

Lit Matters: Imaging Post OHCA

Drew Kalnow, DO FACEP

HIPPO
EDUCATION

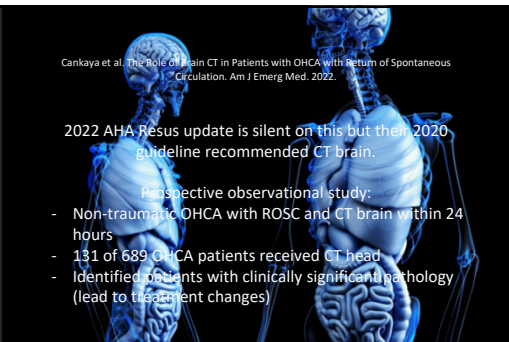
What's the evidence for
obtaining routine advanced
imaging for patient with
OHCA?

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Cankaya, et al: The Role of Brain CT in Patients with OHCA with
Return of Spontaneous Circulation. Am J Emerg Med 2022.

What is the detection rate of
clinically significant pathology
on CT brain imaging in OHCA
patient?

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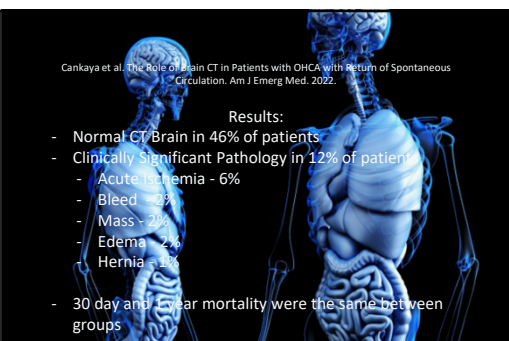
Cankaya et al. The Role of Brain CT in Patients with OHCA with Return of Spontaneous Circulation. Am J Emerg Med. 2022.

2022 AHA Resus update is silent on this but their 2020 guideline recommended CT brain.

Retrospective observational study:

- Non-traumatic OHCA with ROSC and CT brain within 24 hours
- 131 of 689 OHCA patients received CT head
- Identified patients with clinically significant pathology (lead to treatment changes)

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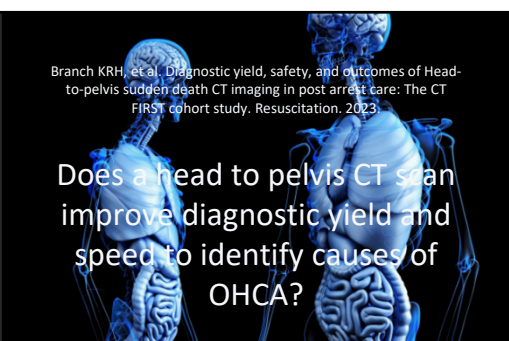


Cankaya et al. The Role of Brain CT in Patients with OHCA with Return of Spontaneous Circulation. Am J Emerg Med. 2022.

Results:

- Normal CT Brain in 46% of patients
- Clinically Significant Pathology in 12% of patients
 - Acute Ischemia - 6%
 - Bleed - 3%
 - Mass - 2%
 - Edema - 2%
 - Hernia - 1%
- 30 day and 1 year mortality were the same between groups

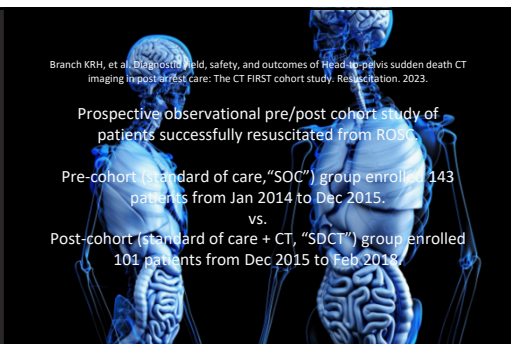
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Branch KRH, et al. Diagnostic yield, safety, and outcomes of Head-to-pelvis sudden death CT imaging in post arrest care: The CT FIRST cohort study. Resuscitation. 2023.

Does a head to pelvis CT scan improve diagnostic yield and speed to identify causes of OHCA?

