

TRAUMA CASE STUDIES

Chris Scheumann, BSN, RN, CCRN-K, CEN, CPEN, TCRN, CFRN, NREMT-P

TravCon 2023

Paris Hotel & Casino

Las Vegas, Nevada

Tuesday, September 19, 2023

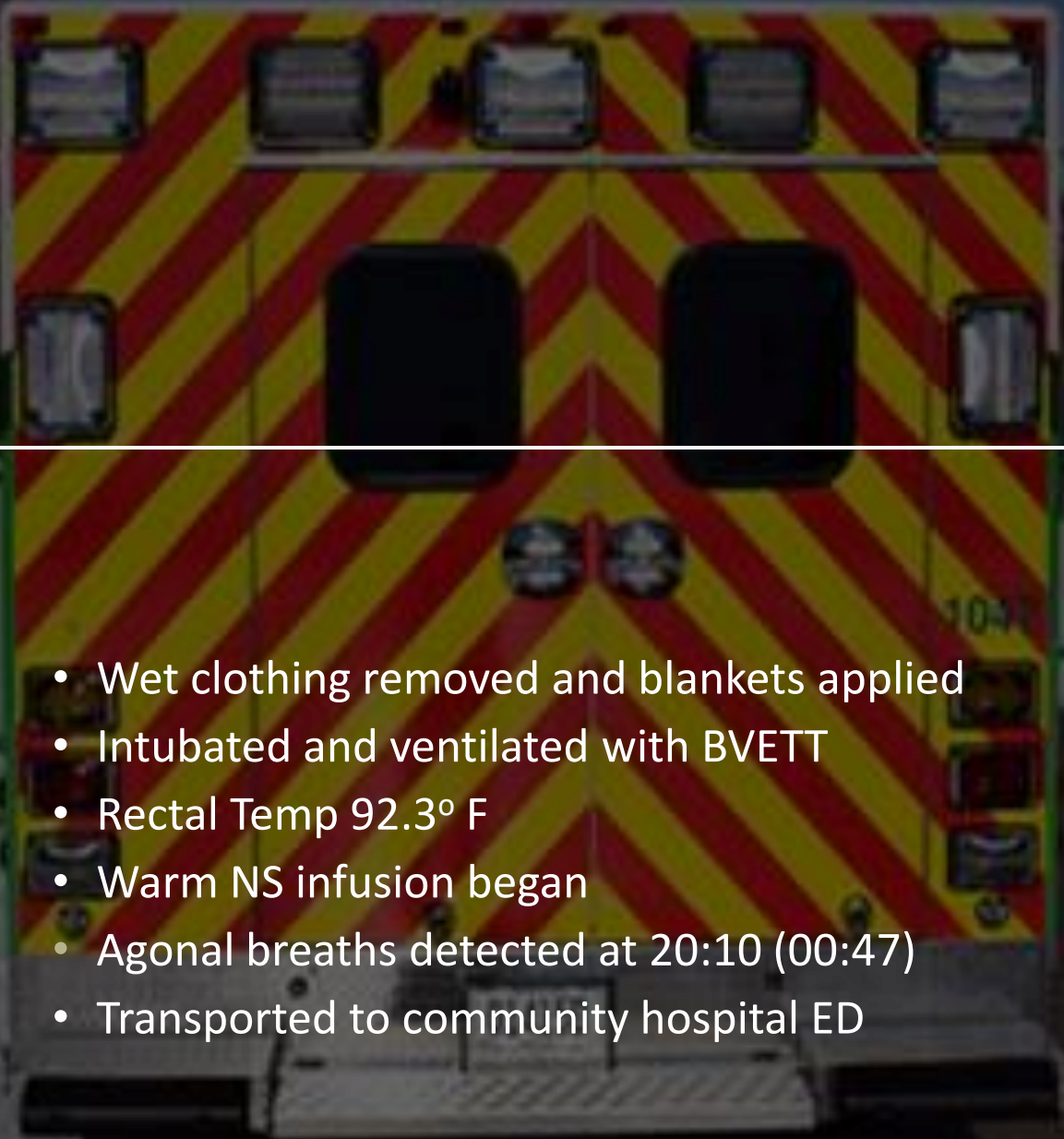
DISCLOSURES

No planner, presenter, faculty, author, or content expert has identified a conflict of interest nor has a relationship with an ineligible company that would affect this educational activity.

No commercial interest has provided financial or in-kind support for this educational activity.

TravCon does not endorse any commercial products discussed or displayed in conjunction with this educational activity.



- 
- Wet clothing removed and blankets applied
 - Intubated and ventilated with BVETT
 - Rectal Temp 92.3° F
 - Warm NS infusion began
 - Agonal breaths detected at 20:10 (00:47)
 - Transported to community hospital ED

Community Hospital Data

Arrival: 20:18 (00:55)

Initial vitals: 147/94, 90, 12 via BVETT,
Rectal temp = 92.3°

Labs drawn, Critical Lactate 10.6

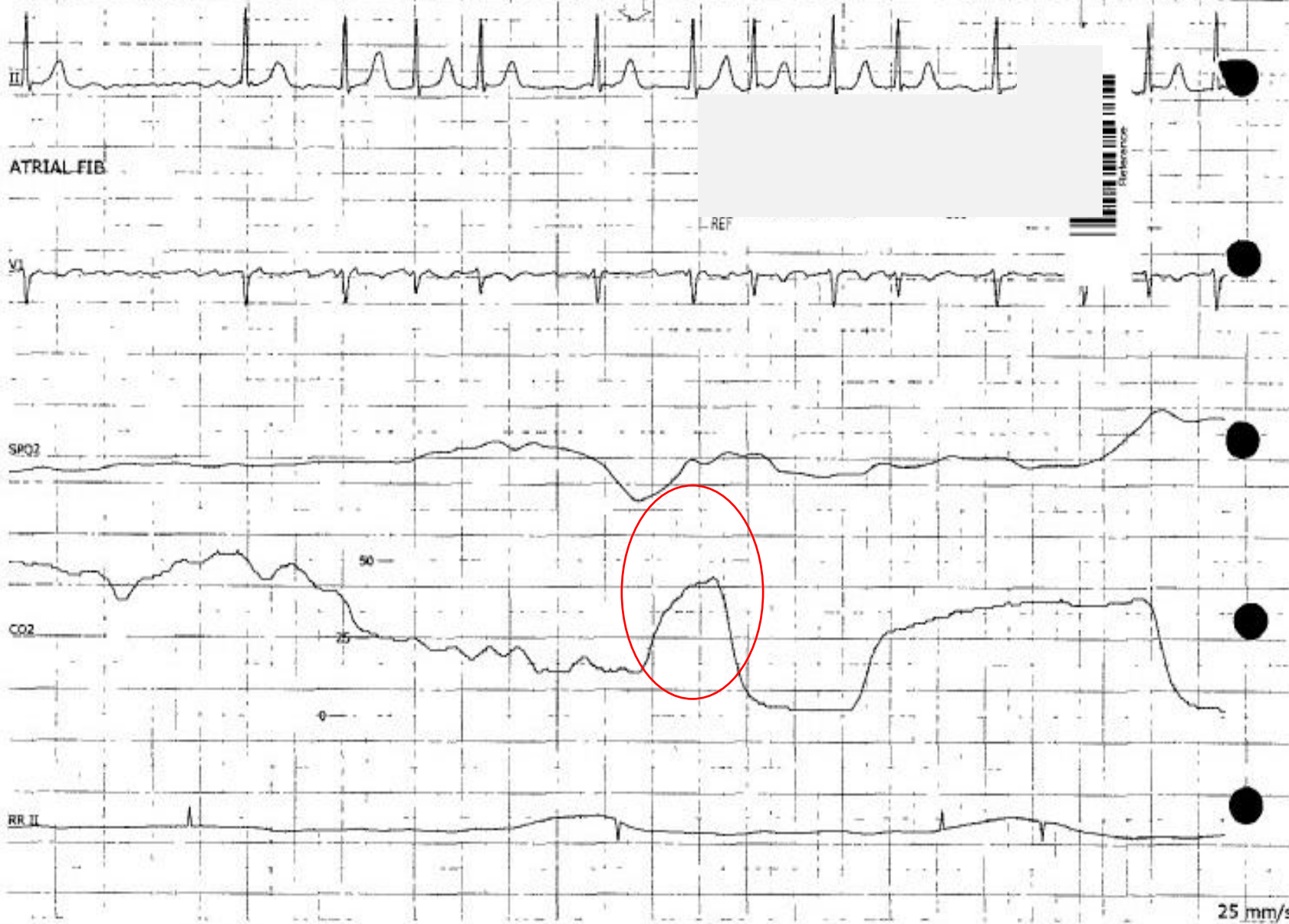
Sedated with Diprivan, paralyzed with
vecuronium, NG & Foley placed

