Utilization of the CHKD Mobile ICU or other Critical Care Transport Assets

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Closest Critical Care Companies

Other Modes of Transport Available

What is a.....

PALS unit?
Critical Care?
BLS?
ALS?

The Only Pediatric/Neonatal Specialty Team in Eastern Virginia/Northeastern North Carolina

CHKD's MICU

Critical Care Transport

- Who am I getting?
- What can they do?
- Where are they coming from?
- When do I need to call?
- How do I get them?

Critical Care

- **Who** am I getting to care for my patient during the transfer?
  - Experience multidisciplinary team, with specialized training, high standards, and autonomy.
  - Critical Care Paramedic and Nurse (and a Respiratory Therapist on CHKD MICU)

Critical Care

- **Paramedic**
  - Specialty certificate FP-C or CCTP
  - Years of experience in a busy 911 system and in-hospital
  - Highly proficient in all areas of medicine and cross trained in the RN role.

Critical Care

- **Nurse**
  - Specialty certificate CCRN or CEN
  - Years of experience in the ED, ICU
  - Highly proficient in all areas of medicine and cross trained in the Paramedic role.

Critical Care
CHKD MICU

- **Respiratory Therapist**

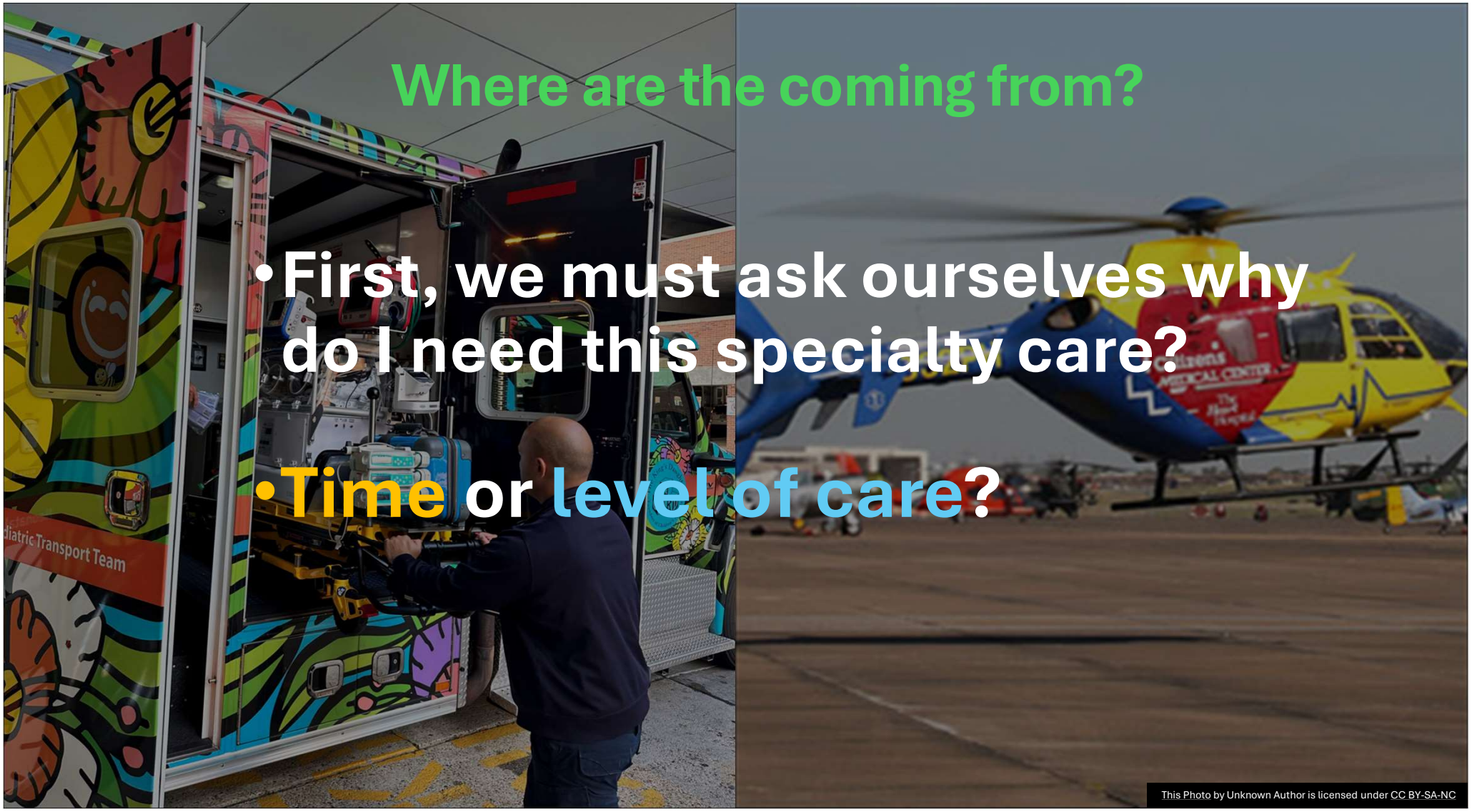
  - Specialty certificate NPS
  - Years of experience in the ED, NICU, and or PICU
  - Highly proficient in all areas of medicine and cross trained in the Paramedic/Nurse role.

What Can They Do?

- Administer and or titrate multiple medication do to include or not limited to.
- Antibiotics
- Antidysrhythmic
- Beta Blockers
- Paralytics
- Sedation
- Analgesics
- Vasopressors
- Interpret blood gasses, and other lab values.

