“Early Show” Top Ten Pearls of Pediatric Trauma

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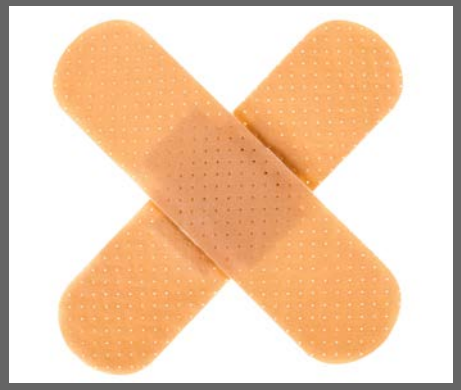
DENVER HEALTH est. 1860 FOR LIFE'S JOURNEY


I have no financial disclosures.

Objectives: Pediatric Trauma Nuances

Anatomy



Injury Patterns

Evaluation

Management

Background

Trauma:

#1 Cause Death & Disability in Children

Tracy et al. 2013

Mechanism of Injury

Age 0-9: Falls

Age 10-18: MVC

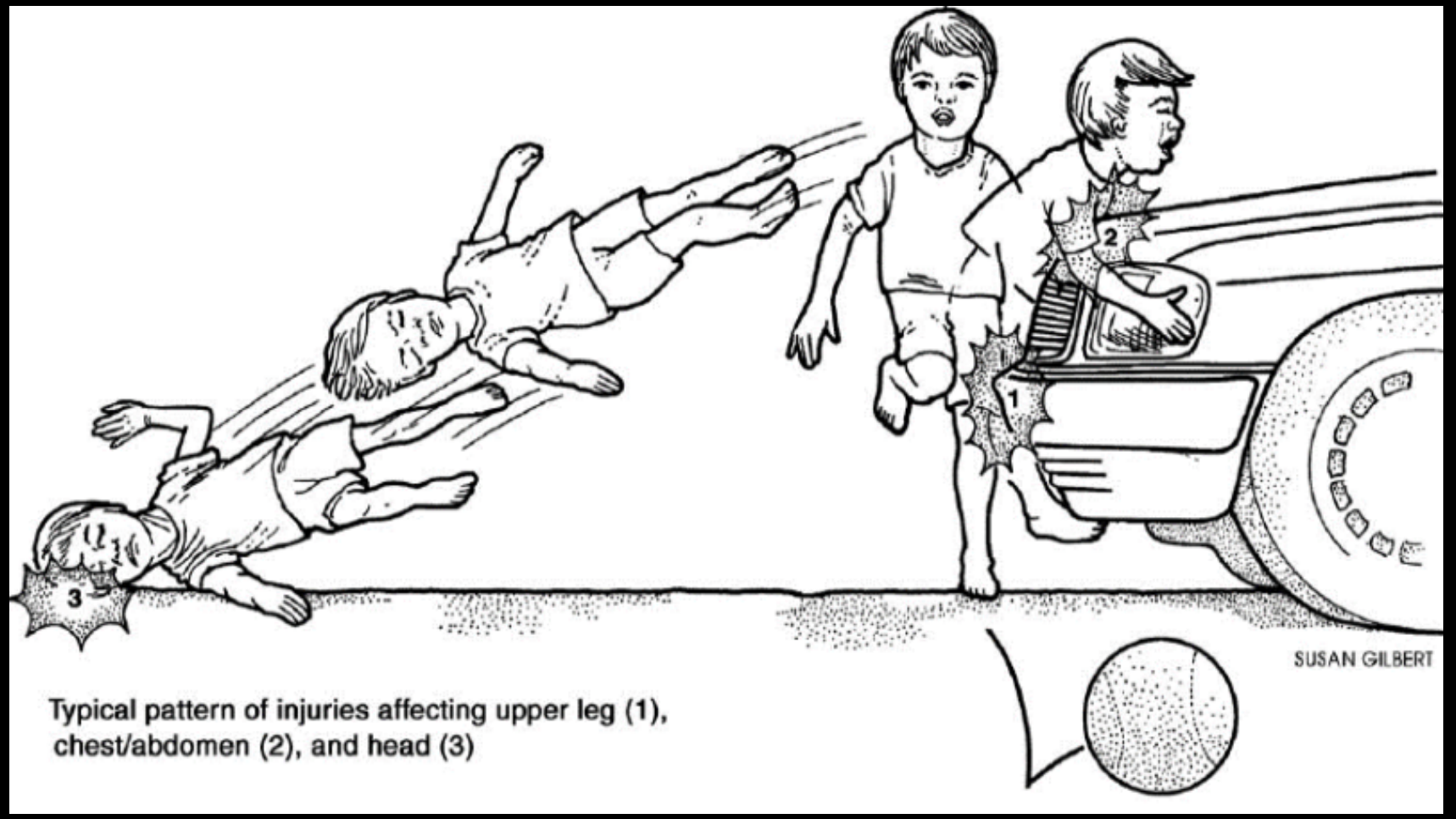
Tracy et al. 2013


