

Take A Breath: Pulmonary Management of the Organ Donor

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Objectives

- Recognize MTN referral criteria.
- Be familiar with the apnea test for brain death pronouncement.
- Be familiar with basic ventilator donor management goals.
- Know why YOU are so important to donation!



Let's talk numbers...

- National Waiting List
 - 118,549
- Lung waiting list
 - 1,391
- Transplants in 2016
 - 33,600
- Lung transplants in 2016
 - 2,327



Why?

- Every 10 minutes, someone is added to the waiting list.
- On average, 22 people die a day while waiting for a transplant.



Keeping it close to home

- MTN 2016 donors
 - 228
- 2016 Lungs
 - 103
- Western Kansas area hospitals (WMC, VCSF, SRHC)

–25 lungs!!



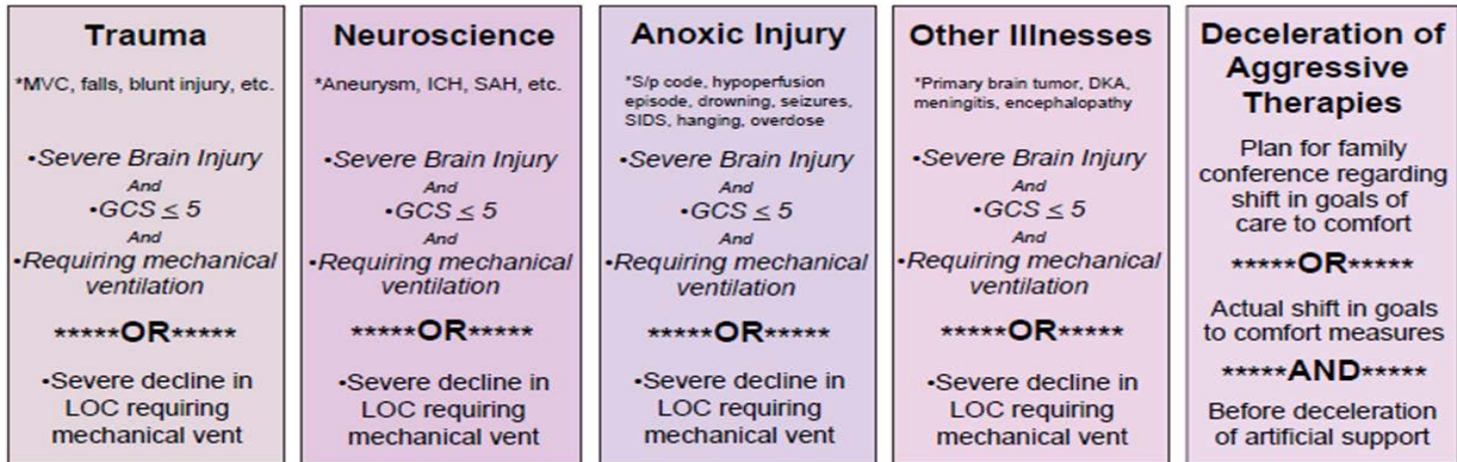
How do we know about your patient?

- Imminent Death Criteria
 - Neuro injury
 - Anoxia, trauma, CVA
 - GCS ≤ 5
 - Assessment of eye opening, painful response and awareness
 - Ventilated
- Referred to MTN from hospital staff within 60 minutes
 - 24/7 call center



Imminent Death

MAKE THE **GOLDEN HOUR** CALL THAT CAN SAVE LIVES
 clinical triggers for **Midwest Transplant Network** consult



CONSULT
MIDWEST TRANSPLANT NETWORK
1-800-366-6791 or 1-913-262-9229
 within the golden hour

*Consult Midwest Transplant Network regardless of on-going aggressive therapies, pt age, or co-morbidities



Death by Neurological Criteria

- American Academy of Neurology guidelines (2010)
 - Must have cause of death
 - Absence of brainstem reflexes
 - Pupils
 - Oculocephalic reflex (doll's eyes)
 - Facial Sensation
 - Tracheal & pharyngeal reflexes
 - Oculovestibular reflex (cold calorics)
 - Coma
 - Apnea
 - Assure pressure trigger setting
 - Ancillary tests