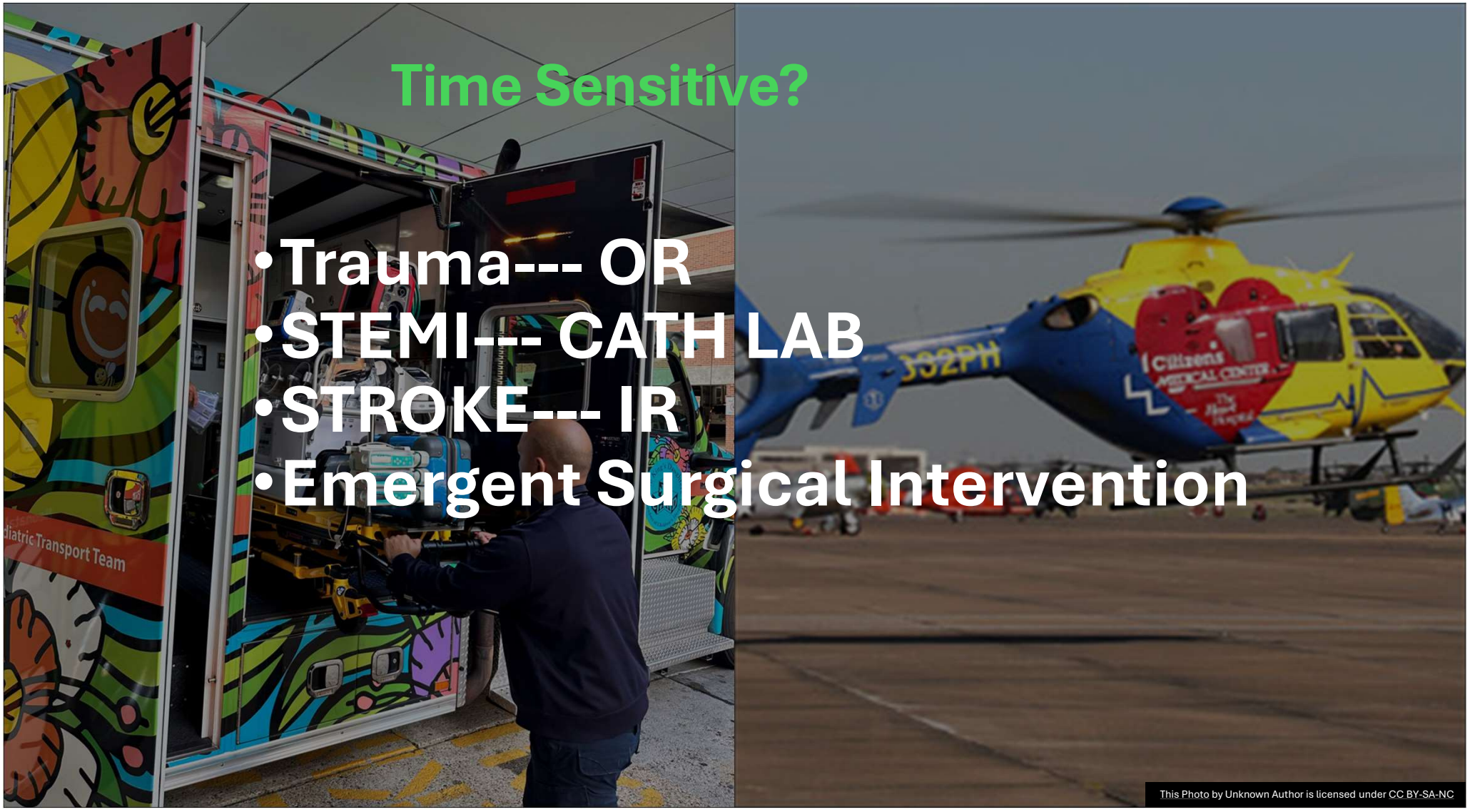
What Can They Do?

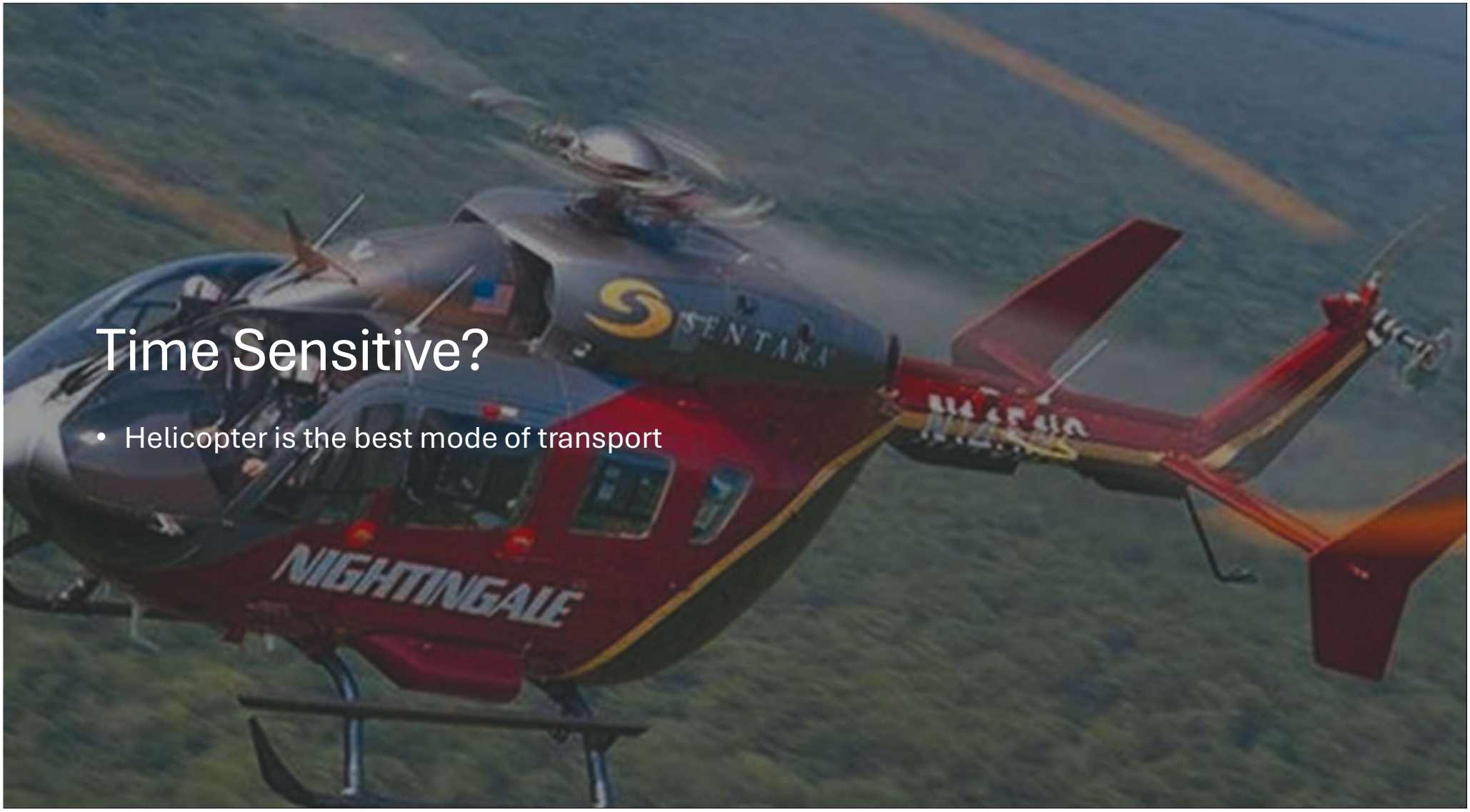
- DSI, RSI
- Surgical Airways
- Needle Thoracostomy
- Manage IAPB
- Manage Impella (pVAD)
- Chest tubes
- Complex ventilation strategies
- Push dose pressors
- Monitor Venous and Arterial Central lines (**CHKD** initiate UVL, UAL)
- POCUS