Not Just Small Adults

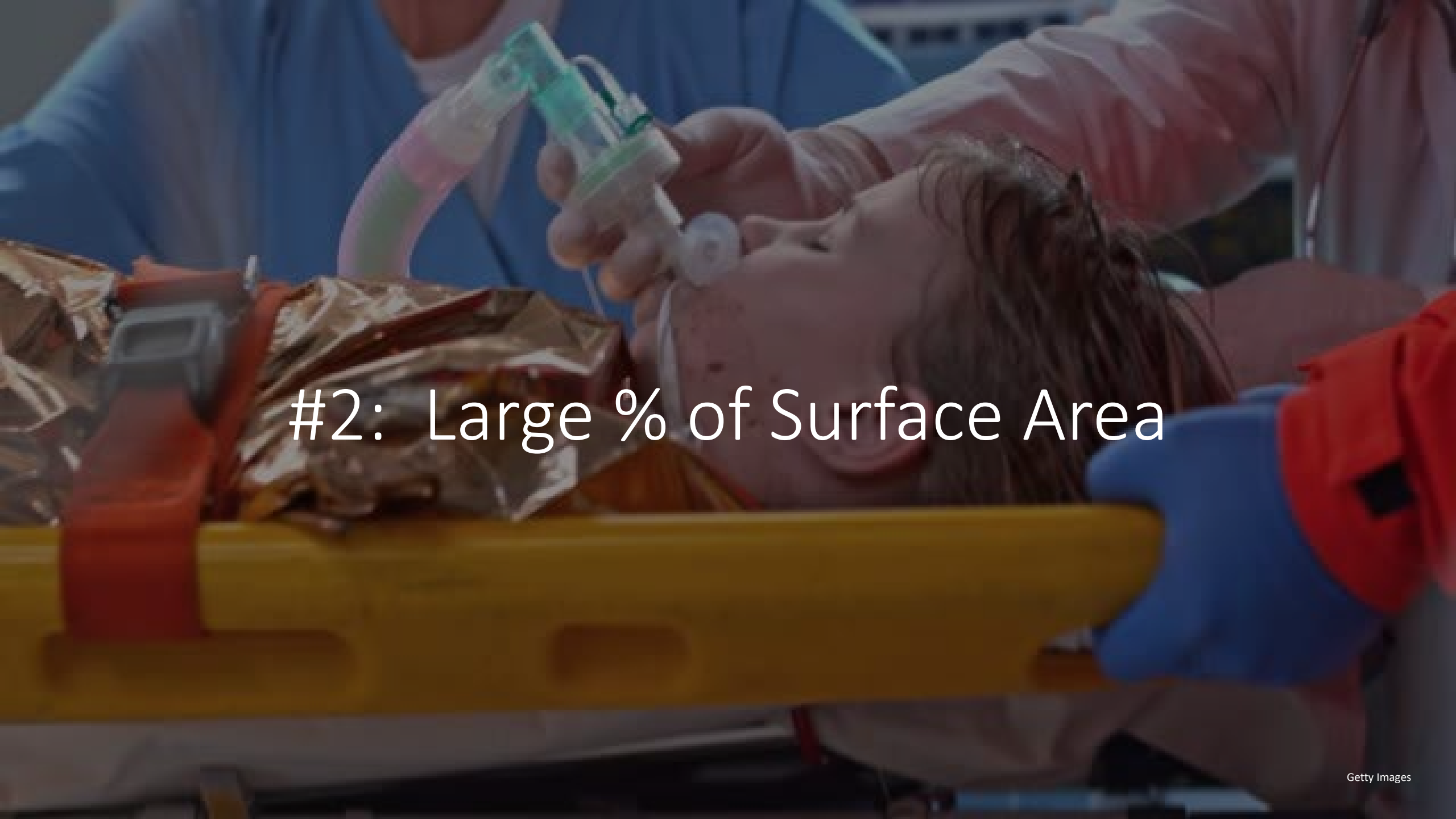
Top Ten


#1: Big Heads, Small Body

Injury Pattern: Waddell's Triad



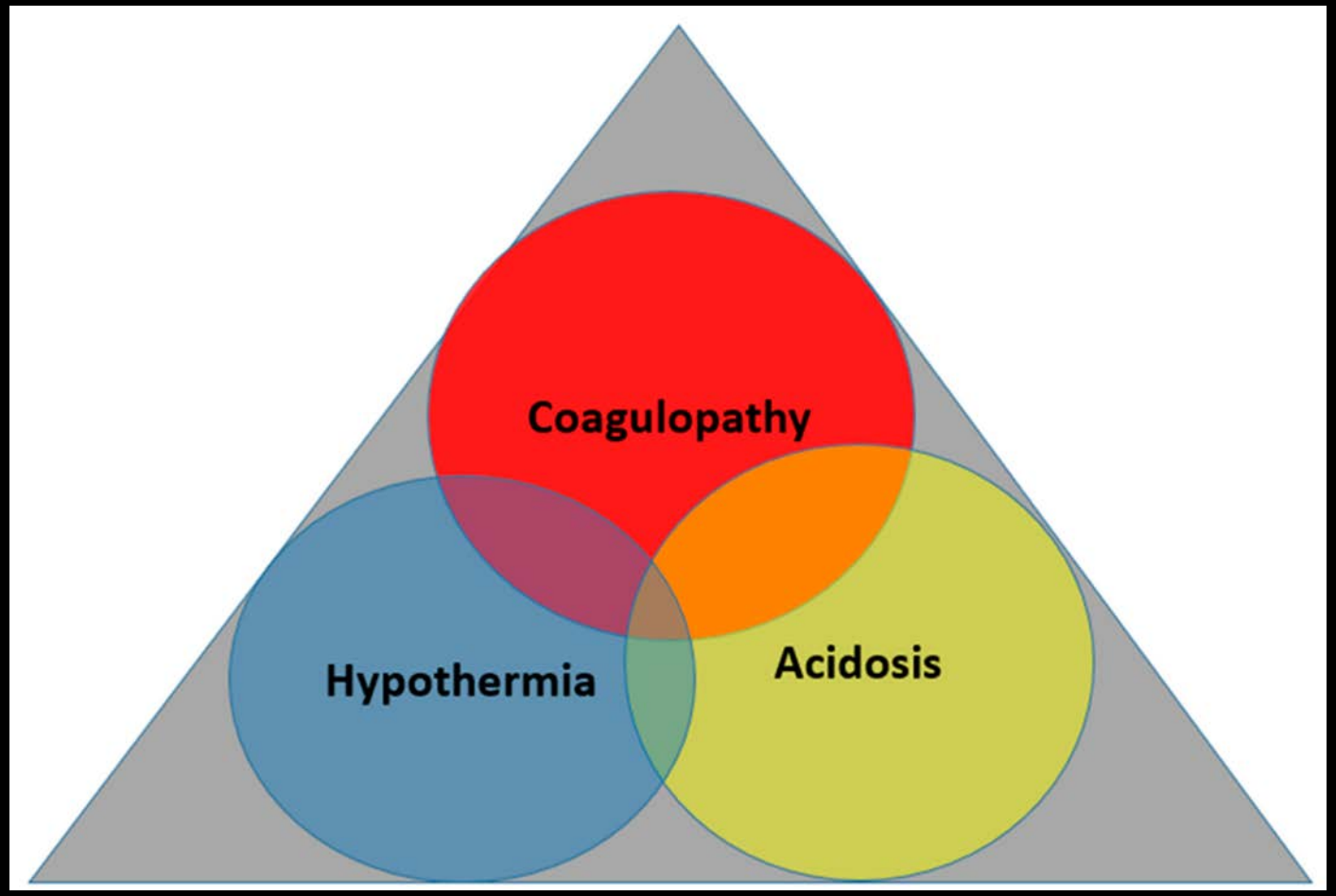
Typical pattern of injuries affecting upper leg (1), chest/abdomen (2), and head (3)