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Branch KRH, et al. Diagnostic yield, safety, and outcomes of Head-to-pelvis sudden death CT imaging in post-arrest care: The CT FIRST cohort study. *Resuscitation*. 2023.

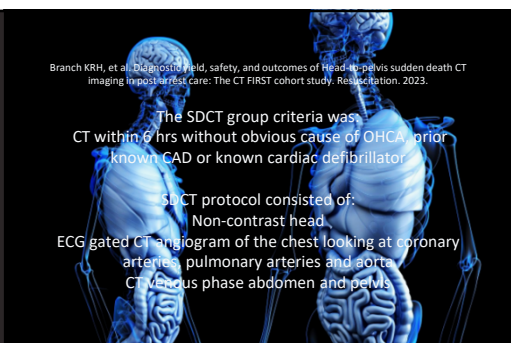
Prospective observational pre/post cohort study of patients successfully resuscitated from ROSC

Pre-cohort (standard of care, "SOC") group enrolled 143 patients from Jan 2014 to Dec 2015.

vs.

Post-cohort (standard of care + CT, "SDCT") group enrolled 101 patients from Dec 2015 to Feb 2018.

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Branch KRH, et al. Diagnostic yield, safety, and outcomes of Head-to-pelvis sudden death CT imaging in post-arrest care: The CT FIRST cohort study. *Resuscitation*. 2023.

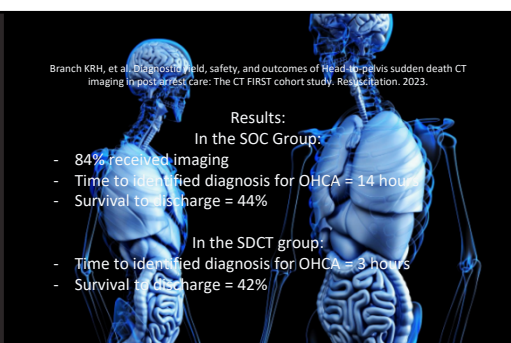
The SDCT group criteria was:

CT within 6 hrs without obvious cause of OHCA, prior known CAD or known cardiac defibrillator

SDCT protocol consisted of:

- Non-contrast head
- ECG gated CT angiogram of the chest looking at coronary arteries, pulmonary arteries and aorta
- CT venous phase abdomen and pelvis

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Branch KRH, et al. Diagnostic yield, safety, and outcomes of Head-to-pelvis sudden death CT imaging in post-arrest care: The CT FIRST cohort study. *Resuscitation*. 2023.

Results:

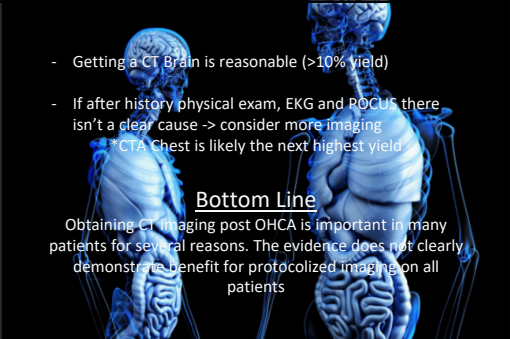
In the SOC Group:

- 84% received imaging
- Time to identified diagnosis for OHCA = 14 hours
- Survival to discharge = 44%

In the SDCT group:

- Time to identified diagnosis for OHCA = 3 hours
- Survival to discharge = 42%

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- Getting a CT Brain is reasonable (>10% yield)
- If after history physical exam, EKG and POCUS there isn't a clear cause -> consider more imaging
 - * CTA Chest is likely the next highest yield

Bottom Line

Obtaining CT imaging post OHCA is important in many patients for several reasons. The evidence does not clearly demonstrate benefit for protocolized imaging on all patients

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Extubation in the Emergency Department

Andy Little, DO

What we will be covering

- Patient Selection
- When to consider
- The algorithm
- The Steps
- Post Extubation Considerations

Why are we talking about this?