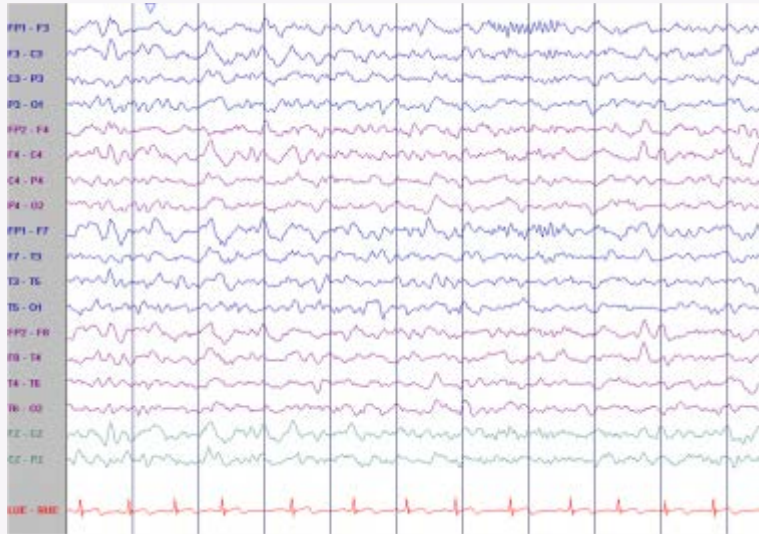


Ancillary tests...

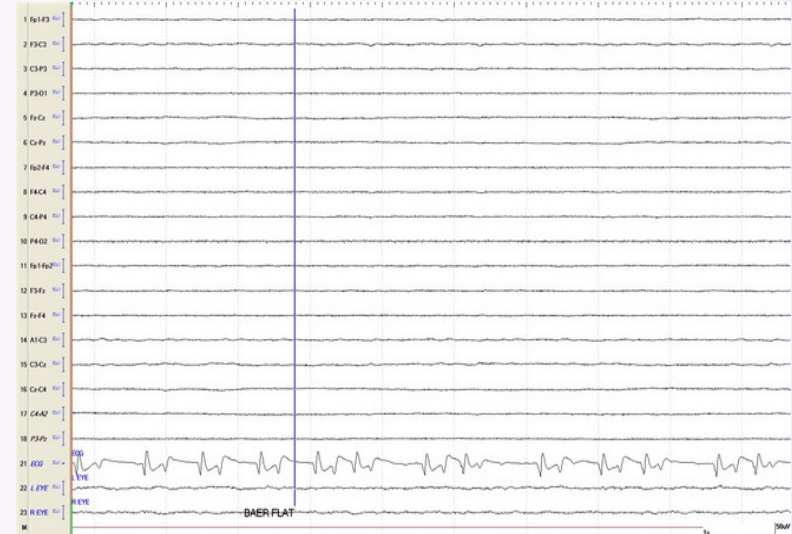
- EEG
 - Isoelectric line (flat)
- CBF
 - No uptake of isotope
- Angiography
 - 4 vessel angio
- Transcranial Doppler
 - Flow to cerebral vessels