Where are the coming from?

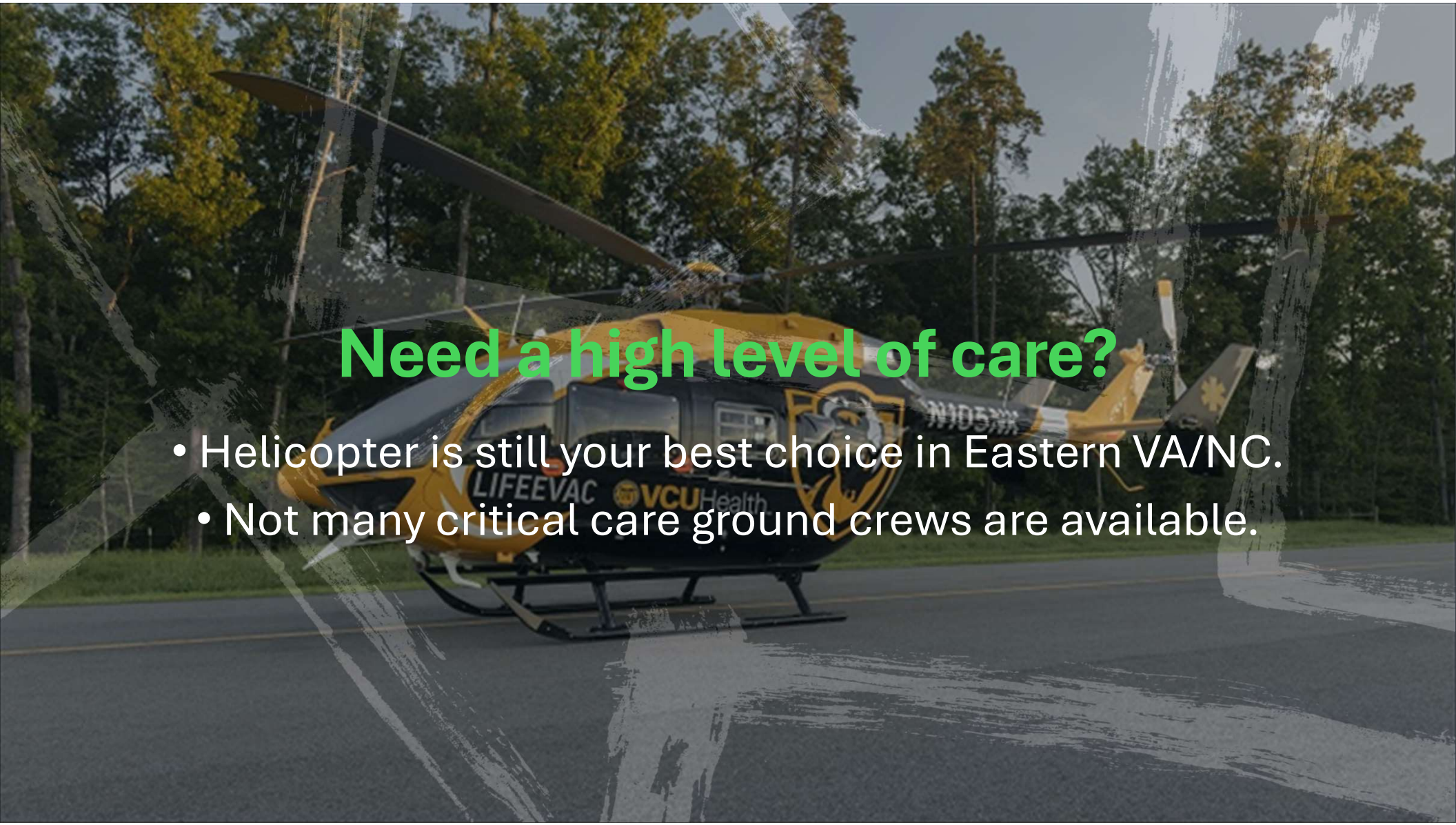
- First, we must ask ourselves why do I need this specialty care?
- Time or level of care?