- Ventilators are not an infinite resource
- COVID reaffirmed that we need to be better at selecting who we do and don't intubate
- Letting patients just "Get the tube out upstairs" is not always the best option

WARNING

THIS IS NOT A ONE SIZE FITS ALL TALK



ORIGINAL RESEARCH

Descriptive Analysis of Extubations Performed in an Emergency Department-based Intensive Care Unit

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Abstract: Evaluation of appropriate patients in the emergency department (ED) may be a strategy to avoid potential or short stay intensive care unit (ICU) admissions, and could allow for improved ventilation and ICU bed availability when demand exceeds supply. Extubation is increasingly performed in the ED, and a variety of outcome data exists. Our objective was to descriptively analyze characteristics and outcomes of patients extubated in an ED-ICU setting.

Methods: We conducted a retrospective observational study at an academic medical center in the United States. Adult ED patients extubated in the ED-ICU from 2010-2020 were retrospectively reviewed and analyzed.

Extubation in the Emergency Department and Resuscitative Unit Setting

Chidima C. Nwakarima, MD^{1,2}, Brian Joseph Wright, MD, PhD^{1,2}

KEYWORDS:
 • ED Extubation • Resuscitation • Emergency Department Critical Care

KEY POINTS:

- A subset of intubated patients can be extubated in the emergency department (ED).
- Appropriate physician and nurse monitoring is required for ED extubation to detect and manage potential complications and extubation failure.
- The disease process that led to intubation should be reversed before considering extubation in the ED.
- ED physicians should select patients with a low probability of extubation failure for ED extubation.

Patient Selection

- Alcohol-intoxicated head trauma patients following normal CT head
- Patients requiring short-term airway protection for procedural sedation (e.g. endoscopy in the ED)
- Overdose patients with short-term CNS obtundation (e.g. GHB intoxication)
- Patients who require palliation (remember to consider organ donation)

When to Consider

- When you first intubate the patient
 - Use a slightly smaller ETT than usual (e.g. size 7.0 or 7.5 instead of 8.0 on an adult male)
 - Use fentanyl and propofol for sedation (wear off rapidly)
 - Avoid ongoing neuromuscular blockade
 - Consider continuing low dose fentanyl infusion at the time of extubation to control discomfort of intubation or pain from other sources
- Prolonged ED Stay
- Patient wakes up

When to Consider

- Resolution of initial indication for intubation
- Able to oxygenate and ventilate on minimal ventilator settings
- Awake and able to follow commands
- Hemodynamically stable
- Uncomplicated initial intubation
- Expected to maintain airway patency post-extubation
- The anticipated hospital course does not require mechanical ventilation

Step 1- Assess Risk

- Resolution of problem requiring intubation
- It was NOT a difficult intubation
- Vitals
 - Spo2 >95, on <40% FiO2, PEEP < 5, RR<30, TV > 6ml/kg
 - SBP >100, HR <100
- ***** ANY of the above NOT met DO NOT Extubate

Step 2- Test Readiness

- Turn DOWN Sedation - keep pain medicine ON
- Initiate a "Weaning trial" (decrease PEEP, Decrease FiO2)
- Sit up to 45 degrees
- Wake Up Patient
 - Cough on the vent
 - Write words/Follow commands
- Vital Signs

***** ANY of the above NOT met DO NOT Extubate

Step 2- Test Readiness

- Respiratory rate <30 breaths per minute and more than 8 breaths per minute
- Heart rate <140 beats per minute and more than 60 beats per minute
- Systolic blood pressure less than 200 mm Hg and more than 90 mm Hg or less than 20% change from baseline
- Oxygen saturation greater than 92%, PaO2 greater than 70 mm Hg (on FIO2 <0.4 and PEEP 8 cm H2O)
- Spontaneous tidal volume >5 mL/kg
- No signs of increased work of breathing, severe anxiety, or altered mental status

**** ANY of the above NOT met DO NOT Extubate

Step 3- Prepare

- Prepare to remove the tube
 - Turn OFF the sedation, keep ON the pain medicine
 - Turn up the FIO2 to 100 for 1 minute
 - Insert bite block
 - Suction the mouth/tube
- Get adjuncts to the bedside

Step 3- Prepare

Have RT at the bedside at the time of extubation if possible

Adjuncts



Step 4- Extubate

- Synchronize with exhalation
- Deflate balloon
- Remove Tube
- Suction Oropharynx

Step 5- Post Extubation Care

- Apply 4-6L via HFNC or 10L via Venti Mask
- Observe for 1-2 hours before allowing PO