Warm saline, Warm, humidified vent
circuit, Bear Hugger

Combivent neb administered

Helicopter summoned for transfer to trauma center
@20:45 (01:22)

ATRIAL FIB HR 85 PVC 0
NBP 181 / 102 (135) 20:25 SPO2 PROBE OFF CO2 I=0 E=53 mmHg RR 0 RR - II 13



Flight Data

Arrived comm
hosp at 21:11
(01:48)

Pupils fixed
& dilated

Diprivan gtt
infusing,
Norcuron
bolus

Temp 89.6°
via
esophageal
probe

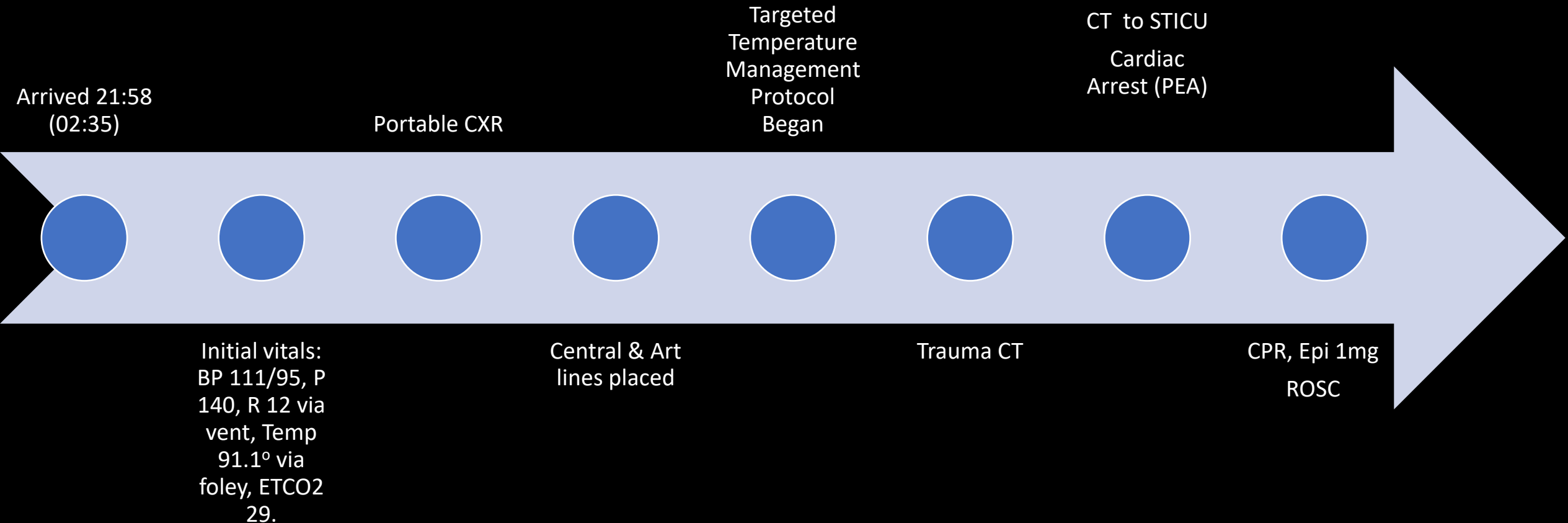
Warm
saline, Bear
hugger,
multiple
layers of
blankets

BP's
ranging
from 85 -
134 systolic
during
flight, a-fib

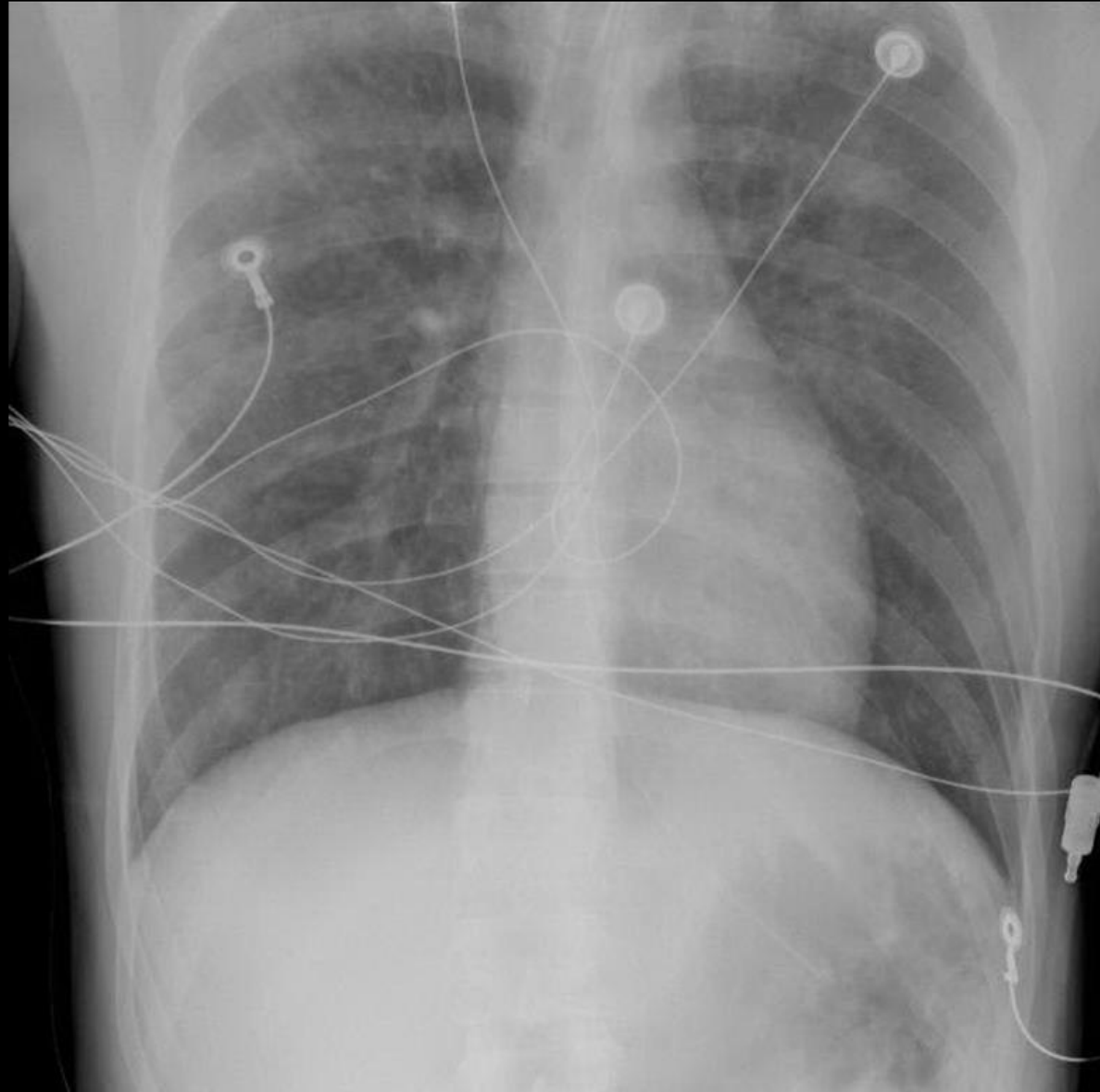
Departed comm
hosp at 21:33
(02:10)