Time Sensitive?

- Helicopter is the best mode of transport



Need a high level of care?

- Helicopter is still your best choice in Eastern VA/NC.
- Not many critical care ground crews are available.

Need specialist in Pediatric and Neonatal Critical Care?

There is only ONE

MICU Team

- Can fly with Nightingale or MedCenter Air

When do I need to arrange transport and what do they need?

- **Time sensitive? Call NOW**

- Nightingale has an approx. 10 min lift of time, plus the distance to fly.

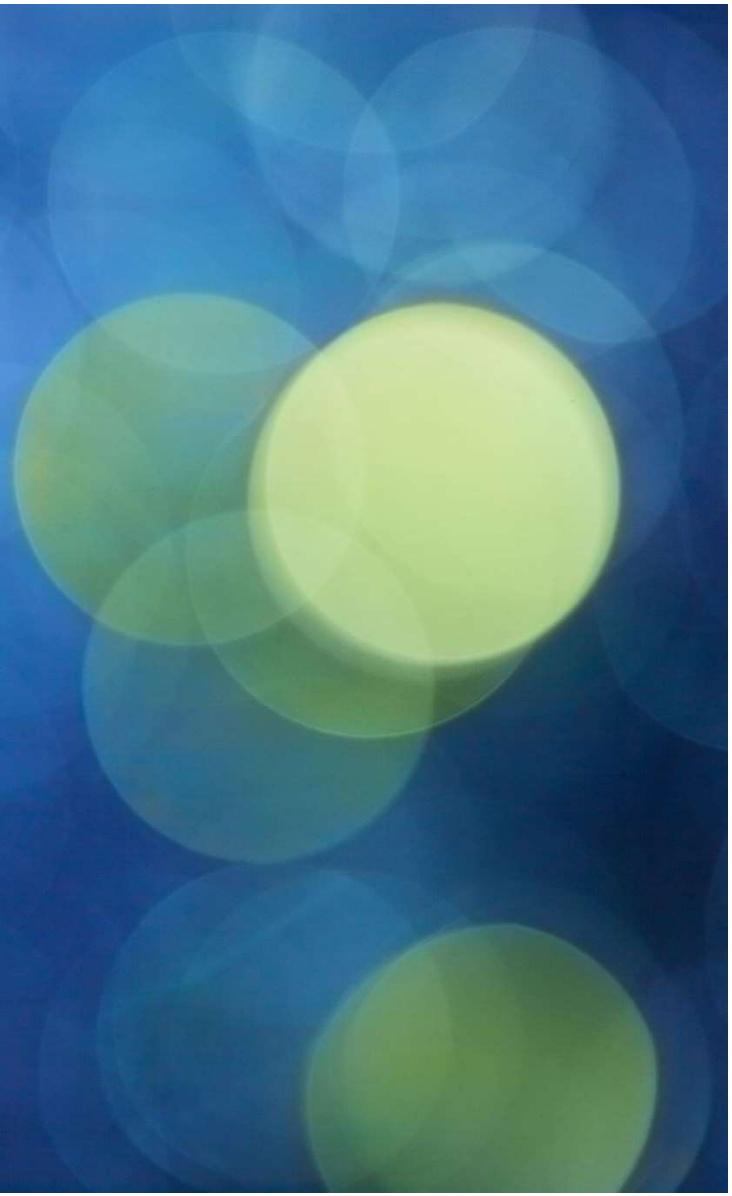
- Other helicopter programs are about the same but coming from a longer distance.
  - Life Evac has bases in Petersburg and West Point
  - ECU EastCare has bases in Bertie, Craven, Onslow, and Wayne Co.
  - EastCare also offers a Peds/Neo team.
  - HCA is based in Hopewell VA.

CHKD MICU

CALL AND GET AN ACCEPTING MD

THE TEAM IS MD ACTIVATED.

APPROXIMATELY 15-MINUTE WHEELS ROLLING TIME.



What documents do they need?

- It depends…
- Sentara to Sentara utilizing NTG, no much.
- Non-affiliated hospitals? Copies of the chart and a disk of all films.
- Time sensitive bedside times… 10 min.
- Not time sensitive…. It varies
- CHKD MICU… most of the time its lengthy, but not always.

Who to call?

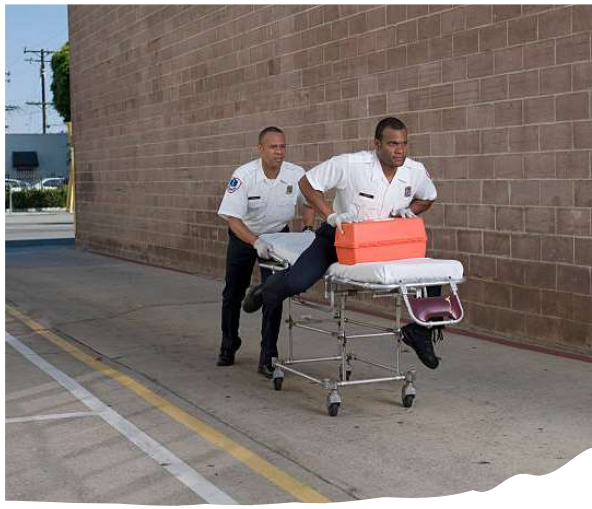
Kid Comm

1-757-668-8000

Nightingale Dispatch

1-800-572-4354


Pierce
Hampton
7
K9
K9
NORFOLK FIRE-RESCUE
VB RESCUE PLAZA
1621
1621
VB RESCUE PLAZA
VB RESCUE PLAZA
VIRGINIA BEACH
VIRGINIA BEACH FIRE-RESCUE
SUFFOLK
Pierce
ENG 7 INE
VIRGINIA
196-917L



NOPE! On the inside we are running away.