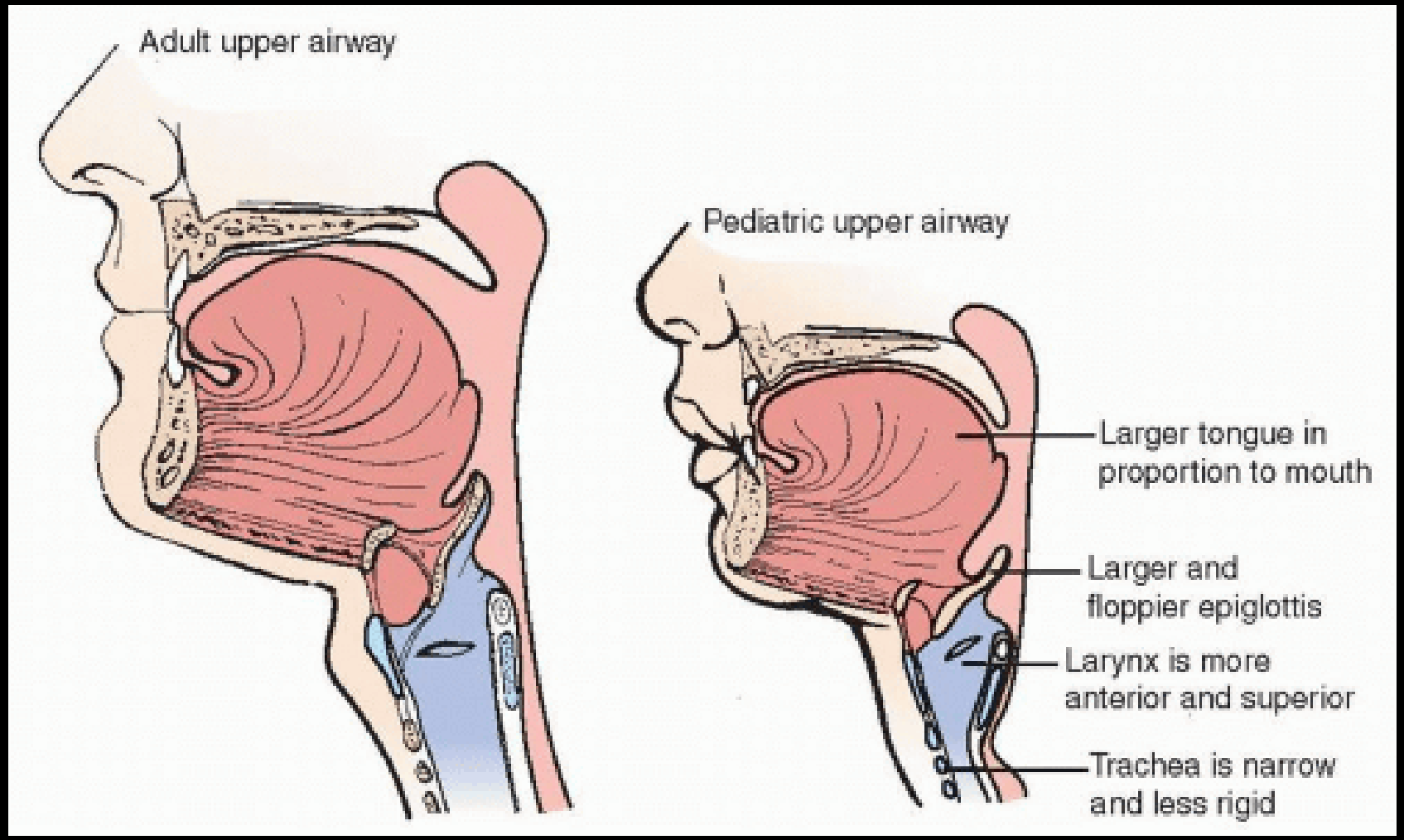
#2: Large % of Surface Area

Getty Images

Triad of Death

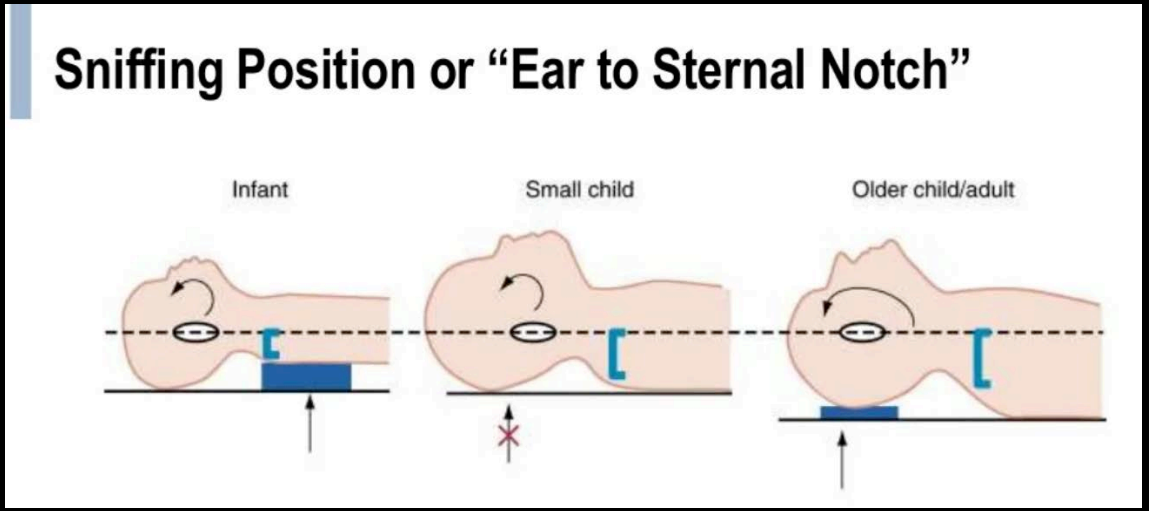