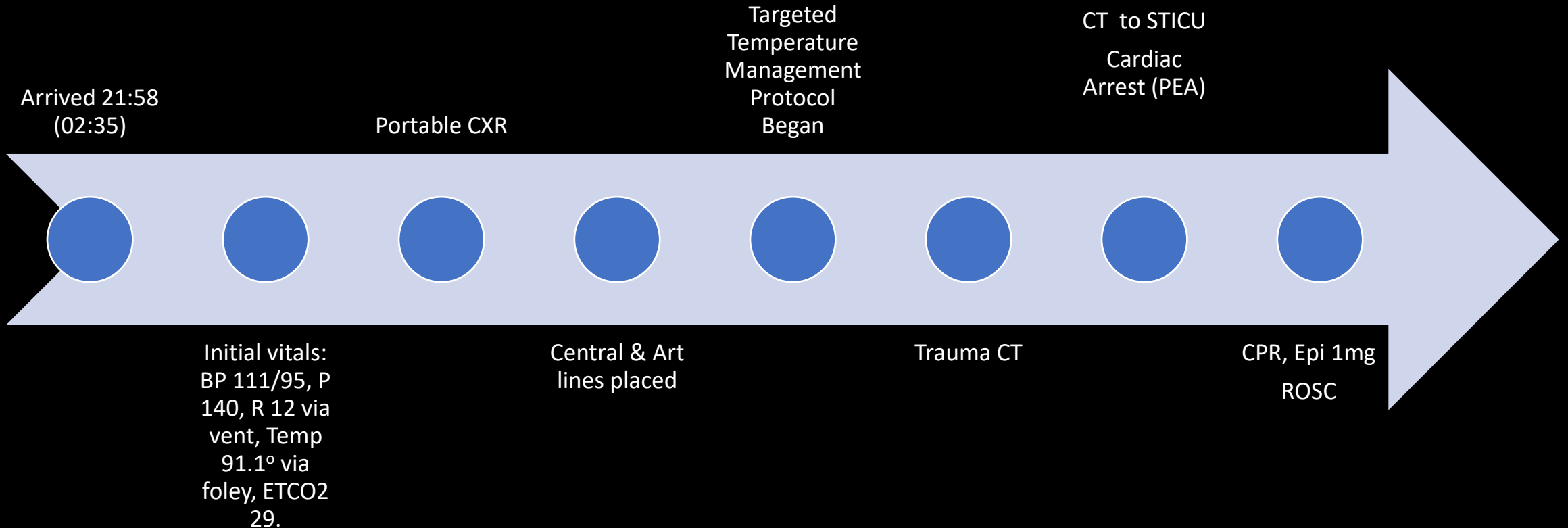
Trauma Center Data



Initial Chest x-ray



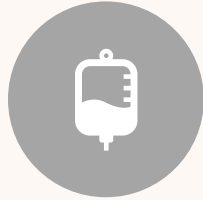
Trauma Center Data



Day 1



HYPOTENSIVE,
HYPERCARBIC
AND HYPOXEMIC
UPON ARRIVAL IN
STICU



NOREPINEPHRINE
BEGAN AND
TITRATED TO
MAXIMUM DOSE AS
WELL AS FLUID
BOLUSES



UNRESPONSIVE TO
ALL STIMULI
PUPILS EQUAL, 6MM
AND SLUGGISHLY
RESPONDING TO
LIGHT



TARGETED TEMP
MANAGEMENT
CONTINUED



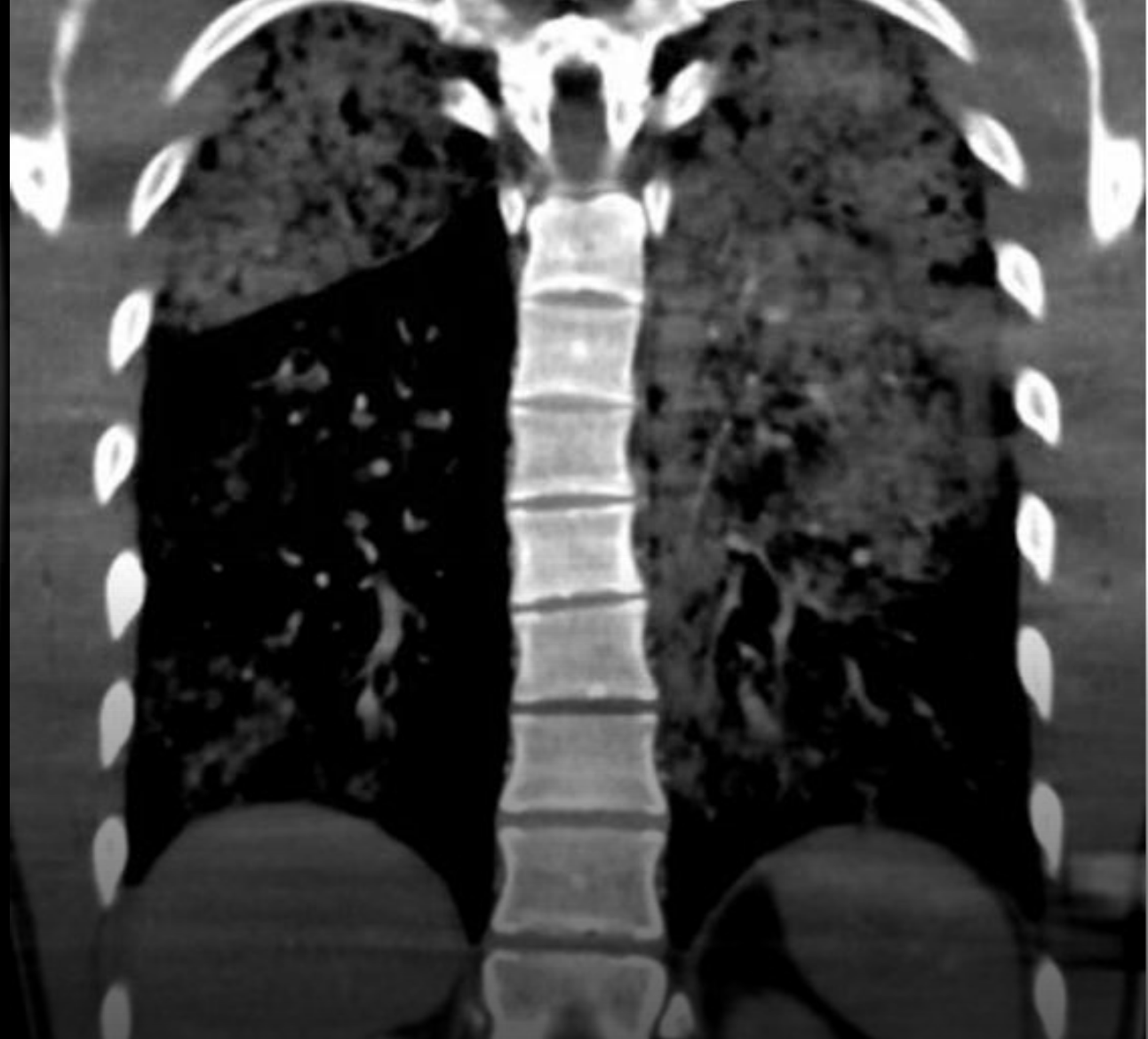
VANCOMYCIN
ANTIBIOTIC
THERAPY BEGAN



REPEAT CHEST X-
RAY LATER IN THE
EVENING
REVEALING
CONSIDERABLY
WORSE DIFFUSE
BILATERAL
AIRSPACE
INFILTRATES



Initial Chest CT

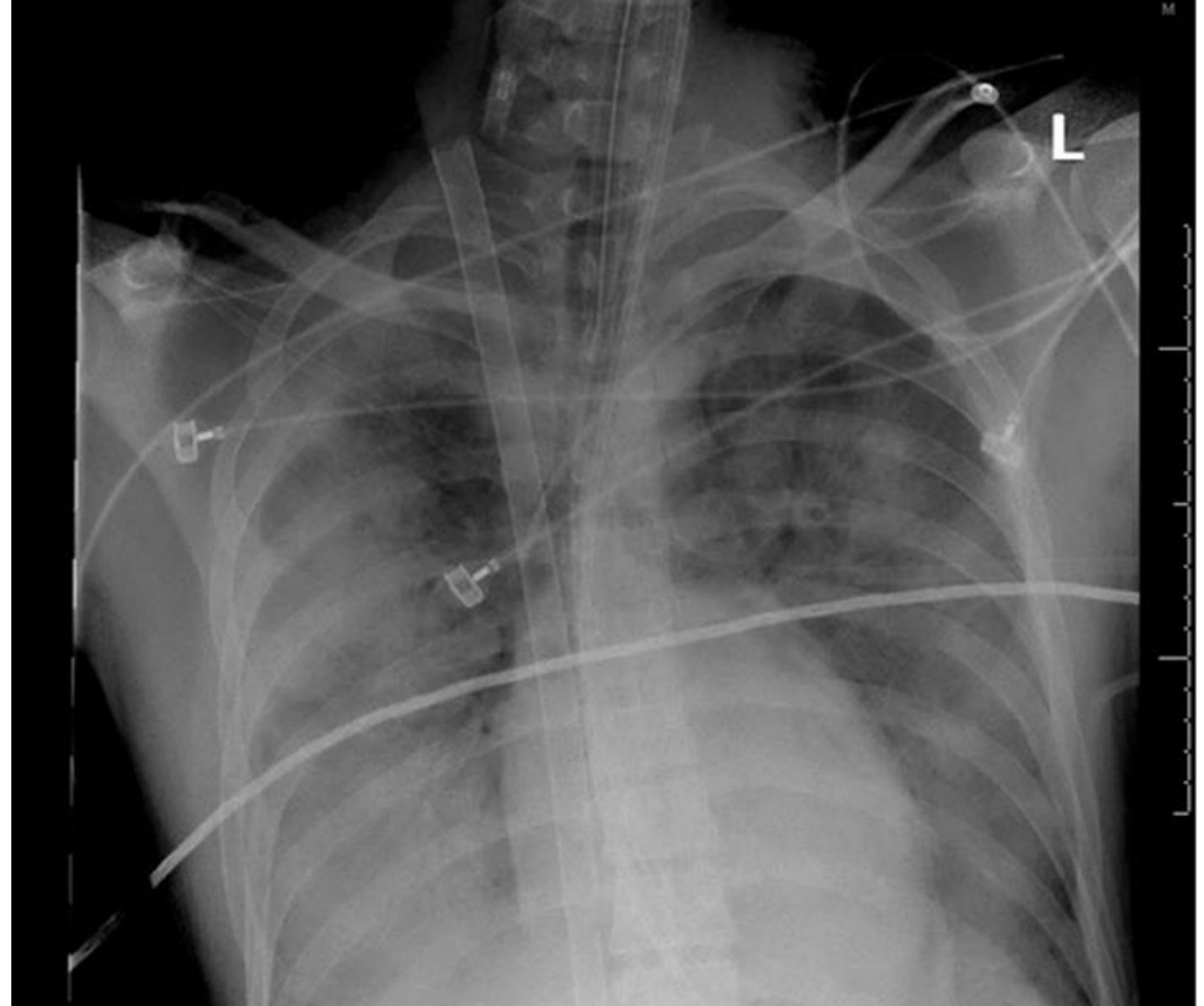


A hospital room with a gurney, a patient bed, and medical equipment. The gurney is in the foreground, and the patient bed is in the background. The room has light blue walls and a blue carpet. The text "Day 2" is overlaid in the center.

Day 2

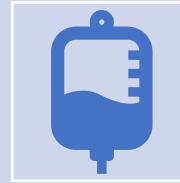
Day 2 Post-Op

- Taken to the operating room and cannulated for Veno-Venous (VV) ECMO with a 31F right intrajugular ECMO catheter by cardiovascular surgeon.