FAILURE

- Apply Non-Invasive ventilation
- Prepare For Difficult Intubation

Post extubation considerations

- Have a low threshold to use HFNC, or Bipap in the initial post-extubation phase
- When intubating the patient consider placing a 0.5 smaller tube to help prevent post-extubation stridor
- **Treat Post extubation stridor**
 - Steroids:
 - Methylprednisolone: 40 to 125 mg intravenous (IV) every 6 to 8 hours
 - Dexamethasone 5 mg IV every 6 hours
 - Nebulized epinephrine:
 - 5 to 10 mL of undiluted "code epinephrine" (0.1 mg/mL, 1:10,000)
 - 0.5 mL of a 2.25% racemic epinephrine diluted in a volume of 2 to 4 mL
- Prepare for a difficult airway if you need to re-intubate

Take Homes

- Post-extubation can be safely performed on a SELECT number of patients in the Emergency Department
- Understanding who and how is key to being able to perform this safely and effectively.

WARNING

THIS IS NOT A ONE SIZE FITS ALL TALK



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ED or No ED?



ED or No ED?

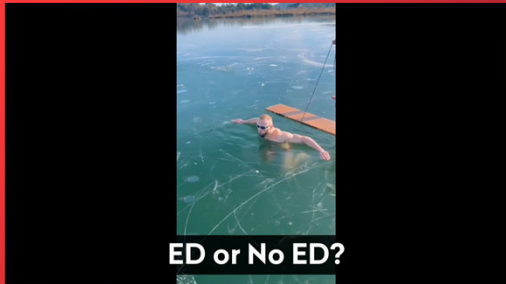




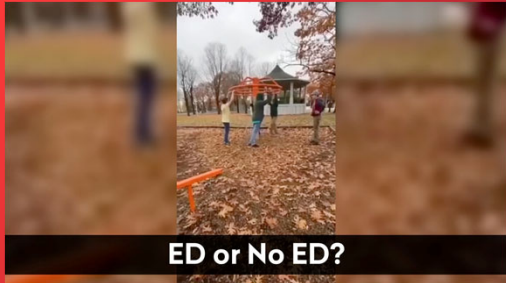














Lit Matters: Lytics Before Transfer for Thrombectomy?

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Katsanos AH, et al. IV Thrombolysis Initiated Before Transfer for Endovascular Stroke Thrombectomy: A Systematic Review and Meta-analysis. *Neurology*. 2023.

Is the administration of IV
thrombolytics before
transfer associated with
improved functional
outcomes, and is it safe?

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EDUCATION

Katsanos AH, et al. IV Thrombolysis Initiated Before Transfer for Endovascular Stroke Thrombectomy: A Systematic Review and Meta-analysis. *Neurology*. 2023.

Meta-analysis and systematic review looking for:

Patient's presented to a PSC and were found to have
LVO and received IVT before transfer to CSC for EVT

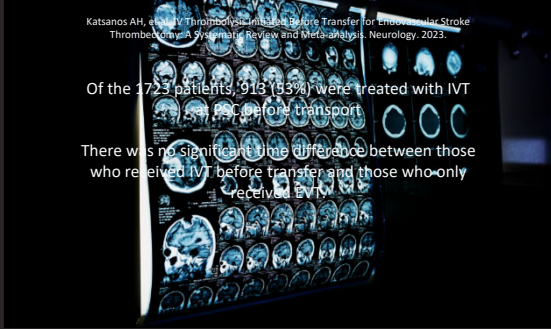
Patient's presented to a PSC and were found to have
LVO but did not receive IVT before transfer to CSC for
EVT

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Katsanos AH, et al. IV Thrombolysis Initiated Before Transfer for Endovascular Stroke Thrombolysis: A Systematic Review and Meta-Analysis. *Neurology*. 2023.