#3: Airway Differences

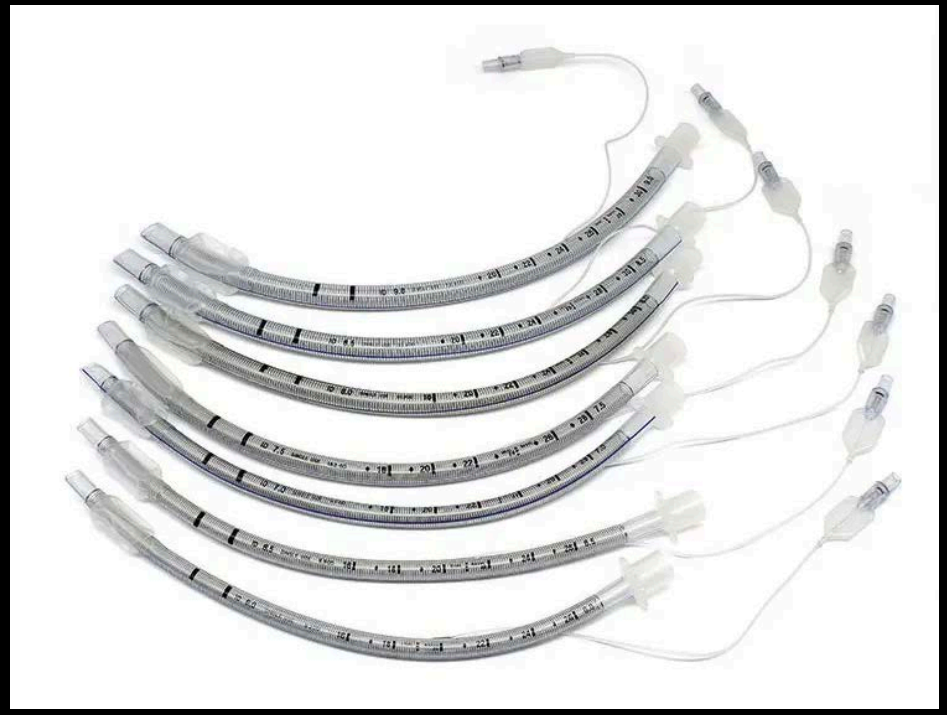


Anesthesia Key

Head Positioning