- Post-operative chest x-ray revealing increased diffuse consolidation noted throughout the lungs. ECMO catheter noted within the vena cava.
- Admitted to CVICU
- ECMO catheter “chugging” noted and catheter repositioned 2cm and RPM’s on the pump decreased.
- Hypotension ongoing. Vasopressin and norepinephrine infusions ongoing

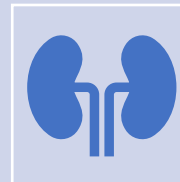




Day 3



Angiomax infusion initiated.

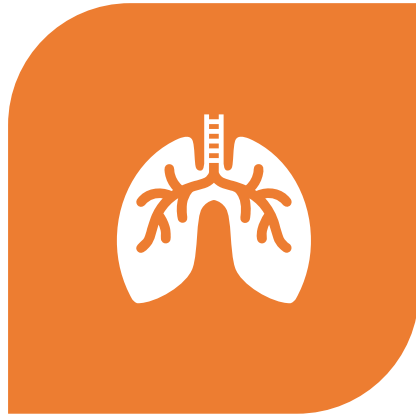


Bronchoscopy with bronchoalveolar lavage (BAL) performed.



Opens eyes, following commands and nodding head to questions when sedation turned off.

Day 4



CHEST X-RAY IMPROVEMENT



TREMOR/SEIZURE-LIKE ACTIVITY
NOTED. DECORTICATE POSTURING
WITH STIMULATION.
NEUROLOGICAL CONSULT.



ELECTROENCEPHALOGRAM (EEG)
COMPLETED, REVEALING NO
SEIZURE ACTIVITY, MILD SLOWING
AND OTHERWISE NORMAL.

Day 5

- ECMO weaning began, tolerated well.
- Decannulated successfully.



Day 6

MRI of the brain completed, revealing no acute intracranial findings. Neurological improvement continuing.

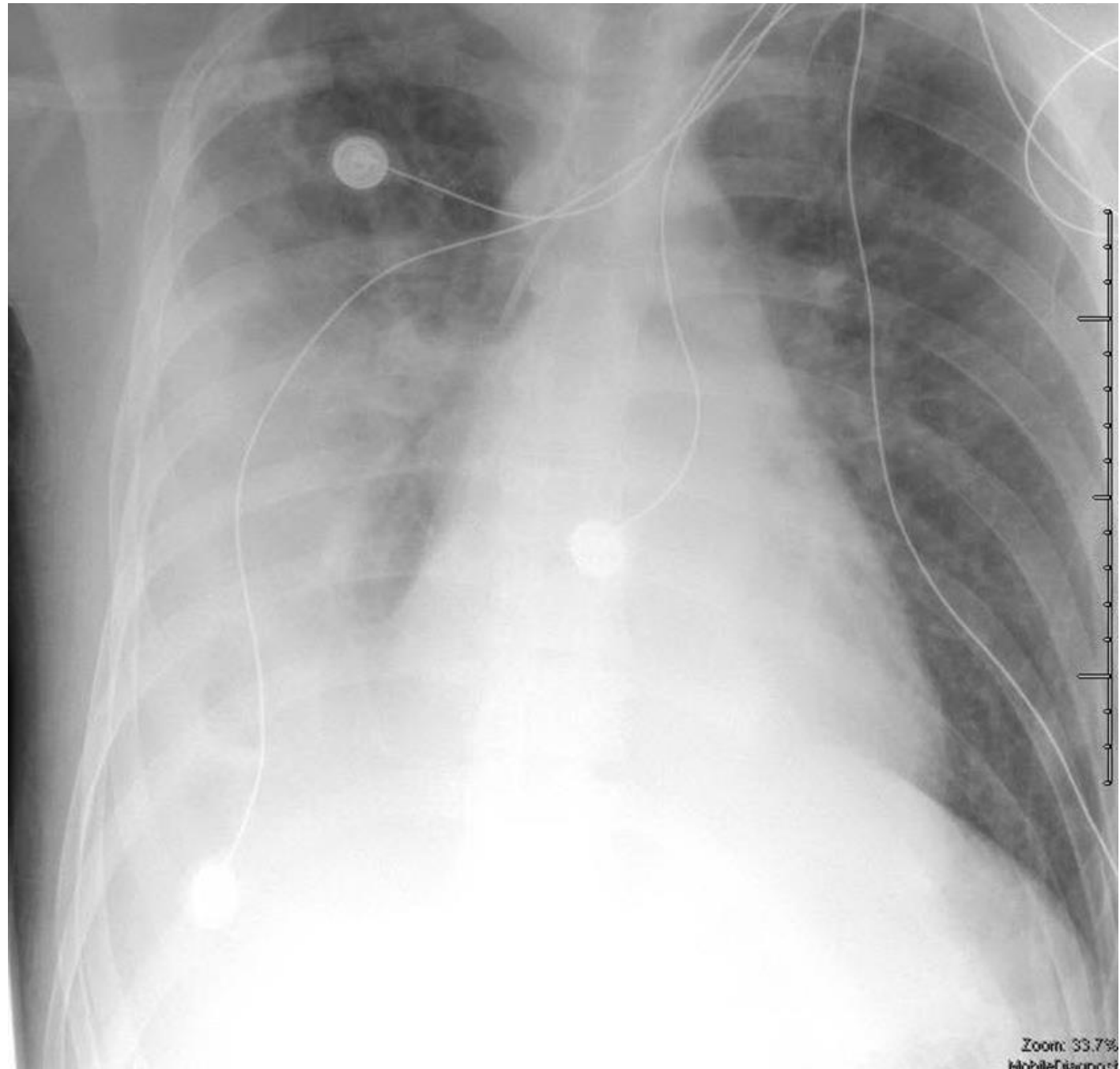
Extubated successfully.