Electroencephalography



Normal

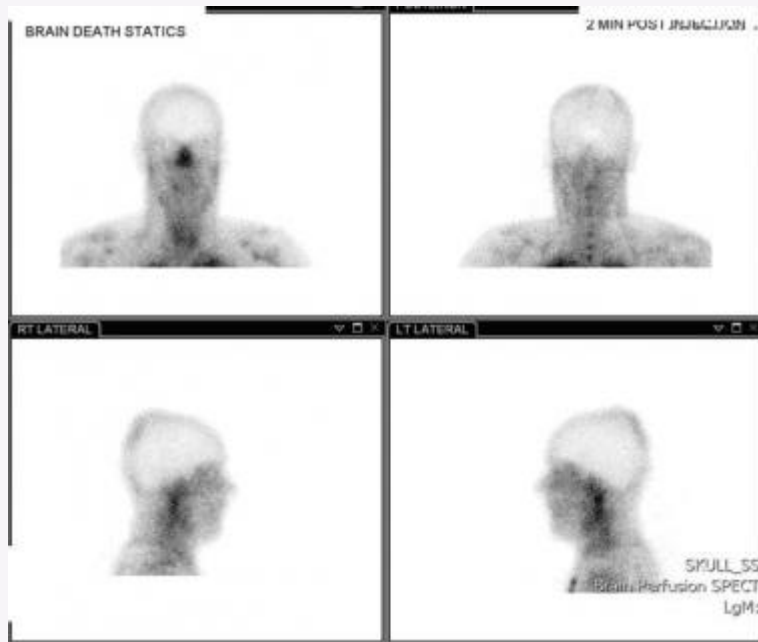


Flat

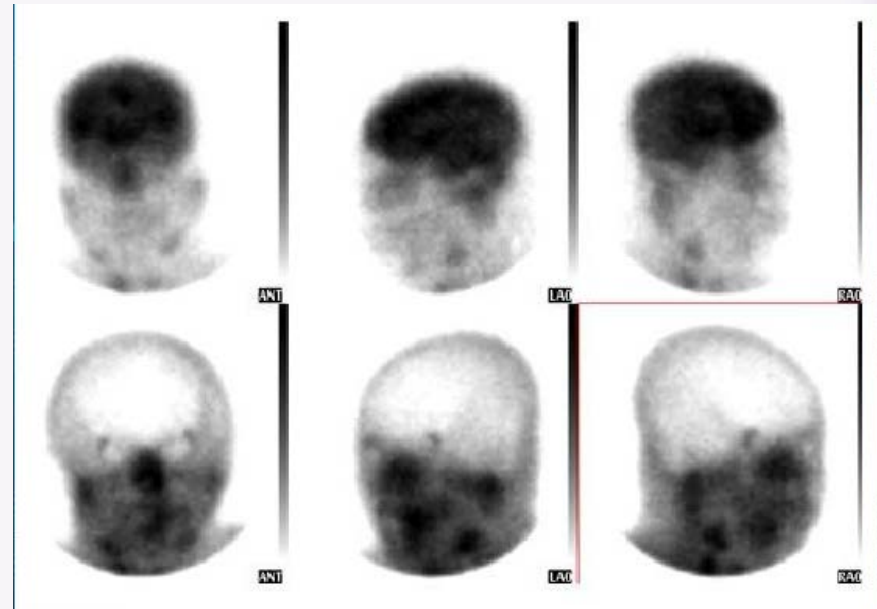


Register to be a donor at mwn.org

Cerebral Scintigraphy

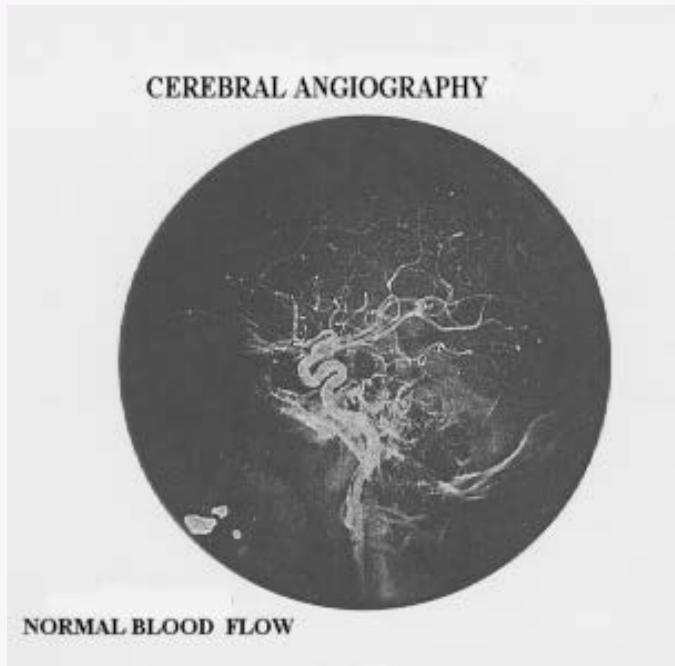


Negative



Normal on top, Negative on bottom

Cerebral Angiography



Apnea Exam

- Hospital protocols mirror the AAN guidelines
- Preoxygenate with 100% fiO_2
- Normal ABG
 - pH 7.35-7.45
 - pCO_2 35-45
- Remove vent & provide “blow by” O_2
- Observe for respiratory effort, 8-12 minutes
 - Any instability, exam is aborted and reconnected to vent
- Recheck ABG
 - $\text{pCO}_2 >60$ and $>$ than 20 from baseline



Apnea Exam

- Case #1
 - Baseline ABG: 7.32/41/456
 - 10 minutes: 7.14/67/426
- Case #2
 - 6.98/97/65
 - Cerebral angiogram
- Case #3
 - 7.44/34/59
 - 8minutes: 7.23/59/89
 - 14 minutes: 7.13/72/99



Vent Management

- Initial consultation with RT
 - 10 minutes of “playing” to get the right settings
 - Modified SALT
 - PC, IP 25 and wean to achieve 8ml/kg TV IBW
 - Switch to AC/VC+ after recruitment
 - Recruitment maneuvers: 40x40 Q2
 - Staircase Recruitment
 - Breathing treatments as needed
- Minimal vent settings
 - AC/VC+, 40%, PEEP 8



Vent Management, cont'd

- Bronchoscopy
 - Therapeutic
 - Visual
- O2 Challenge
 - ABGs on 40% & 100%
 - PFR, goal is >350
- Patient positioning
 - Prone
 - High side positioning



Additional considerations

- Limited suctioning
 - Once recruitment starts, suction only with obvious need
- Clamp ETT with disconnection
 - Do not want to lose recruitment
- Transport vent
 - Use transport vent for road trips and trip to OR
- Speak up!!