Intubation



#4: Head Trauma Common

#1 Cause Death

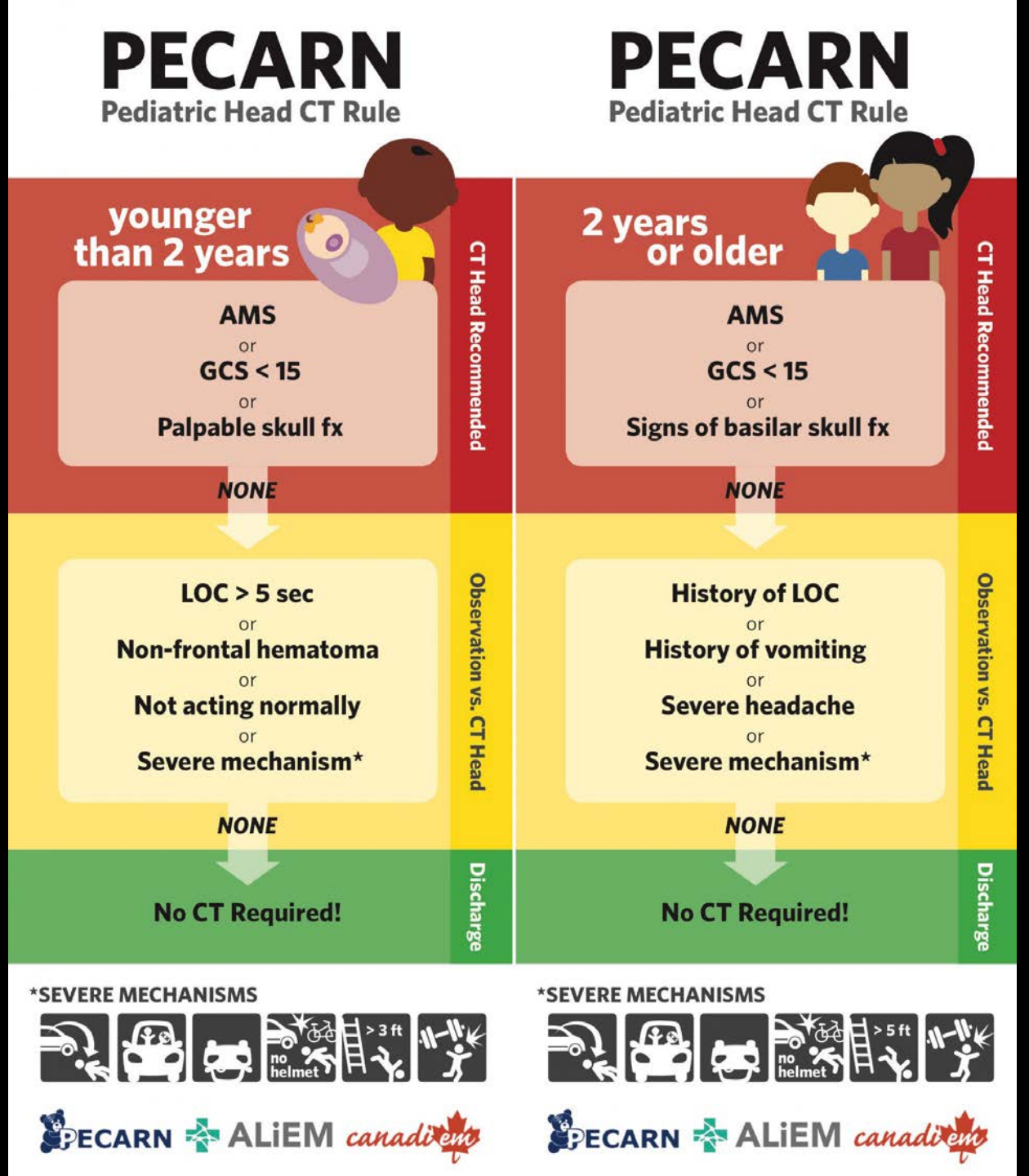
PECARN HEAD TRAUMA DECISION GUIDE:

Kupperman et al. 2009

4.4% ciTBI

0.9% ciTBI

< 0.02% ciTBI



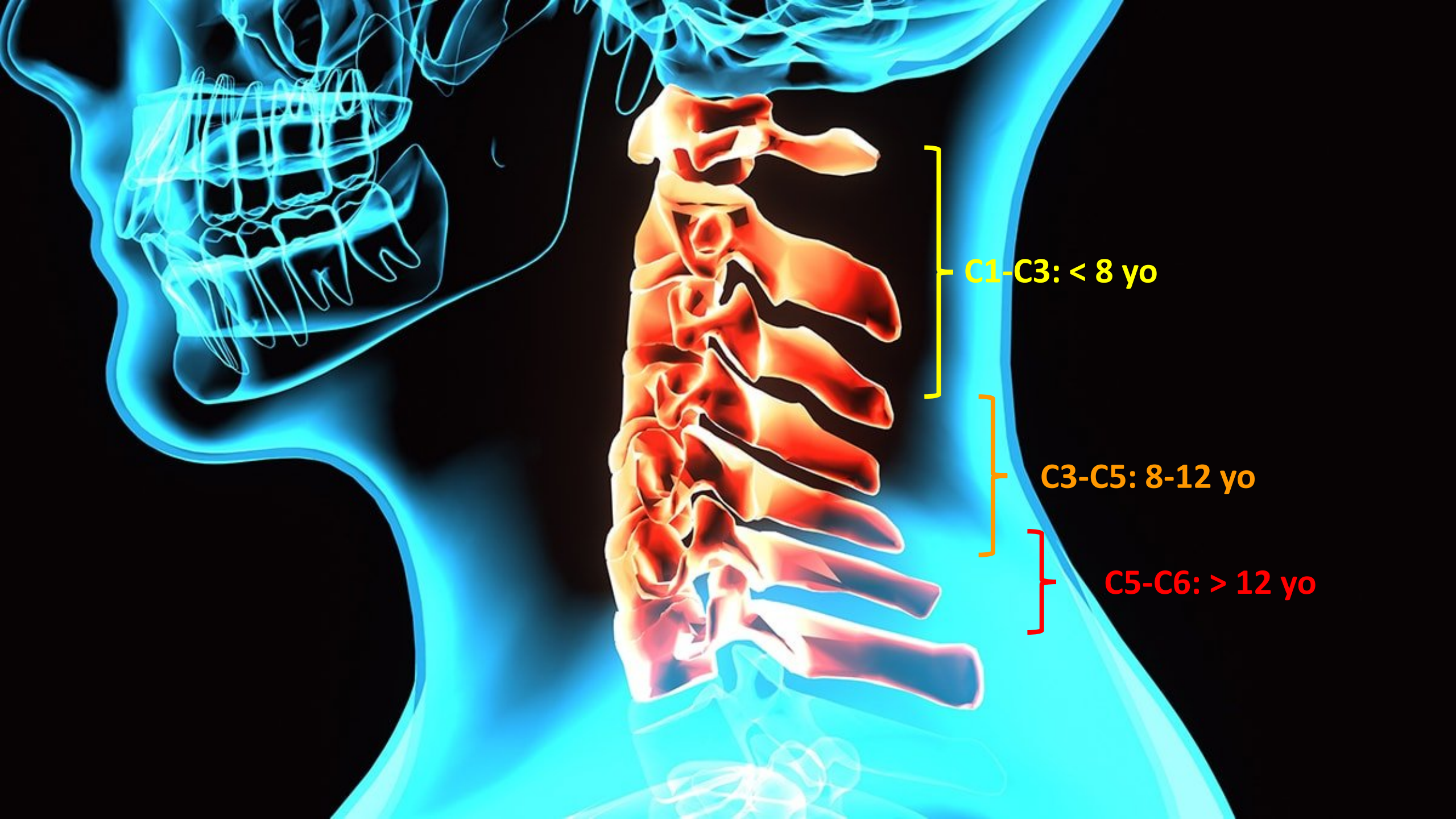
4.3% ciTBI

0.8% ciTBI

< 0.05% ciTBI

Kupperman et al. 2009

#5: Cervical Spine Injuries Uncommon


C1-C3: < 8 yo
C3-C5: 8-12 yo
C5-C6: > 12 yo

Imaging Criteria

NEXUS

Validated by Vicellio

Hoffman et al. 2000

Prospective
<18yrs
3065 participants

Low risk for C spine injury with all of ...

- ☑ Absence of posterior midline cervical spine tenderness
- ☑ Absence of a neurological deficit.
- ☑ Absence of intoxication
- ☑ Normal level of alertness
- ☑ Absence of distracting pain

Sensitivity 100%
Specificity 19.9%

✗ Cannot be applied reliably to children <9yrs

PECARN

Leonard et al. 2010

Prospective
<18yrs
4091 participants

Any one of the following factors is associated with CSI in children...