Seizure

Difficulty Breathing

Trauma

Seizure

- Most common cause
  - Fever
    - Typically, in children between 6 months and 5 years of age.
    - These often happen during the initial rise in body temperature
    - Simple vs. Complex: Simple last for 15 min or less

Seizure

- Other Causes of Seizures
  - Infections: Brain infections like meningitis or encephalitis can cause seizures.
  - Metabolic Imbalances: Low blood sugar (hypoglycemia) or other metabolic disorders can trigger seizures.
  - **Medications:** Certain medications can lower seizure thresholds. (Haloperidol, Diphenhydramine)
  - Substance Use: Drugs or alcohol withdrawal can also lead to seizures.
  - **Head Injury**: Brain damage from a head injury can be a cause.
  - Brain Tumors: Although rare, brain tumors can also cause seizures.
  - Genetic Factors: Some children may have a genetic predisposition to seizures.
  - **Epilepsy**: Epilepsy is a condition characterized by recurrent seizures

Seizure

What should we do?

Febrile- Airway and supportive care, supplemental O2, protection.

Remove extra clothing, apply cool compresses. Avoid ice, cold baths etc.

Obtain a SAMPLE history.

More that 15 minutes of seizures, consider a benzo (Midazolam, Diazepam)

IV if a high suspicion of hypovolemia, if not IM, Nasal, or rectal.

Consider Hypoglycemia and treat as needed.

Seizure

- Other Causes of Seizures
  - Infections:
  - Metabolic Imbalances:
  - **Medications:**
  - Substance Use.
  - **Head Injury**:
  - Brain Tumors: Genetic Factors: **Epilepsy**:

Treat as indicated:

Note: Multiple doses and multiple routes of administering benzo's can cause hypotension and apnea. (slower absorption rates)

If they can not maintain their own airway RSI is an option. Continue to treat the underlying causes of seizures. *Paralytics only mask the symptom.*

Difficulty Breathing

Doorway assessment

Skin Color

Mental Status

Work of breathing

****Rapid intervention or we have some time?****

What's the noise

- Wheezing?
- Stridor?
- Nothing?
- Upper/Lower Airway noise?

Nebulizers

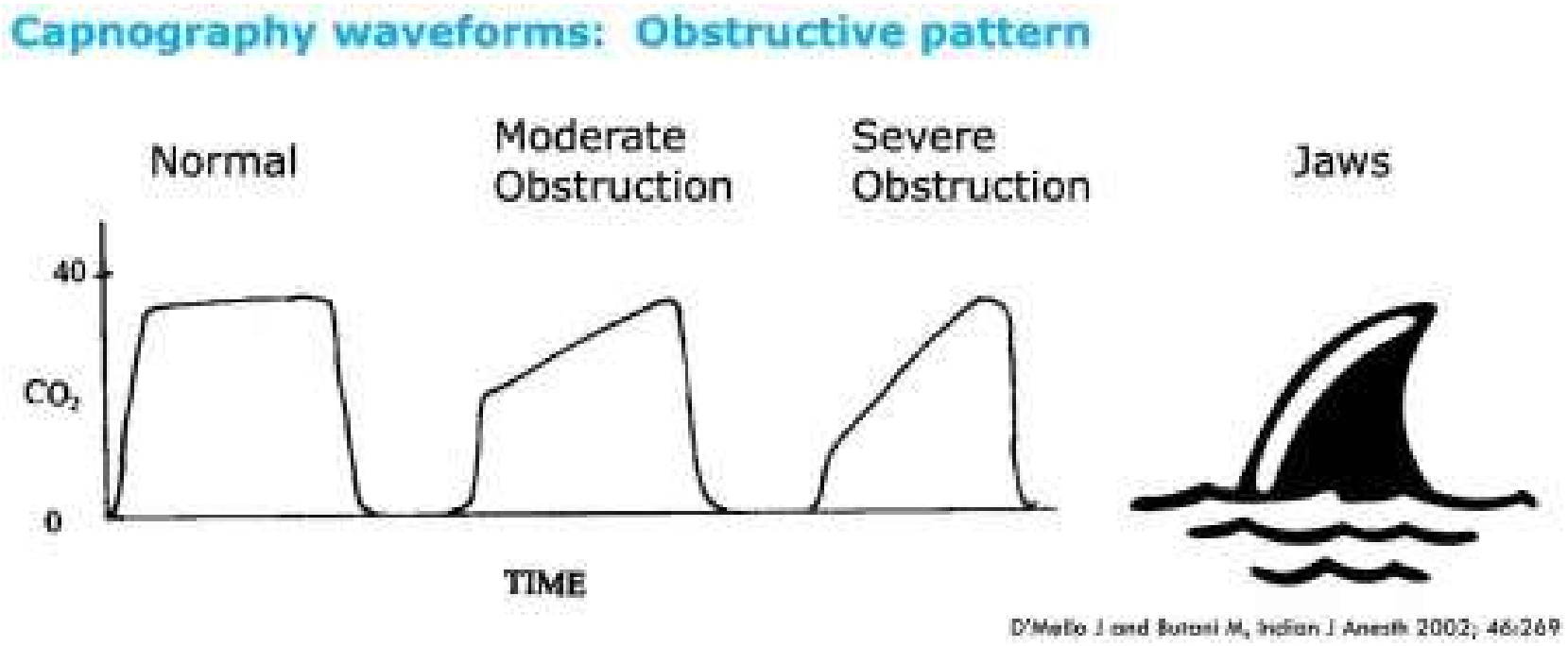
- Don’t be afraid of tachycardia. Kids can handle it! Give back-to-back treatments. (med control)

- Racemic Epi (Stridor at rest, Croup)

- Most of the kids don’t need more oxygen they need more **alveoli surface area, or better ventilation.**

