



# **Using Ultrasound To Guide Management In Cardiac Arrest**

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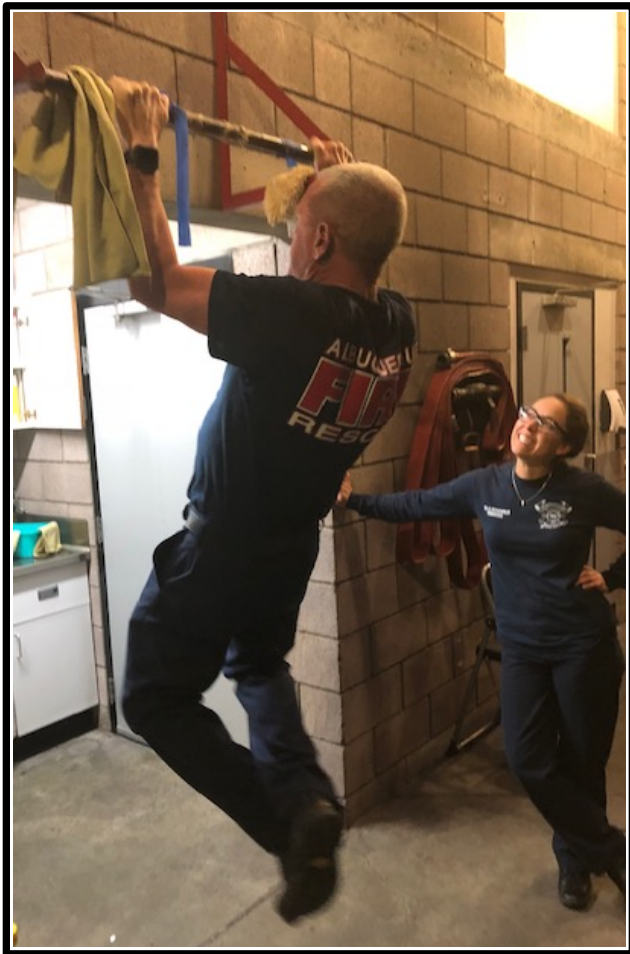
I Have No Disclosures

# Phillips Lumify and Android Tablet



# Albuquerque Fire Rescue “78s”

Highly experienced field paramedic captains



# UNM EMS Fellows



24/7 Scene Response and On-Line  
Medical Direction



# Ultrasound Approval Process

- Apply to NM State EMS Board
  - Paramedic Special Skill
  - Cardiac arrest only
- Report outcomes at 1 year
  - Frequency of usage
  - Outcomes
  - QA metrics



