) requires a decision to terminate resuscitative efforts vs transport.
- Persistently high end-tidal CO<sub>2</sub> or PEA present a challenge in identifying ROSC.
- Ultrasound (US) for cardiac wall motion may assist in identifying ROSC.

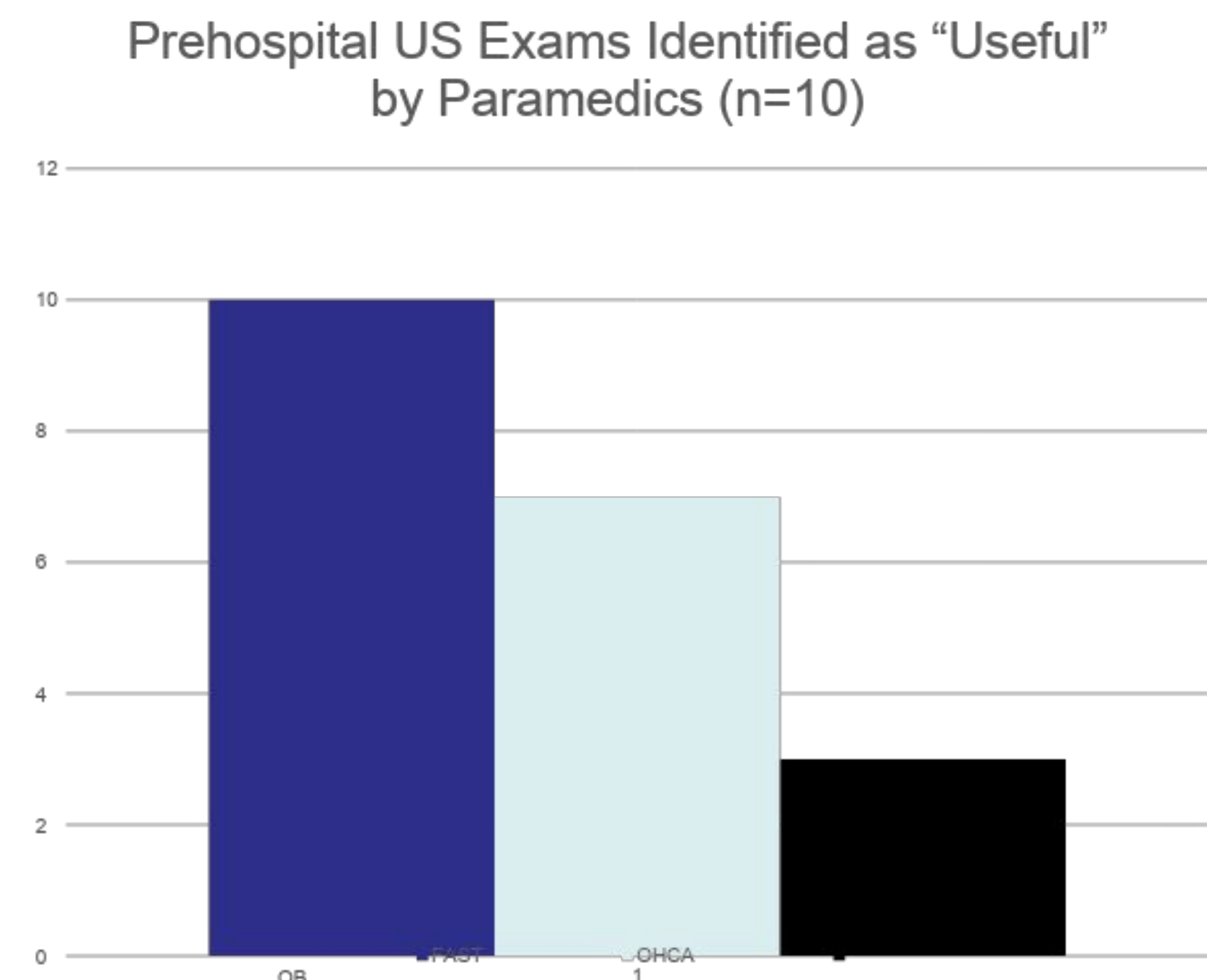
## Needs Assessment

- A text message survey of paramedic supervisors gauged familiarity with and interest in US.
- Paramedics were asked which US exams they felt might be useful prehospital.
- Funding requested for two EMS fellow handheld devices, single portable unit currently on loan from US Fellowship.
- Other paramedic US curricula were reviewed to build our OHCA US curriculum.