- **Don’t chase the etCO2! Use the etCO2 pleth wave to show you air trapping improvement or worsening.**

Capnography



Intubation

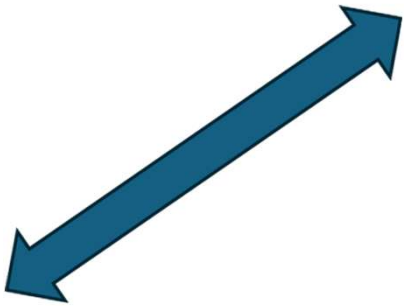
Follow your local protocols

Set you self up for success

- Positioning!
- Video laryngoscopy, proper stylet with blade.
- Bougie, tube size?, suction.
- Ventilate, oxygenate and treat BP prior to RSI.
- Verify DSI/RSI dosages, be prepared for sedation after the intubation for longer transports.
- Utilize progressive laryngoscopy technique. Be gentle.
- Don’t forget about addressing pain.

Intubation

Ventilation



Air In and Air Out

I:E ratio- 1:2-1 second inspiration, 2 second expiration.

- **If Asthma.. Slow Down! Do not** chase your ETCO2. This will be extremely detrimental to you patient.

- I:E of a minimum of 1:4 if not much longer.

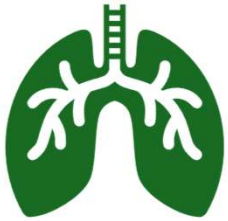
  Continuous nebulizers

  Epi, Mag, Methylprednisolone

Intubation

Ventilation

Air In and Air Out



If you are utilizing a ventilator

Use non-standard I:E ratio's

Slow respirations

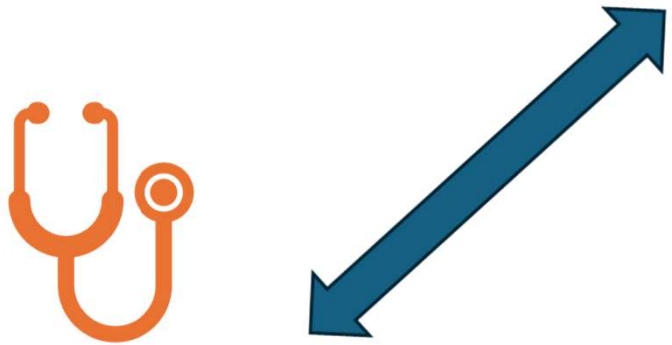
- If using **pressure ventilation** modes expect, High PIP alarms.

  -Insure adequate sedation and or paralysis.

  -Use lower PEEP <5.

-Shoot for tidal volumes of 6-8 ml/kg of **IBW**.

Intubation



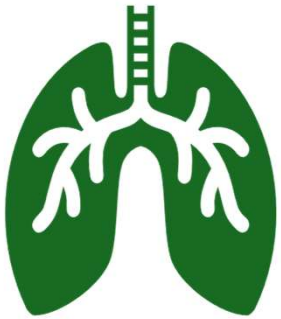
Oxygenation

Delivering Oxygen from the alveoli to the blood and then to the body's tissues.

Ventilation =breathing

vs.

oxygenation = using O2



Which Kids Should Be Transported directly to CHKD?

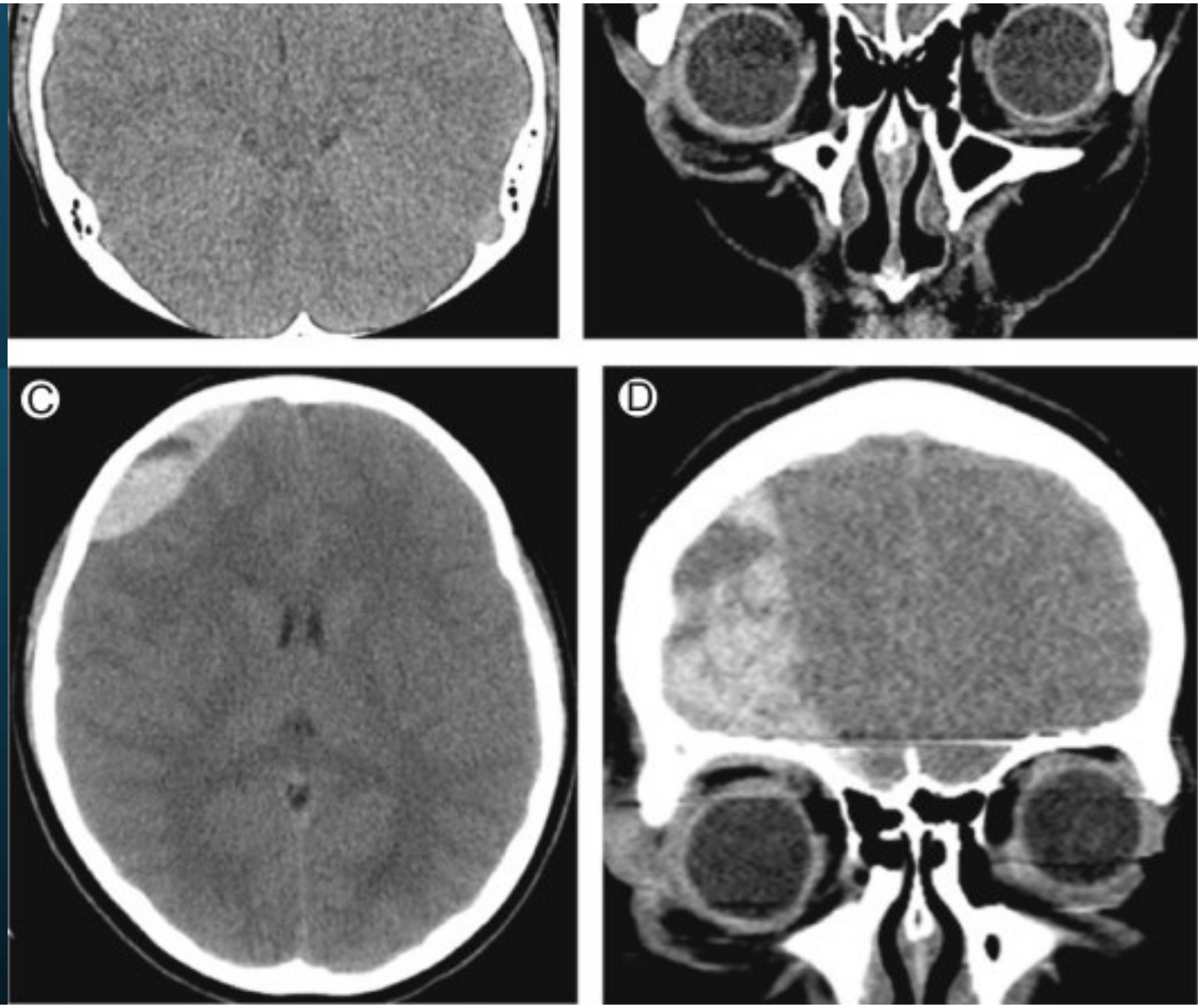
If any pediatric needs to be admitted for observation or further treatment, they will eventually end up at CHKD.

