

# Traumatic Cardiac Arrest Guidelines

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**INDIANA UNIVERSITY**

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# Traumatic Cardiac Arrest (TCA)



IU Department of Emergency Medicine



# Causes of TCA

- Severe head trauma
- Hypovolemia
- Tension Pneumothorax
- Pericardial Tamponade
- Hypoxia
- Injury to vital structures
- Rare ventricular dysrhythmia  
(Commotio cordis vs medical etiology)





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# Causes of ~~TCA~~

Don't forget medical causes...  
especially if things don't add up!



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# Survival Rates

**0-2%**

Historically, survival rates generally  
very poor!



# Survival Rates

But....

**1-17% ↑**

More recent studies have showed possibly higher rates in certain subsets.



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## Standard of Care

# NAEMSP POSITION STATEMENT

### WITHHOLDING OF RESUSCITATION FOR ADULT TRAUMATIC CARDIOPULMONARY ARREST

National Association of EMS Physicians and American College  
of Surgeons Committee on Trauma



# NAEMSP EB Guidelines

1. EMS Systems should have protocols for termination/withholding resuscitation.
2. Resuscitative efforts may be withheld on blunt & penetrating trauma patients who are pulseless, apneic, & without organized rhythm.






# NAEMSP EB Guidelines

1. Asystole TCA → <1% survival
2. PEA >40 → greater survival
3. Ventricular dysrhythmias → highest survival
4. TCA + >15 min transport time → low survival



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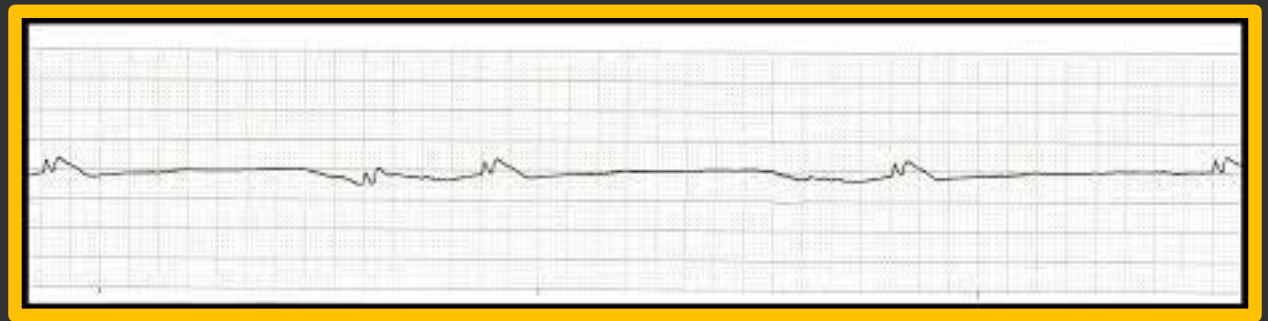