# 8 Hours Didactic and Hands-On Training With EMS Physician Faculty

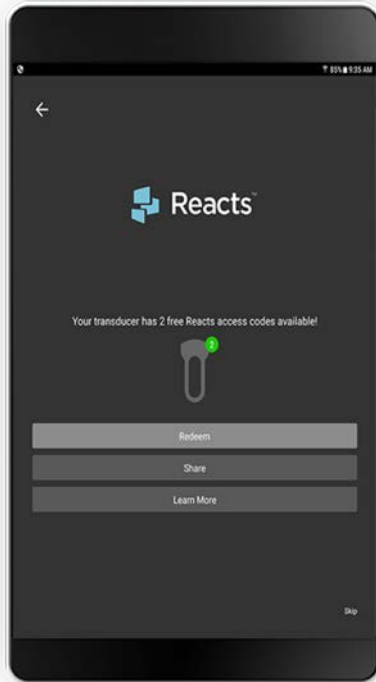


# Is There Any Squeeze?

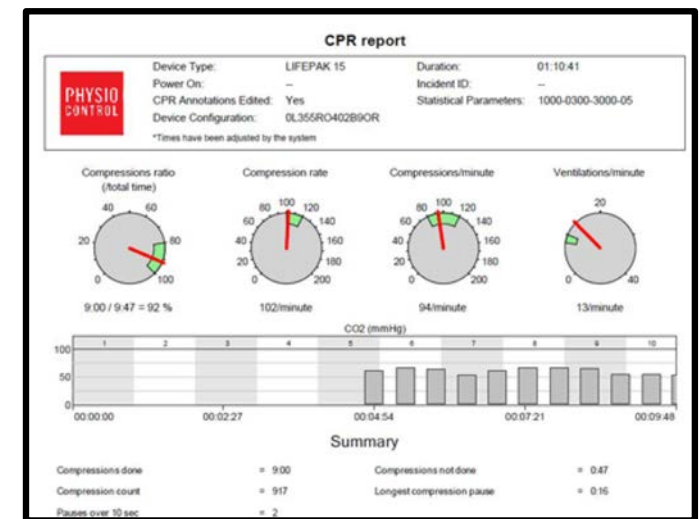




# Quality Assurance Measures



The image shows a mobile application interface for ELITE FIELD. The screen is divided into two main sections. On the left is a sidebar menu with the following items: "Response" (highlighted in red), "Unit & Crew Info", "Response Info", "Times/Mileage", "Patient Encounter", "Transport", "Billing", "Narrative", and "Signatures". The main section is titled "Unit & Crew Info" and contains the following fields: "EHS Agency Number" (00939), "EHS Unit Call Sign" (dropdown menu), "EHS Vehicle (Unit) Number" (dropdown menu), "Primary Role of the Unit" (radio buttons for "Ground Transport", "Non-Transport First Responder", and "Extrication or Other Specialty Unit"), "Level of Care of this Unit" (dropdown menu), and "Crew Members" (with an "Add" button).



# **Case Studies**



# 46 Year Old Female “Sick”

- PMH: COPD, PE with IVC filter, hypothyroid, adrenal insufficiency, HLD, GERD
  - “Not feeling good since yesterday”
- Arrested on EMS arrival
  - ACLS initiated
  - LMA placed
  - IO access





**PEA 60-80**  
**End Tidal 50-60**



# What Does The End Tidal Increase Suggest?



**Just Good CPR?**



**ROSC?**

# Cardiac Ultrasound



# Cardiac Ultrasound



**LEVOPHED**

Strength \_\_\_\_\_ mg/mL

Exp. Dt./Tm. \_\_\_\_\_

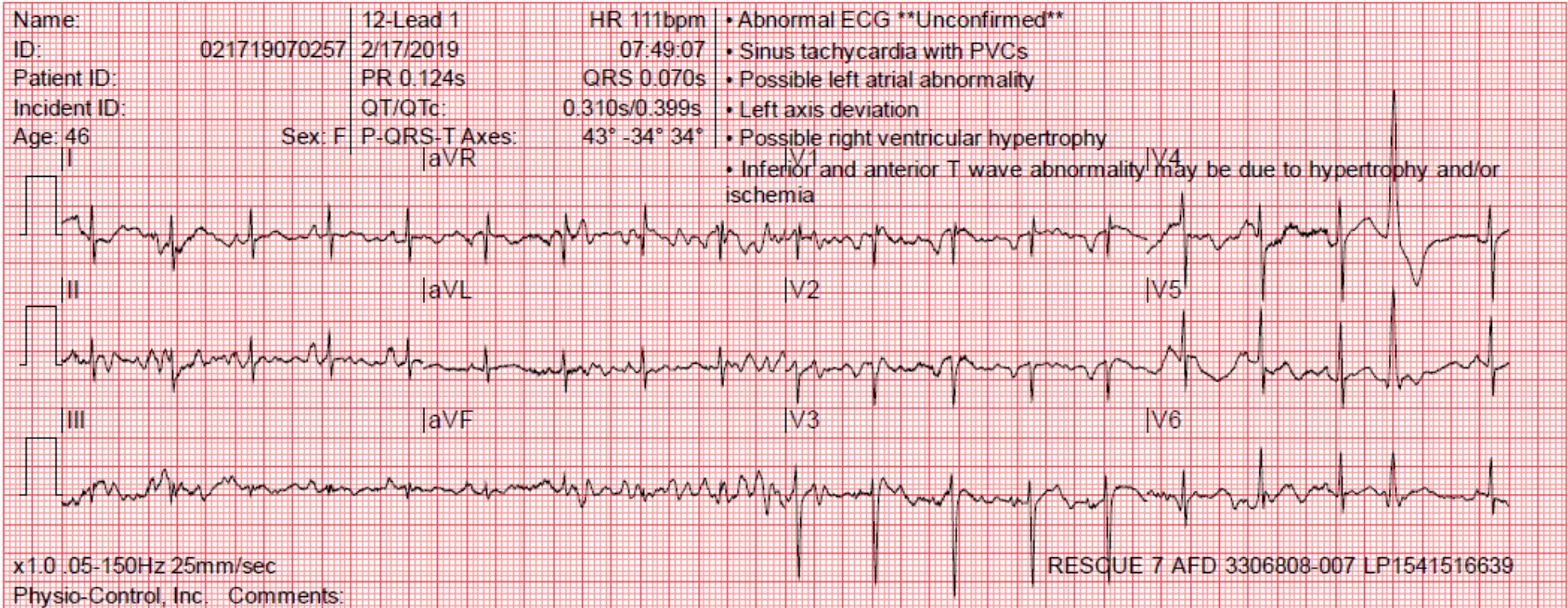
**EPInephrine**

Strength \_\_\_\_\_ mcg/mL

Exp. Dt./Tm. \_\_\_\_\_



# Post ROSC 12 Lead EKG



ST measurements are measured at the J point and are expressed in mm.

