Ultrasound in Pre-hospital Cardiac Resuscitation

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Pre-hospital U/S

- ***IS THIS TECH USEFUL?***
- ***WHERE / SHOULD WE USE IT IN EMS?***

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Pre-hospital U/S

- ***Where are we in ground-based EMS?***

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Price DD, Wilson SR, Murphy TG: **Trauma ultrasound feasibility during helicopter transport.**
Air Med J 2000, **19**(4):144-146. PubMed Abstract | Publisher Full Text

Mazur SM, Sharley P: **The use of point-of-care ultrasound by a critical care retrieval team to diagnose acute abdominal aortic aneurysm in the field.**
Emerg Med Australas 2007, **19**(1):71-75. PubMed Abstract | Publisher Full Text

Price DD, Wilson SR, Murphy TG.
Trauma ultrasound feasibility during helicopter transport. *Air Med J.*2000;19:144-146.

Melanson SW, McCarthy J, Stromski CJ, Kostenbader J, Heller M.
Aeromedical trauma sonography by flight crews with a miniature ultrasound unit. *Prehosp Emerg Care.*2001;5:399-402.

Heegaard W, Plummer D, Dries D, Frascone RJ, Pippert G, Steele D, Clinton J.
Ultrasound for the air medical clinician. *Air Med J.*2004; 23(2):20-23.

Early Adopters

EMS Profile: Odessa Fire Department

- TX: Early 2000's adopted pre-hospital U/S, recognized at 1st World Congress of U/S in Milan in '05 for 1st PM U/S program in world

- ***Then what happened??***

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Why cardiac arrest?

- One pre-hospital disease process where entirety of initial resuscitation occurs outside of ED!!
  - **WORK 'EM WHERE YOU FIND 'EM!!**

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ALBUQUERQUE Established 1900 FIRE DEPT.

Can we train to do it right?

Acad Emerg Med. 2010 Jun;17(6):624-30. doi: 10.1111/j.1553-2712.2010.00755.x. Epub 2010 May 14.

Prehospital ultrasound by paramedics: results of field trial.

Heegaard W[1], Hildebrandt D, Spear D, Chason K, Nelson B, Ho J.

Author information

[1]Department of Emergency Medicine, Hennepin County Medical Center, Minneapolis, MN, USA. william.heegaard@hcmed.org

- **9-1-1 Medics trained in FAST & AA U/S**
- **6hr course, all scans in "back of the bus" enroute to ED**
- **104 scans, 20 AA & 84 FAST- 8/104 PM no image**
- **100% agreement b/n MD and Medic**

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Do EMS systems see it useful?

BMC Emergency Medicine 2014, **14**:6 doi:10.1186/1471-227X-14-6

Use of prehospital ultrasound in North America: a survey of emergency medical services medical directors

John Taylor[1,2*], **Kyle McLaughlin**[3], **Andrew McRae**[3], **Eddy Lang**[3] and **Andrew Anton**[3,4]

* Corresponding author: John Taylor jataylo@ucalgary.ca ▾ Author Affiliations

1 University of Calgary MD program, #108 1990 West 6 Avenue, Vancouver, BC V6J 4V4,

- **Cross section survey of NAEMSP EMS directors**
- **30% response 225 of 755**
- **22% of respondents considering U/S!**
- **Most common indicators for use- FAST & PEA**

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Is there science for it?

Acad Emerg Med. 2001 Jun;8(6):616-21.

Outcome in cardiac arrest patients found to have cardiac standstill on the bedside emergency department echocardiogram.

Blaivas M[1], Fox JC.

- **169 pts enrolled, subxiphoid or parasternal view**
- **136 echo confirmed cardiac standstill/ 52% had rhythm**
- **NO pt w/ cardiac standstill survived regardless of initial presenting ED rhythm**
- **PPV w/ standstill for death→100%**

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Is there science for it?

Am J Emerg Med. 2005 Jul;23(4):459-62.

Does the presence or absence of sonographically identified cardiac activity predict resuscitation outcomes of cardiac arrest patients?

Salen P[1], Melniker L, Chooljian C, Rose JS, Alteveer J, Reed J, Heller M.

- **Only looked at PEA & Asystole pts**
- **70 pts→36 Asys/34 PEA**
- **No cardiac activity= OMI regardless of rhythm**
- **Time interval for efforts by EMS or ED no predictors of ROSC**

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Is there science for it?

Prehosp Emerg Care. 2012 Apr-Jun;16(2):251-5. doi: 10.3109/10903127.2011.640414. Epub 2012 Jan 11.

Cardiac movement identified on prehospital echocardiography predicts outcome in cardiac arrest patients.