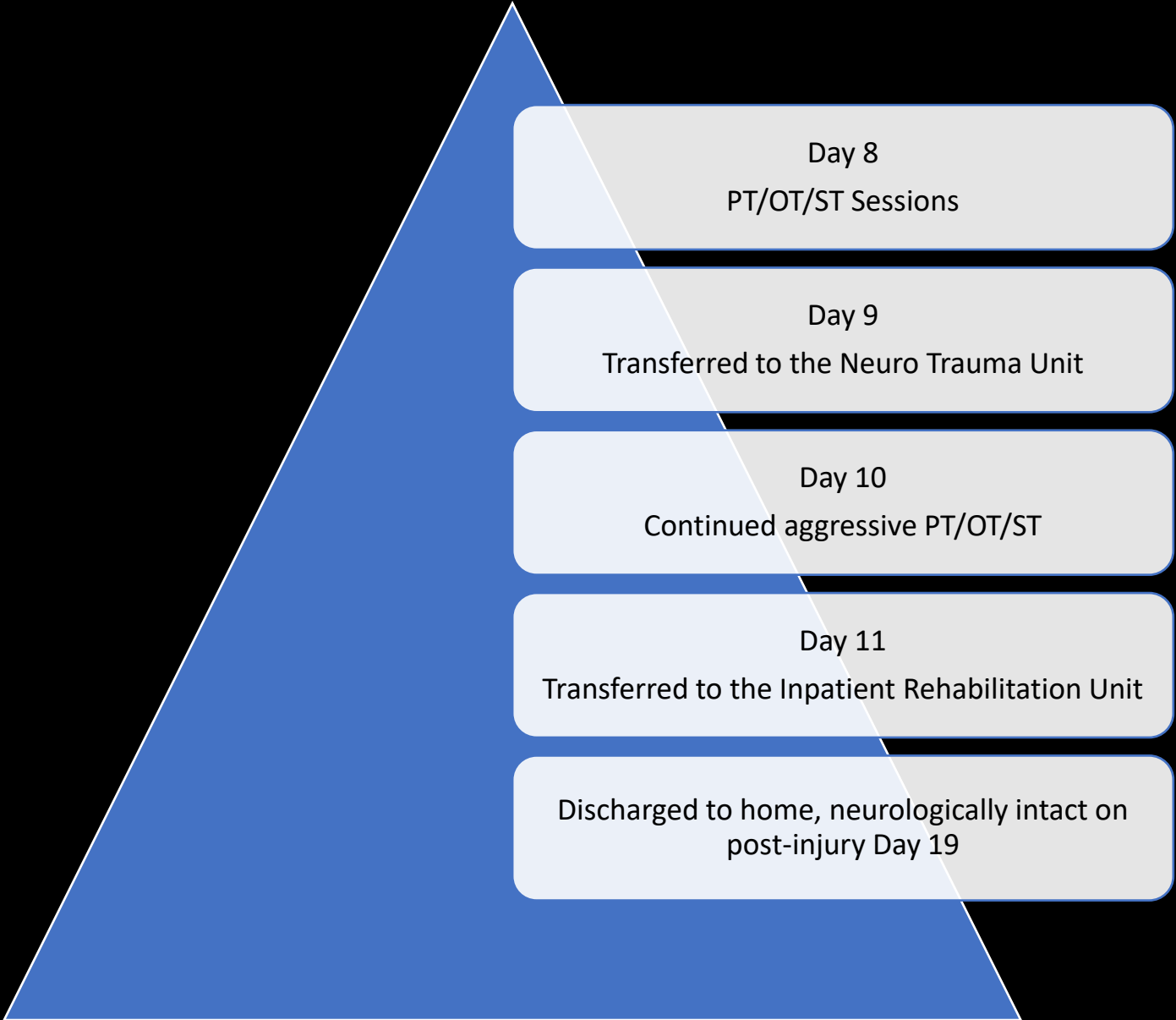
Complaining of being tired as well as double vision.

Arterial line discontinued.

Transferred to STICU.