If you have had to give medications while caring for your pediatric patient, more that likely they will end up at CHKD.

Do what is right for the patient, the patients' family, even though it may inconvenience the EMS crews.

Trauma

#1 Head Trauma



Head Trauma

- Subdural Hematoma
- Contusions
- Skull Fractures
- Etc.

Head Trauma

What is EMS's primary concern?

LOC which dictates your airway decision

Question: If they vomit, will they aspirate?

Head Trauma

Head Trauma

No-----supportive measures only.

Yes----------Do I do it now? Do I go to **a** hospital? Do I go to CHKD and let them do it?

Spinal Injury

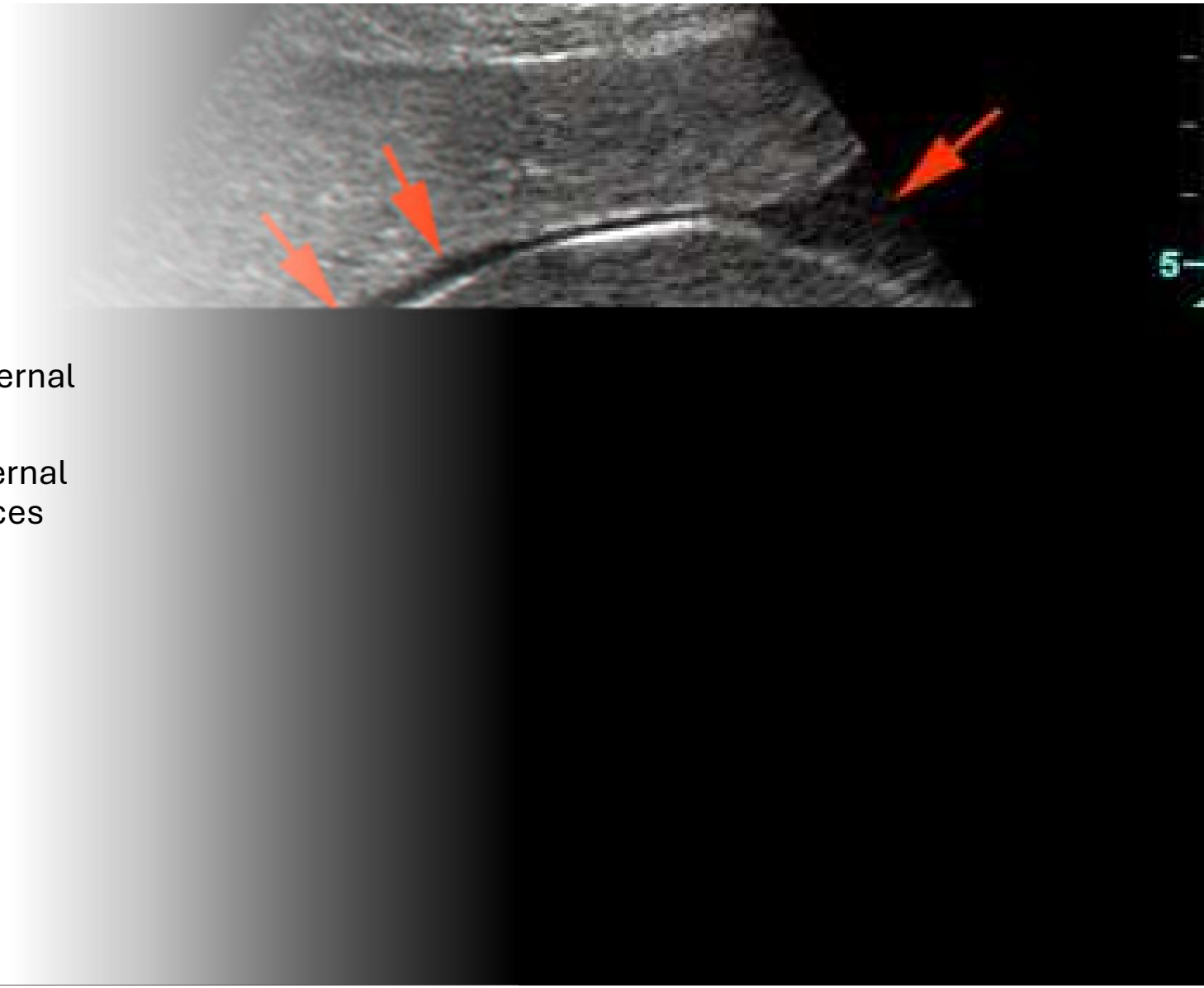
With obvious deficits?