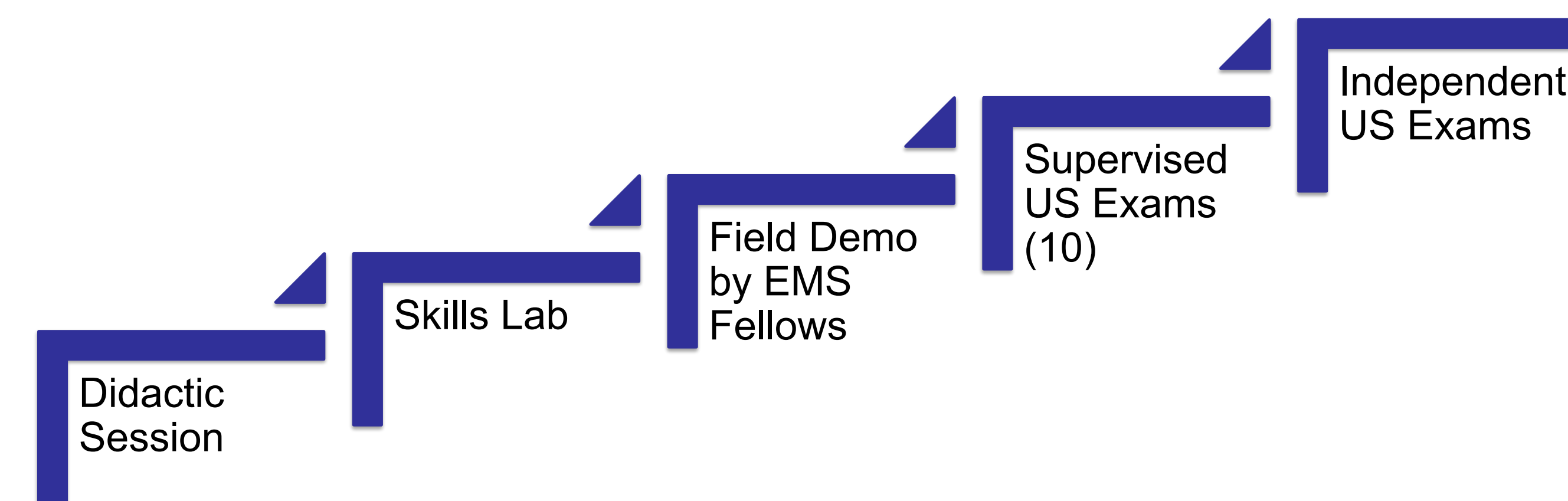
## Goals and Objectives

Upon completion of the US program, paramedics should be able to:

- Describe the basics of US technology
- Display the ability to perform POC cardiac US in OHCA
- Recognize important cardiac findings
- Integrate findings into decision to terminate or transport



## Educational Strategy



## Needs Assessment Comments

Erin: If we learn how to give this training we can eventually get it on every ambulance.

Jordan: I can see the use in finding tamponade or pending tension pneumo.

Parshaw: I think the learning curve would be pretty steep for someone that's only going to use this occasionally.

Susan: I'd keep it with the CPR devices (*on supervisor trucks*). Then you have a team of CPR/US experts.

Joe: This needs to be rolled out with preceptors like with paramedic students.

## Educational Strategies

- Didactics
  - Paramedics will learn the basics of US technology and specifics of the cardiac exam
- Workshops
  - Paramedics will learn and demonstrate practical skills on standardized patients
- Progressive practicals
  - Progression from EMS fellow demonstration to direct oversight of paramedic by fellow to independent paramedic exam

## Implementation

- Paramedics complete didactic training session on US theory and OHCA exam
- US skills are practiced and assessed in standardized patient workshop
- Portable US deployed to EMS fellows who respond to OHCA with paramedic supervisors and demonstrate ten US patient encounters.
- Paramedics perform US exams under fellow direct supervision.
- Upon completion of above steps, paramedic supervisors are issued a handheld US device with recording capacity.

## Evaluation

- Kirkpatrick Model of Evaluation was used to examine program success:
- An SMS-based post-training survey evaluates the reaction level ("Is this still interesting?")
- Learning evaluation by way of didactic pre-and post-tests as well as supervised US exams
- Behavior evaluation via weekly cardiac arrest review: US images, OHCA characteristics triggering US use, documented findings
- Results: Post-implementation review to evaluate for measurable change in high end-tidal or PEA code dispositions

## Charts

### Evaluation

#### Reaction

- 100% found prehospital US "Interesting"
- SMS-based survey post-training to determine if this remains true

#### Learning

- Didactic post-test
- Supervised US exams in the skills lab and field

#### Behavior

- Medical director review of image quality, documented findings, OHCA characteristics triggering US use

#### Results

- Post-implementation OHCA review: Was there a measurable change in high end-tidal or PEA code termination vs transport?

## Needs Assessment Comments

Erin: If we learn how to give this training we can eventually get it on every ambulance.

Allan: I can see the use in finding tamponade or pending tension pneumo.

Rami: I think the learning curve would be pretty steep for someone that's only going to use this occasionally.

Susan: I'd keep it with the CPR devices (*on supervisor trucks*). Then you have a team of CPR/US experts.

Joe: This needs to be rolled out with preceptors like with paramedic students.

### Selected Needs Assessment Comments:

- Erin: We can learn how to give the training and eventually get this on every ambulance.
- Allen: I can see the use of looking for tamponade or pending tension pneumothorax.
- Rami: I think it would be a pretty steep learning curve for a medic that's only going to use this occasionally.
- Susan: I'd keep it with the CPR devices. Then the supervisors are your CPR/US experts.
- Stephan: This should be rolled out with preceptors like the paramedic students.