Day 7





Trauma Center ED Data

Arrived in the ED trauma bay @ 10:38

Initial vitals: 148/86, 87,
10 via BVETT, Temp 97.1F

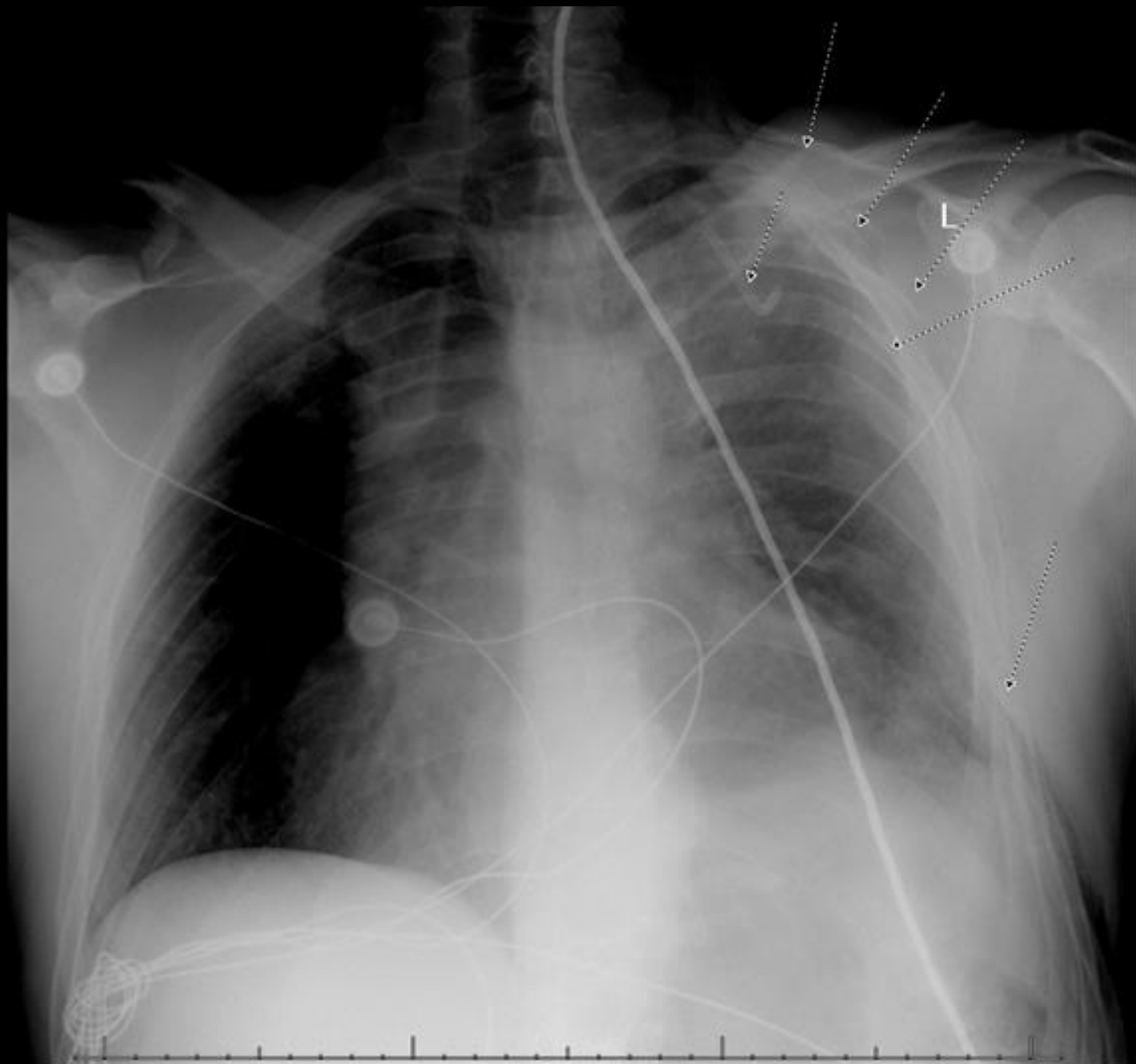
Chest Tube Output = 100mL

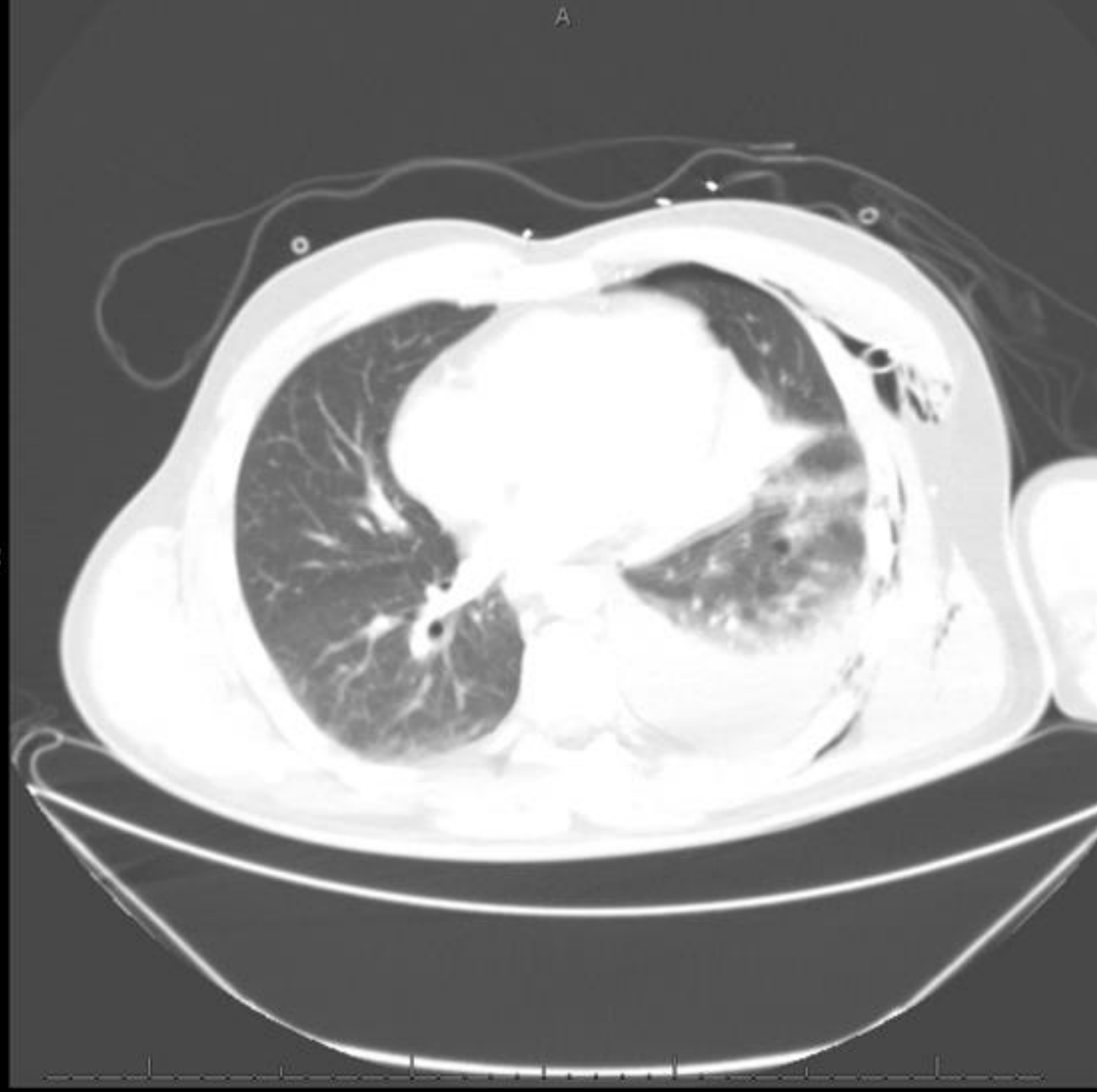
FAST Exam Negative

Portable Chest & Pelvis X-ray

Trauma CT Scan

Disposition from ED >
Interventional Radiology





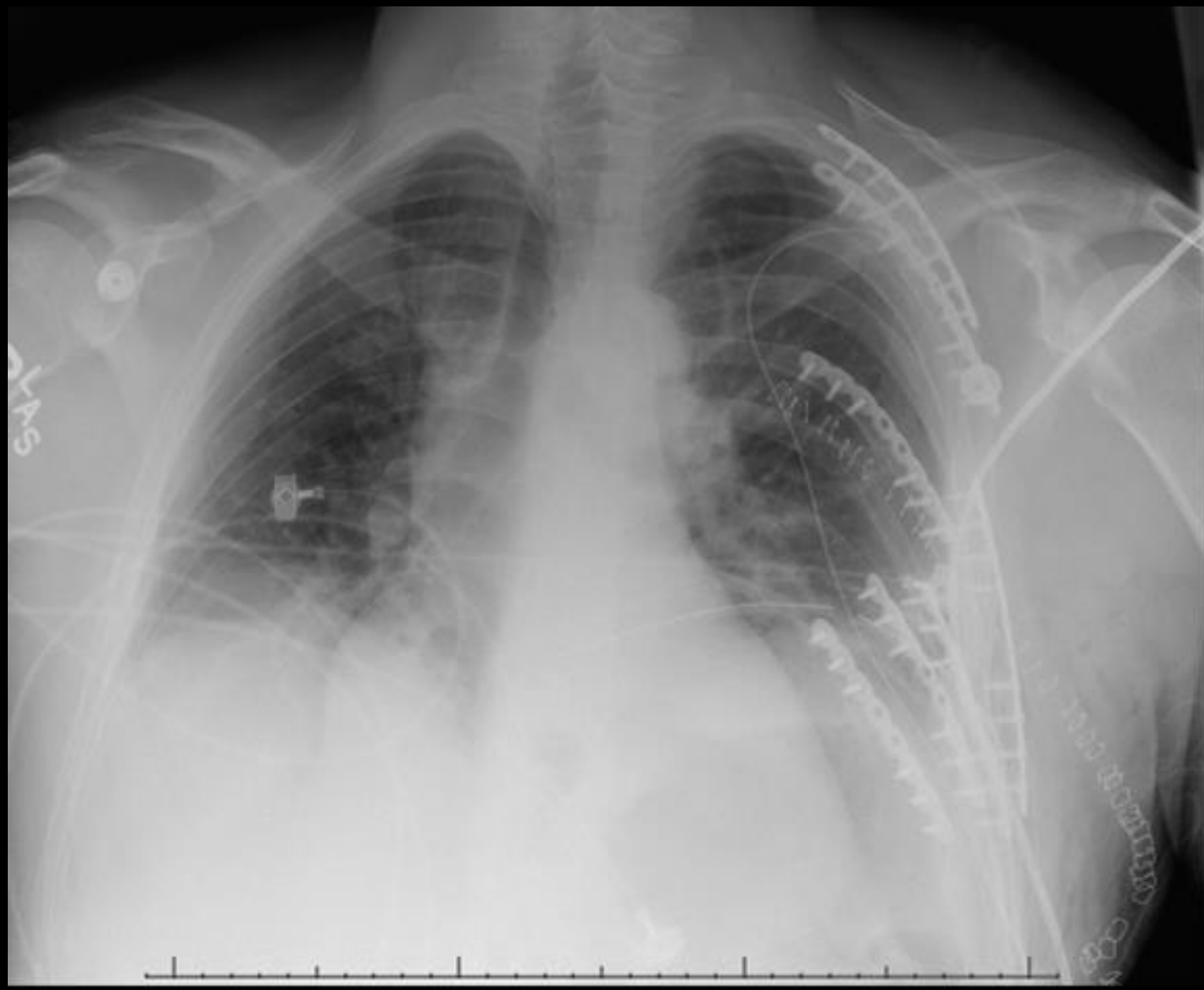
A

R





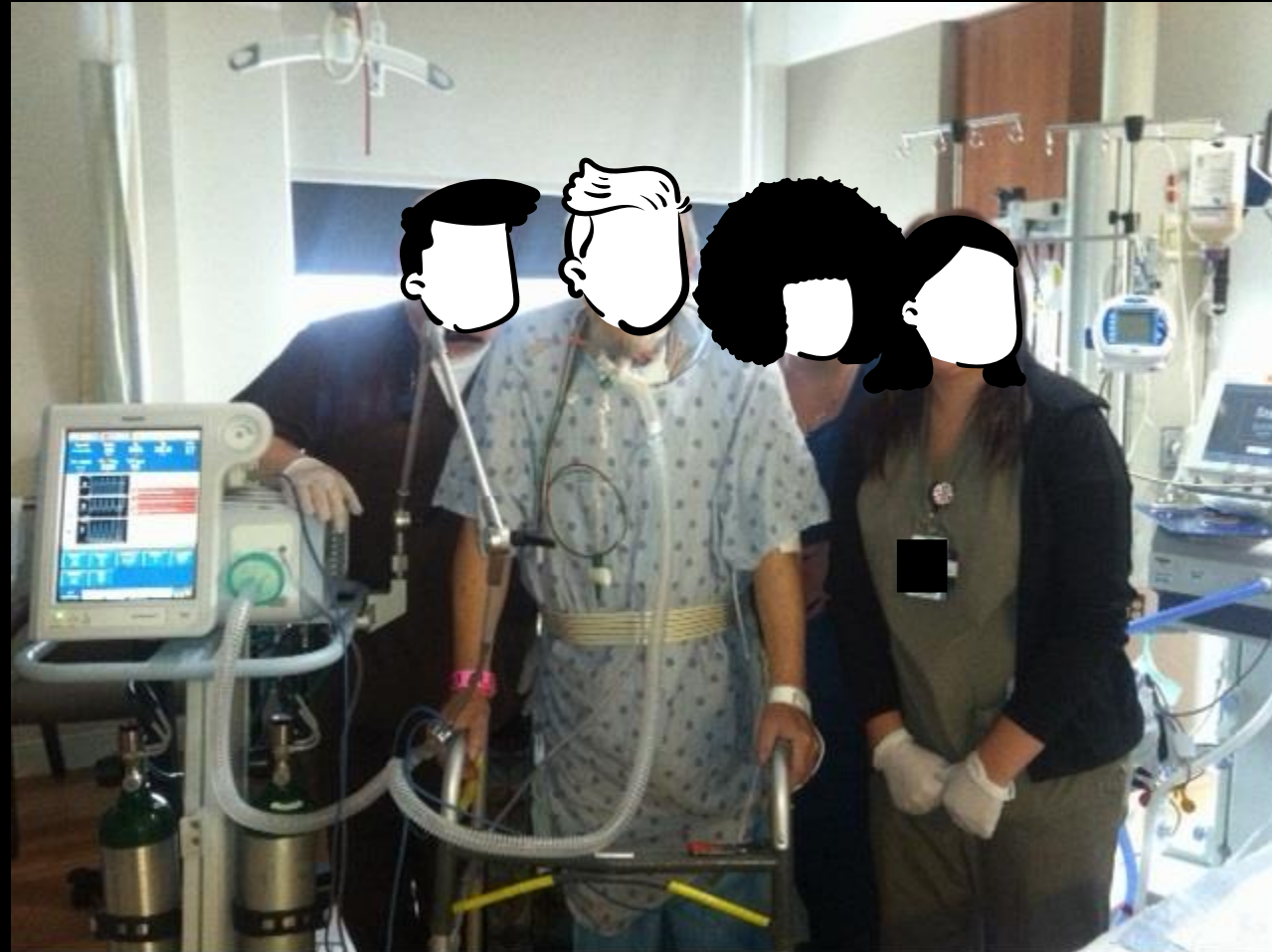








OUTCOME









Survey of EMS directors 19 years ago

- 26 amputations over a five-year period
- 53% were performed by a trauma surgeon and
- 36% by an emergency physician.
- Only 2 EMS systems had an existing protocol

In-Field Extremity Amputation: Prevalence and Protocols in Emergency Medical Services. Prehospital and Disaster Medicine 11(1):63-66, 1996.

Informal poll of trauma surgeons at an American College of Surgeons meeting 2010

- Only 5 had ever been called to do a field amputation
- Only 2 had actually done it

Field Amputation Indications

- Absolute #1: entrapped extremity with a lengthy extrication and a physiologically impaired patient who does not respond to fluids.