Of the 1723 patients, 913 (52%) were treated with IVT
and EVT before transport

There was no significant time difference between those
who received IVT before transfer and those who only
received EVT

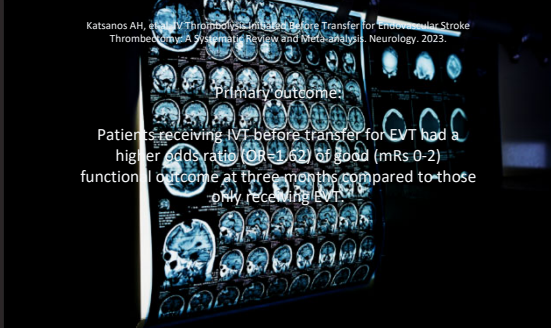


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Katsanos AH, et al. IV Thrombolysis Initiated Before Transfer for Endovascular Stroke Thrombolysis: A Systematic Review and Meta-Analysis. *Neurology*. 2023.

Primary outcome:

Patients receiving IVT before transfer for EVT had a
higher odds ratio (OR=1.62) of good (mRS 0-2)
functional outcome at three months compared to those
only receiving EVT



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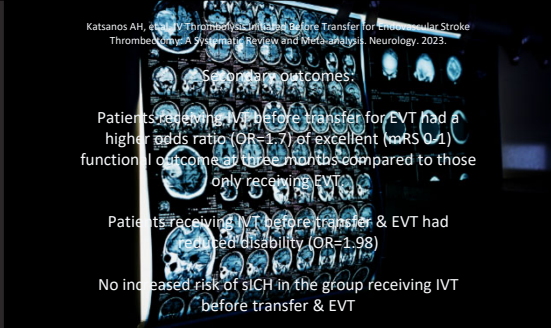
Katsanos AH, et al. IV Thrombolysis Initiated Before Transfer for Endovascular Stroke Thrombolysis: A Systematic Review and Meta-Analysis. *Neurology*. 2023.

Secondary outcomes:

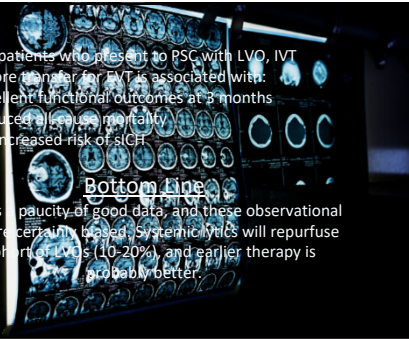
Patients receiving IVT before transfer for EVT had a
higher odds ratio (OR=1.7) of excellent (mRS 0-1)
functional outcome at three months compared to those
only receiving EVT

Patients receiving IVT before transfer & EVT had
reduced disability (OR=1.98)

No increased risk of sICH in the group receiving IVT
before transfer & EVT



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- For patients who present to PSC with LVO, IVT before transfer for EVT is associated with:
- Excellent functional outcomes at 3 months
- Reduced all-cause mortality
- No increased risk of sICH

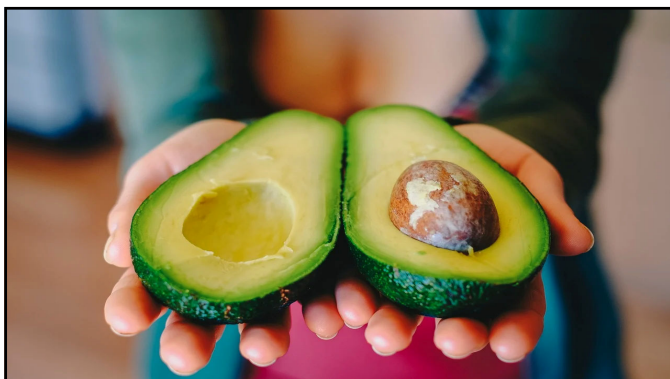
Bottom line

There is a paucity of good data, and these observational trials are certainly biased. Systemic tPA's will repurfuse a cohort of LVOs (10-20%), and earlier therapy is probably better.

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Just the tip...