Yes----------Is there a breathing issue?

Should I anticipate or do I see signs and symptoms of spinal shock? (Hypotension with Bradycardia) injury above T6 of spinal shock?

- **What can I do about Spinal Shock?**

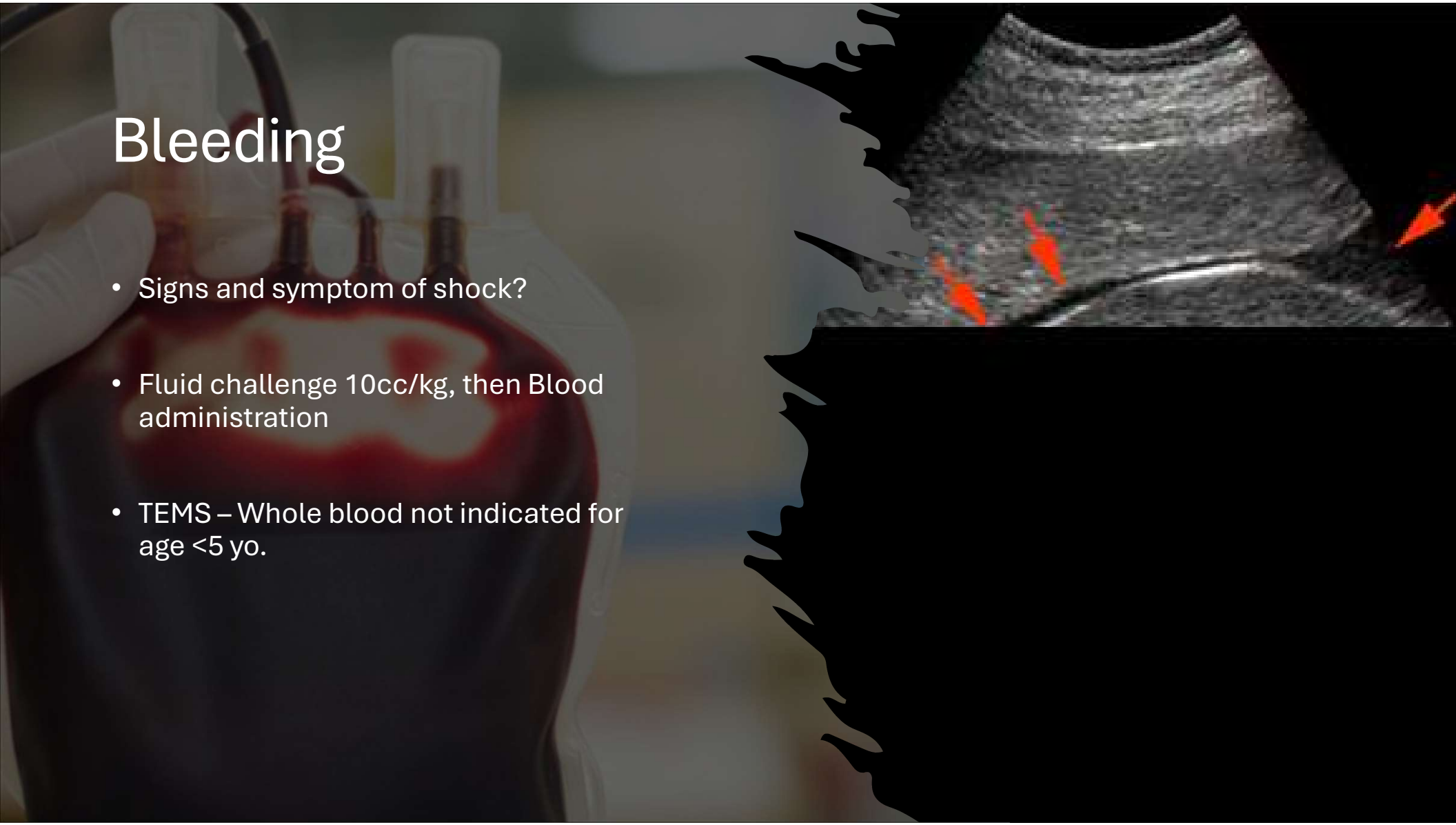
Bleeding



- We know what to for external bleeding.
- How can we identify internal bleeding or fluids in places they should not be?
- POCUS

Bleeding

- Signs and symptom of shock?
- Fluid challenge 10cc/kg, then Blood administration
- TEMS – Whole blood not indicated for age <5 yo.



Pain Control

- Fentanyl 1 mcg/Kg
- Morphine 0.1 mg/kg
- Ondansetron

Direct Trauma Center Transport Criteria Keep scene time at 15 minutes or less

Status

GCS < 14; SBP < 90; Resp rate <10 or >29

Injury - Penetrating injury to head, neck, torso, proximal extremities

Flail chest; Two or more proximal long bone fractures; Pelvic fracture

Open/depressed skull fracture; Paralysis; Crushed, degloved, or mangled extremity; High voltage electrical burns

Mechanism

Peds, fall greater than 2-3 times height

Intrusion greater than 12 inches on occupant side and/or greater than 18 inches anywhere

Ejection including partial

Death in same passenger compartment

Auto vs pedestrian or bicycle thrown, run over or greater than 20 mph; Motorcycle crash greater than 20

Trauma

If a patent airway cannot be established, CPR is in progress or bleeding is uncontrolled, transport to closest facility

Trauma

What significant pediatric trauma should come to CHKD?

All the rest!

Thank you!


NEONATAL PEDIATRIC CRITICAL CARE TRANSPORT TEAM
EST.
1975
CHKD


HEALTH
HEALING
CHKD
Children's Hospital
of The King's Daughters
Norfolk, VA
HOPE FOR ALL CHILDREN