# Without Organized Electrical Activity

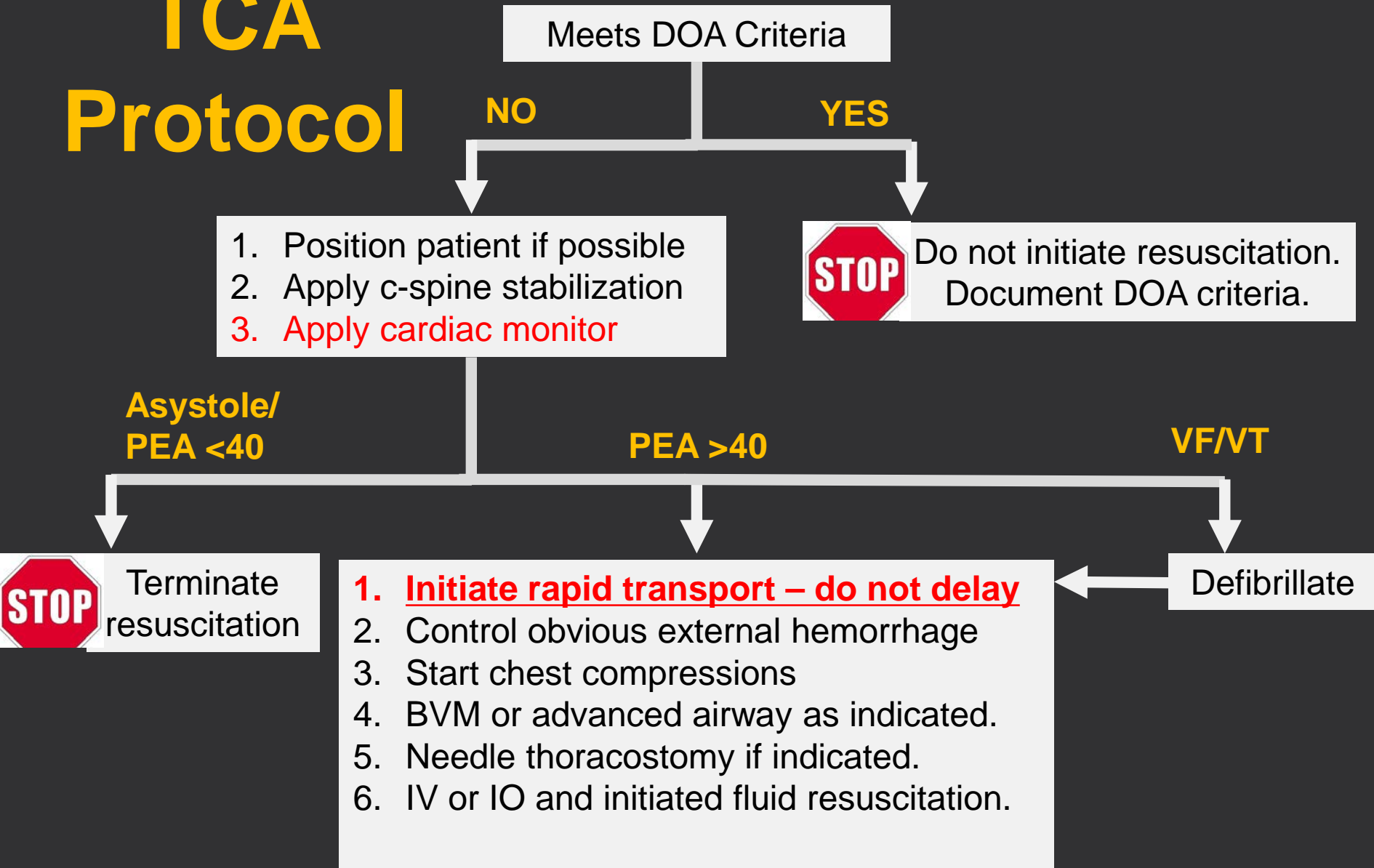
Means we may have to place the pads on them

Rate  $< 40$   $\rightarrow$  No resuscitation indicated

Rate  $> 40$   $\rightarrow$  Begin resuscitation & transport to trauma center



# TCA Protocol





# NAEMSP EB Guidelines

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# Protocol Development

## Things to consider:

1. Access to Trauma Center (<15min transport time?)
2. Available resources
3. Risks of RLS transport
4. Helicopter pros/cons





# Clinical Controversies

DOA Criteria

Rapid Transport

Withholding

CPR?

Needle Thoracotomy?

Termination

Fluids?

Airway?

Monitor?



# Clinical Controversies

Epinephrine:

Chest Compressions:

Needle Thoracostomy:

Ultrasound:

POC Testing:







# Clinical Controversies

Epinephrine:

Chest Compressions:

Needle Thoracostomy:

Ultrasound:

POC Testing:

MAYBE

Limited to no role  
in TCA



# Clinical Controversies

Epinephrine:

Chest Compressions:

Needle Thoracostomy:

Ultrasound:

POC Testing:

YES

CPR still considered standard by NAEMSP, but limited evidence.

Should not impede procedural interventions in TCA.



# Clinical Controversies

Epinephrine:

Chest Compressions:

**Needle Thoracostomy:**

Ultrasound:

POC Testing:

**YES**

Aggressive use in TCA resuscitation when indicated.

Recommend longer needles and mid-axillary line.



# Clinical Controversies

Epinephrine:

Chest Compressions:

Needle Thoracostomy:

Ultrasound:

POC Testing:

MAYBE

Feasible, but no current literature showing improvement in patient treatment.



# Clinical Controversies

Epinephrine:

Chest Compressions:

Needle Thoracostomy:

Ultrasound:

**POC Testing:**

**NO**

No current literature to support prehospital use of POC testing in TCA.



# Diversity of Protocols

## 33 large urban EMS system polled

21% transport asystolic blunt trauma or  
"leave to paramedic discretion"

46% transport asystolic penetrating trauma

82% transport PEA (unspecified rate) penetrating trauma

61% transport PEA (unspecified rate) blunt trauma

\*2010 Brywczyński J



# Challenges

1. Crime scene disturbance.
2. "Incompatible with life" clarification
3. Documentation
4. QI & review with multiagency feedback.





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# Summary

1. Have guidelines for DOA/Withholding Resuscitation
2. Have TCA protocol that reflects NAEMSP Position
3. Anticipate challenges/issues
4. Provide continuous oversight/medical direction







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# Questions?

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Indianapolis Metropolitan EMS Protocols available  
at: <http://mobile.indianapolisems.org/pnp.html>