I	II	III	aVR	aVL	aVF	V1	V2	V3	V4	V5	V6
0.03	-0.04	-0.02	0.01	0.08	-0.05	0.19	0.00	0.51	0.01	0.64	0.12

To ensure printer accuracy, confirm that the calibration markers are 10mm high and the grid squares are 5mm wide.



**Multifocal Pneumonia**



# **Awake and Following Commands**

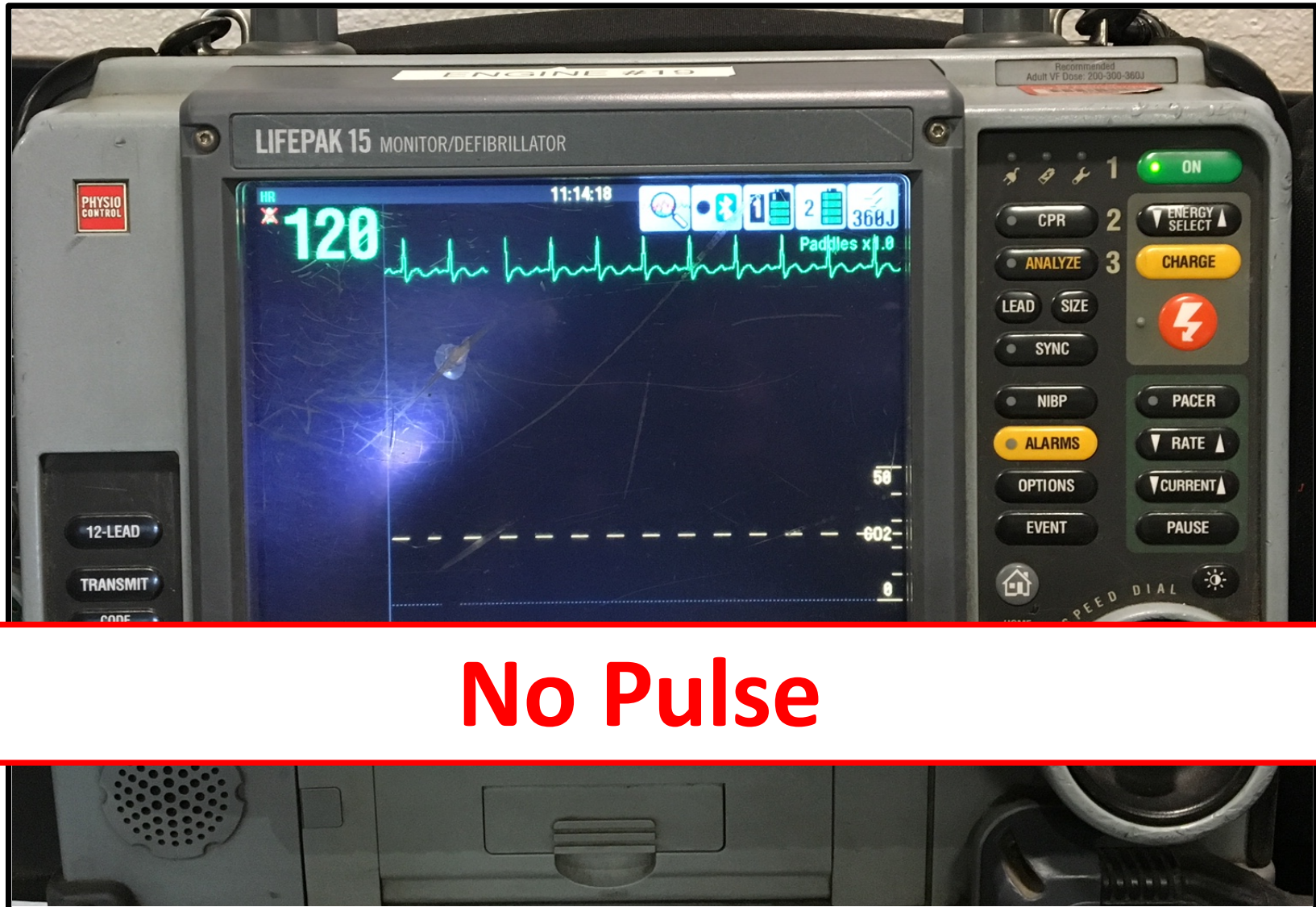
# 27 yo Male, Unresponsive

- Family finds him in the bathroom
- Bystander CPR
- Asystole → PEA → V-Tach → PEA
- ACLS
  - IO
  - 3 Rounds of EPI
  - LMA and BVM





