

A Nor-Cal EMS Webcast:  
Prehospital ultrasound – Useful Procedure or  
Just Another Toy?

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# A Nor-Cal EMS WebCast For Continuing Education

A Live Presentation from the  
2017 Northstate  
Prehospital Conference

Presented by Markus Dorsey-Hirt, RN, CFRN,  
Chief Flight Nurse, Care Flight. Recorded live  
in front of an audience at the April 22, 2017  
Northstate Prehospital Conference.

# Pre-Hospital Ultrasound Useful Procedure Or Just Another Toy?

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Chief Flight Nurse  
Care Flight



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## Benefits Of Pre-Hospital Ultrasound

- Only reasonable option for imaging in EMS
- Portability
- Non-invasive diagnostic procedure
- Can be performed during transport
- Multiple uses, i.e.:
  - extended Focused Assessment with Sonography in Trauma (eFAST)
  - Confirmation of cardiac standstill
  - Confirmation of endotracheal intubation
  - Potential in diagnosis of ischemic stroke
  - Confirmation of viable fetus
- Can help with destination decisions
- Can help with treatment decisions (i.e. TXA administration)
- Fairly inexpensive



## Limitations and Pitfalls

- Requires extensive training of EMS crews
- False negatives
- Potential to delay transport
- Ties up the hands of one provider
- Consider transport times (does it make a difference with a 10 minute ETE?)

## False Negatives

- While the overall false negative rate is fairly low (2-10%), there are factors that can inhibit diagnostic significance:
  - Time since injury
  - Location of injury
  - Abdominal adhesions
  - Bowel gas patterns
  - Volume status
  - Patient positioning
  - Quality of exam

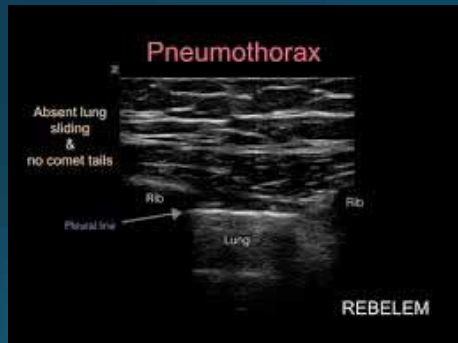
## What are we looking for?

- Hemopericardium



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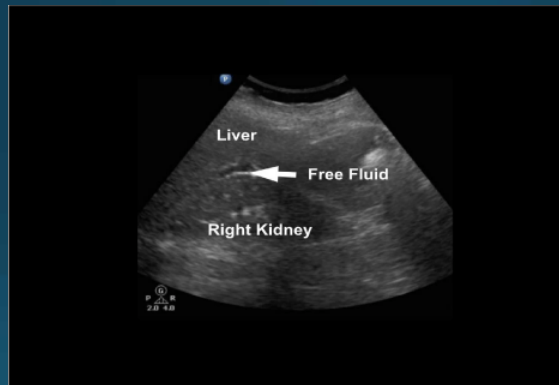
## What are we looking for?



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## What are we looking for?

- Free abdominal fluid

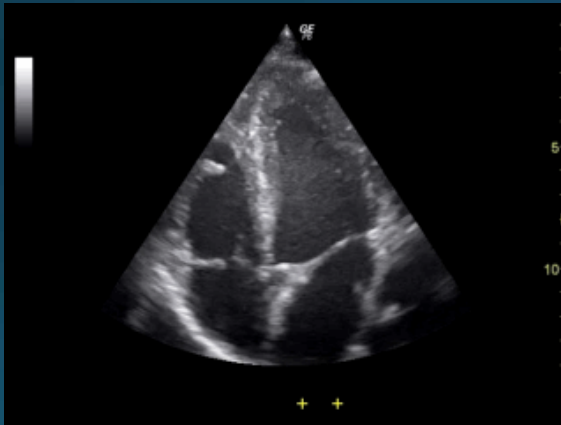


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## What are we looking for?

- Cardiac movement



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## What are we looking for?

- Endotracheal vs. esophageal intubation



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## What are we looking for?

- Viable fetus



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Many more applications...

## Devices:



## Where can ultrasound make a significant difference in patient outcome?

- Destination decision (i.e. Should we go to the trauma center direct, or do we need to stop at a closer facility to evacuate pericardial tamponade)
- Mode of transport: Air vs. ground....Can we rendezvous with a helicopter enroute, or do we need to go to the closest facility for initial treatment?
- Treatment decisions: TXA, blood products, Needle/tube thoracostomy, fluid status (need for more fluid boluses vs. catecholamine infusion, confirmation of endotracheal intubation vs. need for reintubation or rescue airway, cessation of resuscitative efforts and declaration of cardiac death.

## Which agencies should consider investing in ultrasound technology?

- HEMS with expanded scope of practice and wide rural area coverage.
- Rural EMS with long transport times.



## Implementation

- Requires intense training ... about 6-8 hours to start with
- Recurrent training
- Well thought-through protocols and procedures
- Medical director support
- Focused CQI/QA (most devices save and record studies)



## Conclusion

- Is it a must have? No
- Is it nice to have? Definitely yes
- Can it benefit patient outcome? Yes .... If applied for the right patient population and under the right circumstances
- Does it cost a lot? Considering acquisition cost, training, time to develop protocols, procedures etc... up to each agency
- Will it be standard of care? Let's discuss...

## Questions?

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Hold on Tight – Test Questions Review Next . . .

## TEST REVIEW – Question 1

1. Pre-hospital ultrasound can rule out abdominal bleeding.
  - A. True
  - B. False

## TEST REVIEW – Question 2

2. Use of pre-hospital ultrasound can be learned in an hour.
  - A. True
  - B. False

## TEST REVIEW – Question 3

3. Pre-hospital ultrasound can aid in intubation confirmation.
  - A. True
  - B. False

## TEST REVIEW – Question 4

4. TXA is an anticoagulant.

- A. True
- B. False

## TEST REVIEW – Question 5

5. Ultrasound can look past bones.

- A. True
- B. False



**Thank You Very Much!**