 - This is still your patient! If you have questions or concerns, let's talk!



Case Study

- 61/F
- Unresponsive
- Intubated in the ED
- MRI showed bilateral infarcts
- Pronounced brain dead at 1840
- Authorization at 1900



Vent Management

- Pre Apnea
 - 7.43/34/292
- Post Apnea
 - 7.21/74/318
- Vent changes
 - AC/VC+, PEEP 8, rate & volume for ABG
- Recruitment Maneuvers
- Pronation
 - 360 protocol



Additional testing

- CT chest: Mild interstitial edema, mild basilar atelectasis
- Bronchoscopy: Normal, minimal secretions
- CXR: Minimal atelectasis
- Final PO2 521





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Outcome

- Liver recovered, but discarded due to biopsy results
- Bilateral kidneys recovered, but discarded due to biopsy results
- Bilateral lungs recovered and transplanted into a 51/M!!!!



Did I forget to mention...

**Donor was a 1-1 ½ pack per day
smoker for 47 years!!!!!!!**



Case Study

- 17 year old male
- MVC
- No chest trauma suspected
- Pronounced with 4 vessel angio due to pulmonary instability
- Initial PO2 was 53
- CXR: Extensive hazy opacities in bilateral lungs, likely edema.



Interventions

- Vecuronium and Narcan
- Solumedrol
- Bronch
- Recruitments started 30x30, then up to 40x40 (hourly)
- Albumin
- Lasix
- Dobutamine
- High left turn
- Positioned prone
- Repeat Vec and Narcan
- Repeat Solumedrol



Outcome

- After 12 hours, PO2 395
- Continued hourly recruitments
- Repeated bronch
- Allocated lungs to 26 year old male
- Final PO2 392
- Hourly recruitments...

–56 hours



Thinking outside the box...

- https://www.youtube.com/watch?v=CUUq7fLMruM&oref=https%3A%2F%2Fwww.youtube.com%2Fwatch%3Fv%3DCUUq7fLMruM&has_verified=1