PEA Near 100 Consistently  
Initial End Tidal 10 → Now 30

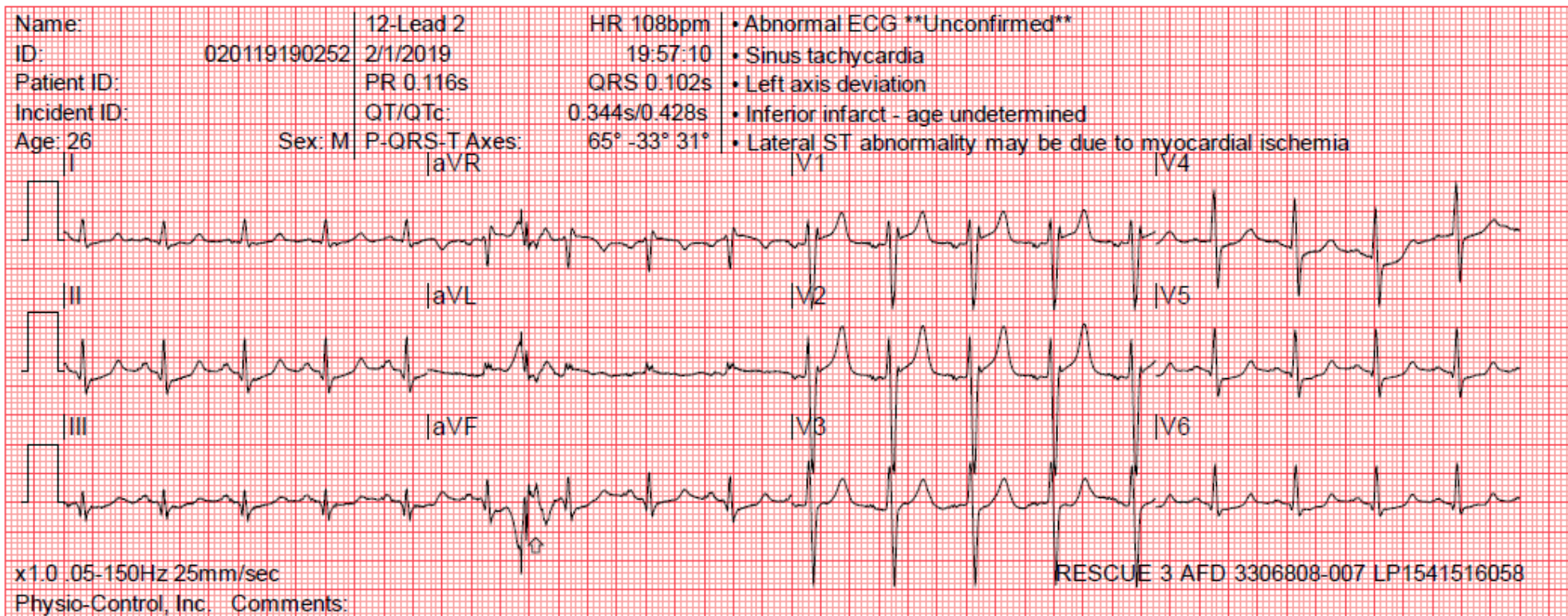


**No Pulse**

# Ultrasound Images



# Post ROSC



ST measurements are measured at the J point and are expressed in mm.

I	II	III	aVR	aVL	aVF	V1	V2	V3	V4	V5	V6
-0.27	-1.29	-1.02	0.78	0.36	-1.16	0.87	0.88	-0.36	-1.28	-1.15	-0.83

To ensure printer accuracy, confirm that the calibration markers are 10mm high and the grid squares are 5mm wide.

# Outcome

- Anoxic brain injury
- Comfort care
- Died next day





# 89 Year Old Male SOB

- Recently released from hospital for bradycardia
  - Awaiting pacemaker placement
- Arrests on EMS arrival
  - Immediate Pit Crew CPR
  - Narrow, Slow PEA



# Ultrasound Changed Our Direction

- Atropine
- Epi Drip
- Pacing
  - Could not capture



Proceeded to asystole confirmed by US

# Conclusions

- Ultrasound can be used by experienced and well-trained paramedics to guide resuscitation management in cardiac arrest
  - Really helpful in PEA arrest
- Need to be careful about time off the chest while trying to get a good view

# Questions?

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