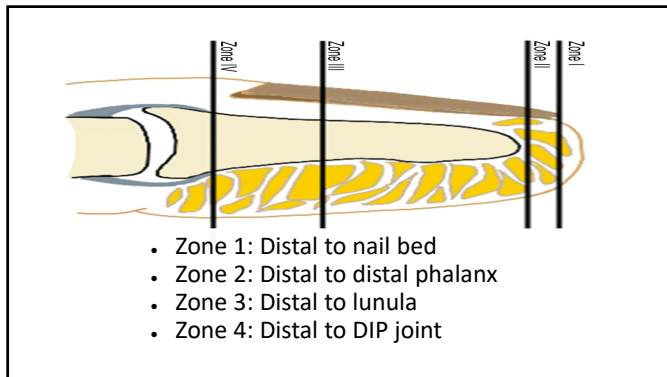


- 111 Hospitals
 - 77% "elective hand surgery"
 - 55% "basic emergency hand services"
 - 18% "occasional hand specialist coverage"
 - 7% "24/7 hand specialist coverage"

15,360 injuries

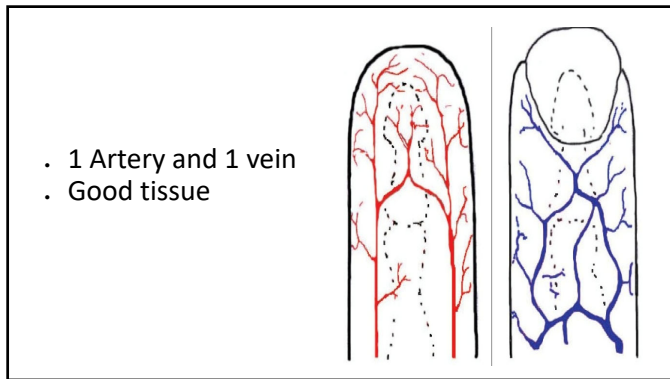


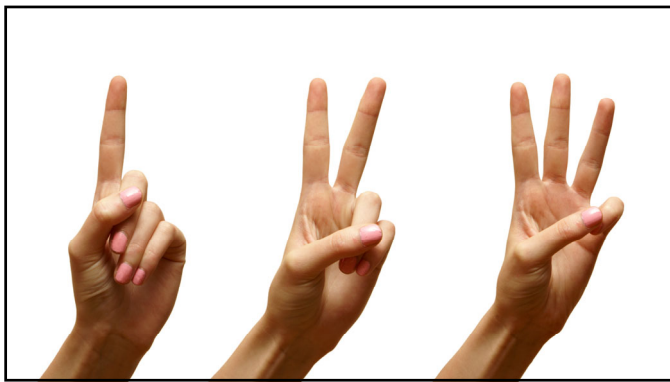
18% re-implanted









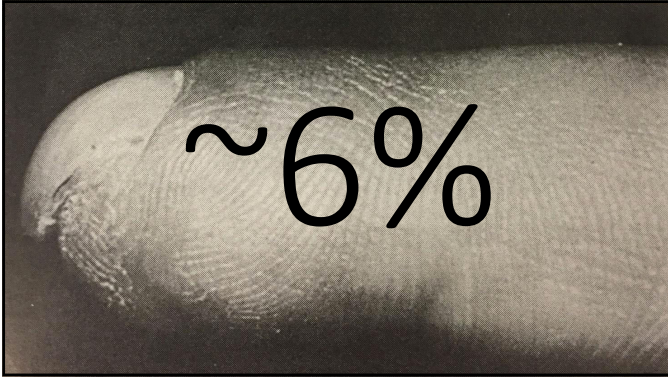






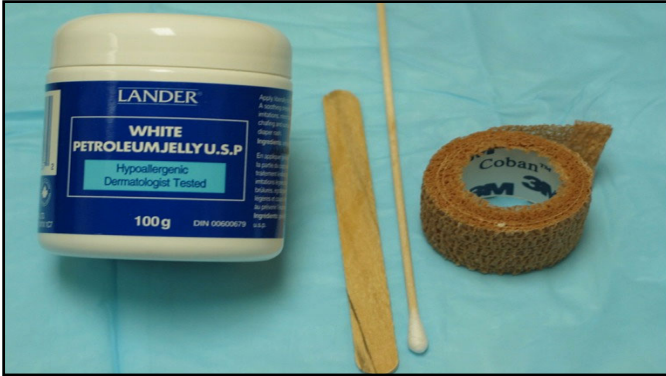