- In this case, there is occult blood loss into other areas that is killing your patient and they need to get out quickly for definitive management.

Field Amputation Indications

- Absolute #2: Entrapped extremity with a lengthy extrication and an unstable physical environment.
- Examples include entrapment in a structurally damaged building or a vehicle in danger of falling.

Field Amputation Indications

- Relative #1: Entrapped extremity with a lengthy extrication in a patient who was initially hypotensive, but responded to IV fluids.
- It is possible to wait for additional extrication efforts, but vital signs must be monitored closely. At the first sign of recurrent hypotension, it's time to amputate.

Field Amputation Indications

- Relative #2: Entrapped extremity and physiologically normal, but extrication may take many hours or may be impossible.
- There is time to wait and let rescue workers continue their efforts. However, the more time that passes, the less likely the extremity will ultimately be functional.

Logistics

- What happens when the trauma surgeon leaves the hospital?
 - Utilize the back-up surgeon
 - Scene Safety

Logistics

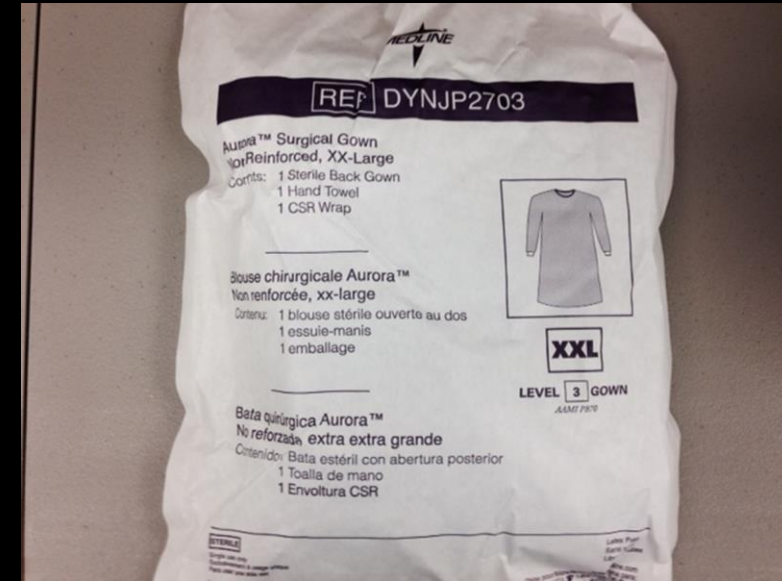
- Easy to grab bag containing all supplies
- Intubation before the procedure preferred