Aichinger G[1], Zechner PM, Prause G, Sacherer F, Wildner G, Anderson CL, Pocivalnik M, Wiesspeiner U, Fox JC.

Author information

[1]Austrian Red Cross, Medizinercorps Graz, Austria. g.aichinger@gmail.com

- **U/S inexperienced European EMS MDs, 2 hr EE course**
- **1 subxyph view, +motion=anything Fib→organized rate**
- **42 pts, all w/ adequate cardiac views**
- **+ positive cardiac motion associated w/ survival**
- **Cardiac standstill, AT ANY TIME, PPV 97.1% for death**

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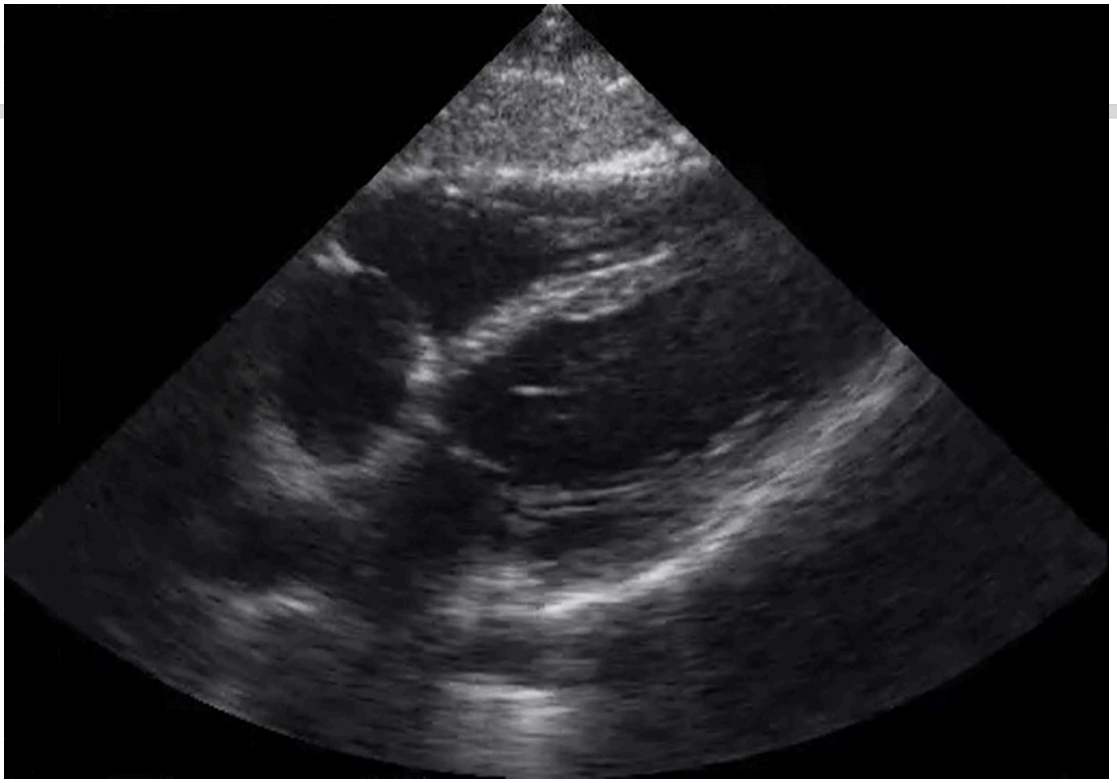
ACUSON P10
personal · powerful · pocket


SonoSite NanoMaxx
STELLAR MSK

Subxyphoid View



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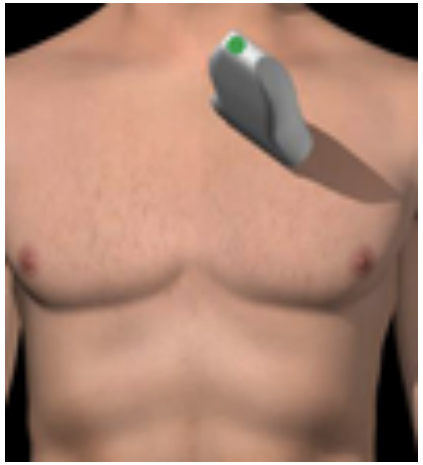
Parasternal Long



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Pre-hospital U/S

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IN CLOSING

- U/S in EMS should START w/ CARDIAC ARREST
- TOR is difficult w/ some cases. This tech can help!
- We can learn this skill in EMS
- Cost, size, durability
- Usefulness can be applied to many conditions
- ***REASON 1 trial*** ***www.clinicaltrials.gov*** ***caveat***
- Stay tuned for ABQ experience- prospective pilot.

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Thank You

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•QUESTIONS?

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