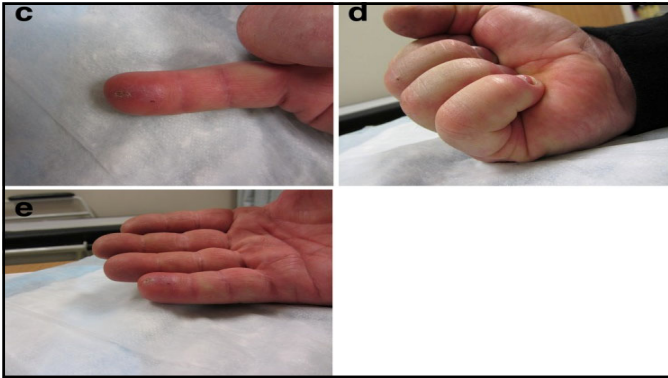












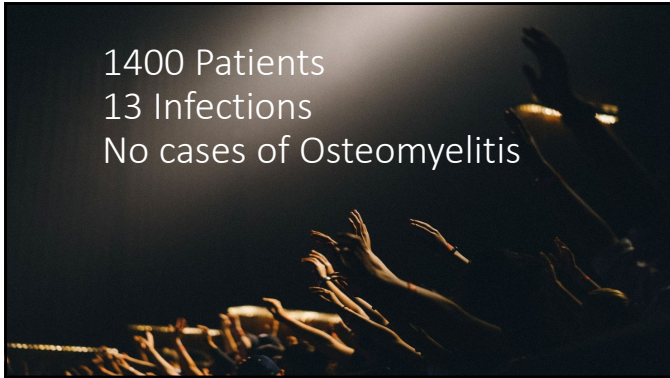




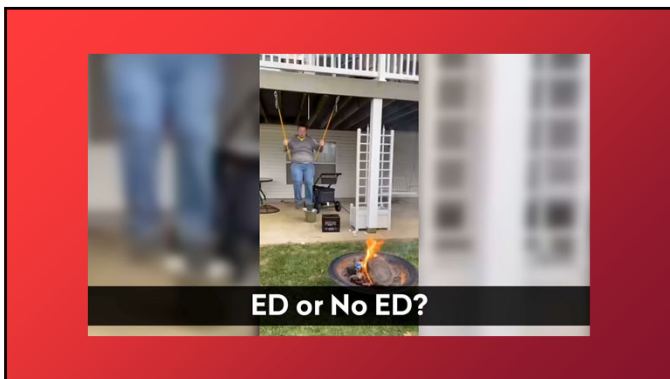




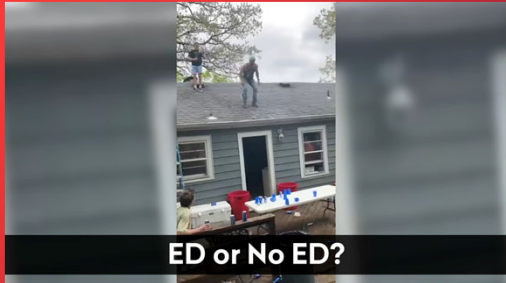






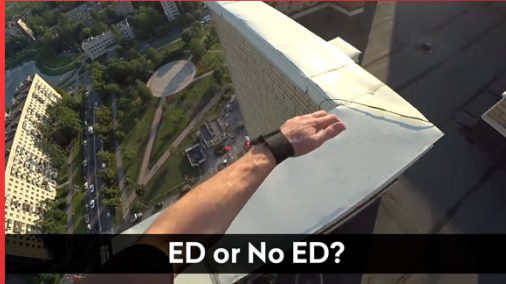






ED or No ED?





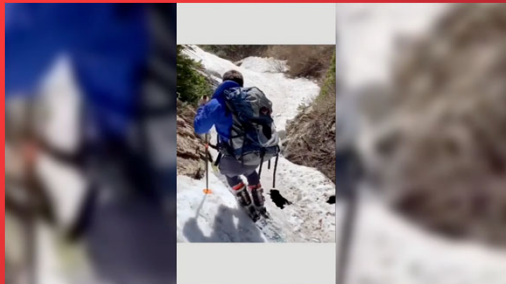








ED or No ED?



**Lit Matters:
More with less? Whole Blood
Transfusion in Traumatic
Hemorrhage**

Drew Kalnow, DO FACEP

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