Equipment

- Drugs
 - Sedative, preferably longer acting
 - Paralytic agent, preferably longer acting
 - Analgesics

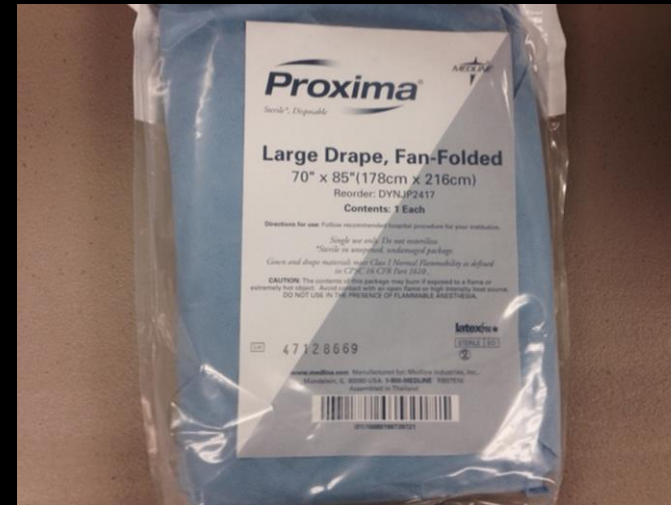
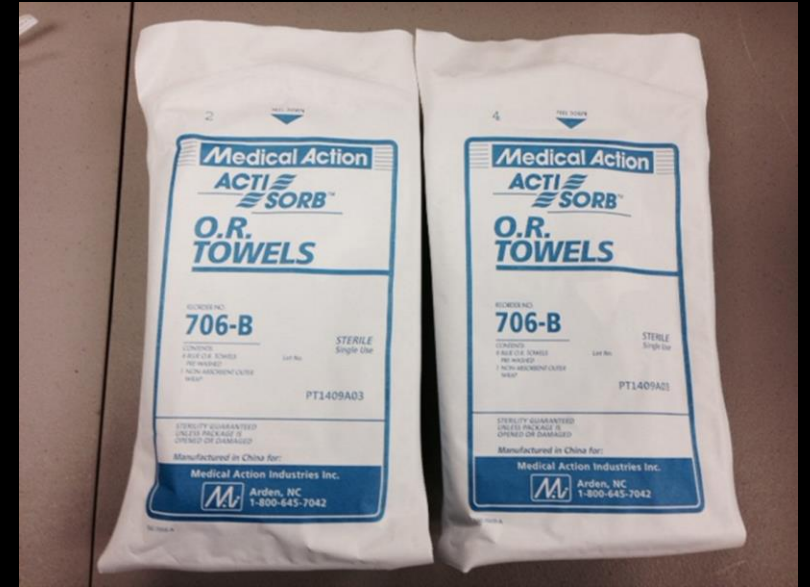
Equipment (cont)

- Personal protective equipment
 - Gown
 - Mask
 - Goggles
 - Gloves



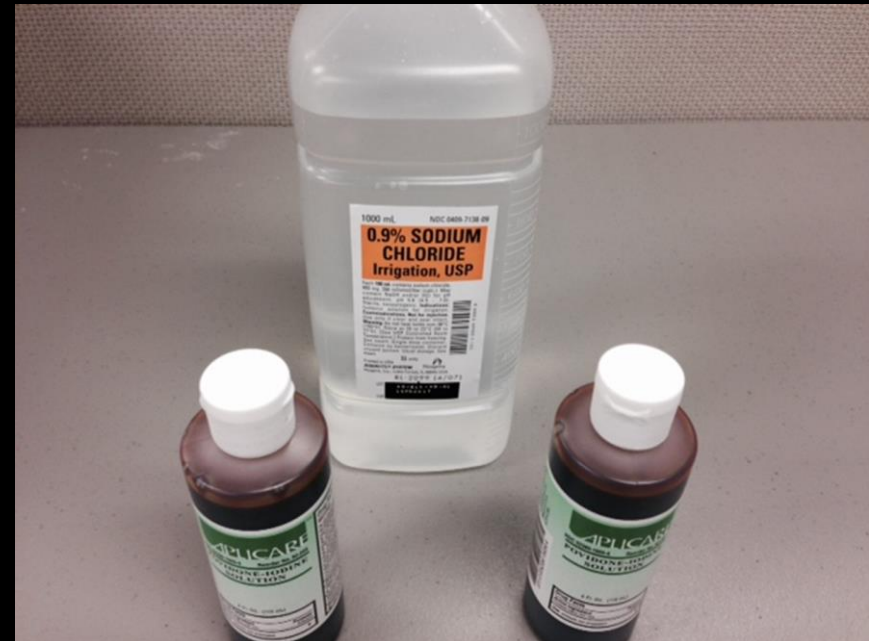
Equipment (cont)

- Draping materials
 - Sheets (two 3/4 sheets)
 - Towels (two 4-packs)
 - Towel clips (for patients in unusual positions)



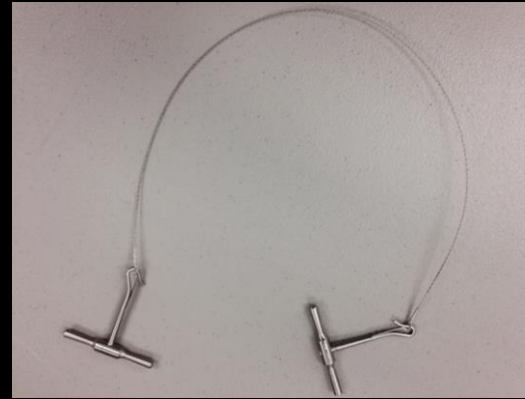
Equipment (cont)

- Preparation materials
 - Tourniquet(s)
 - Povidone/iodine solution
 - Saline



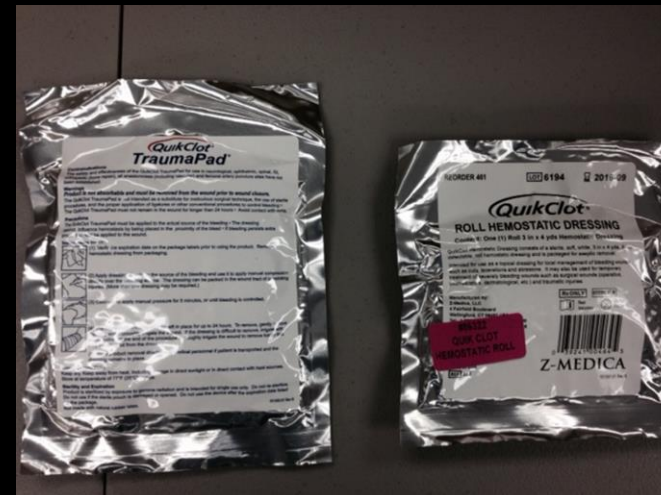
Equipment (cont)

- Surgical equipment
 - Mayo scissors (1 straight & 1 curved)
 - Kelly clamps (4)
 - Hemostats, large & small (8 each)
 - Needle holder
 - Hand-held sagittal saw
 - Extra blades and battery for handheld saw
 - Gigli saw handles and blade
 - Scalpels (3 each #10 & #20)
 - Suture (3 packs of 2-0 silk ties)



Equipment (cont)

- Dressing supplies
 - ABD pads
 - 4x4 gauze pads
 - Gauze rolls
 - Large Ace bandages
 - Combat gauze



Procedure

- EMS / Dispatch will contact the Trauma Center and request the need for emergent field amputation.
- Trauma surgeon will be paged
- Trauma surgeon will respond to the ED and pick up the field amputation bag
- Ground or flight crew takes surgeon to scene

References

- In-Field Extremity Amputation: Prevalence and Protocols in Emergency Medical Services. *Prehospital and Disaster Medicine* 11(1):63-66, 1996.
- McGonigal, Michael D. (2013). Field Amputation. *The Trauma Professional's Blog: Trauma MedEd*. November 2013, 1-3.

Thank you
for all you
do!