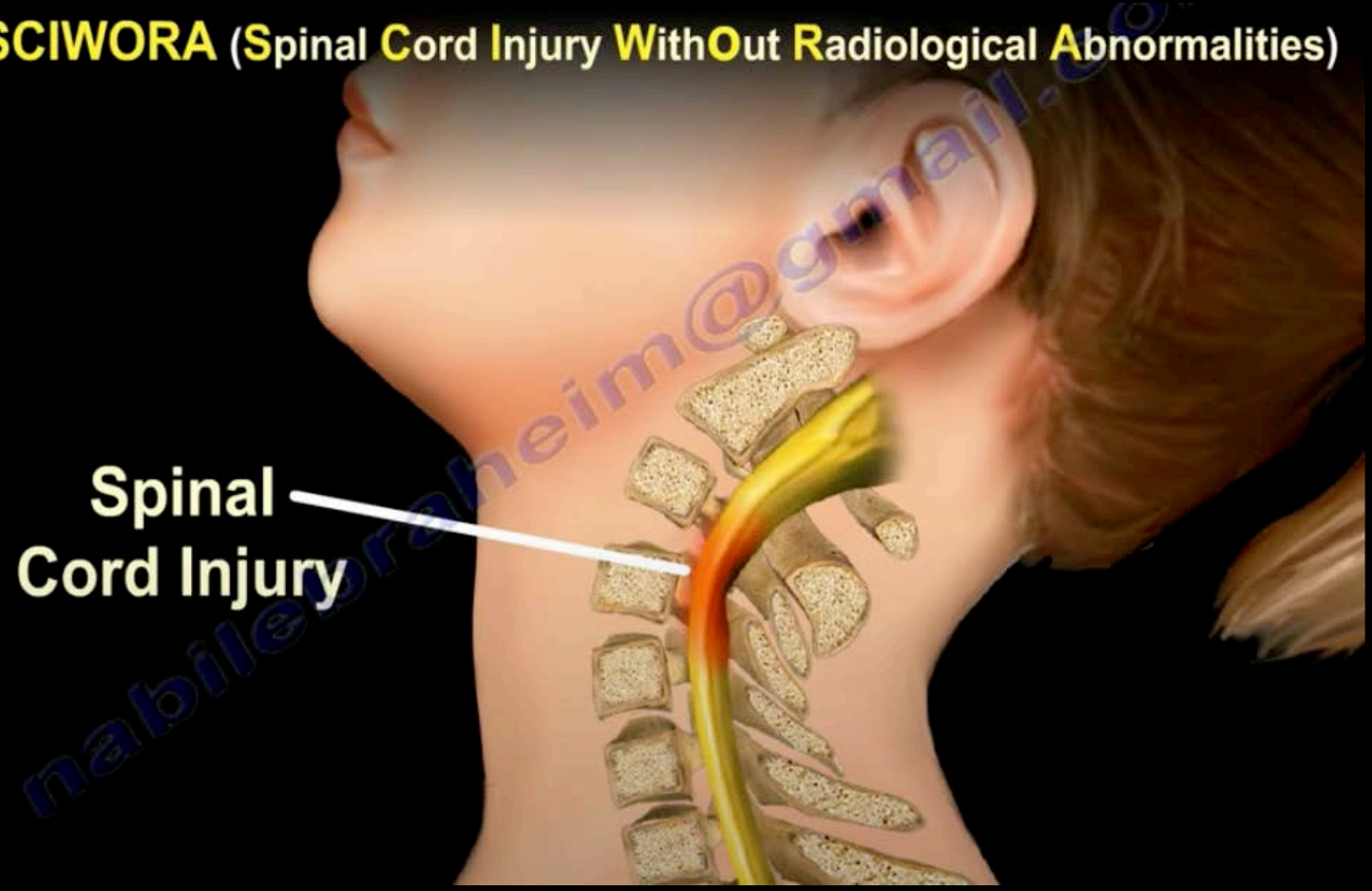
- Altered Mental Status
- Focal Neurological Findings
- Report of neck pain
- Reported decreased neck mobility or on physical examination
- High risk MVC
- Significant torso injury
- Diving as the mechanism
- Predisposing factors such as T21

Sensitivity 90.5%
Specificity 45.6%

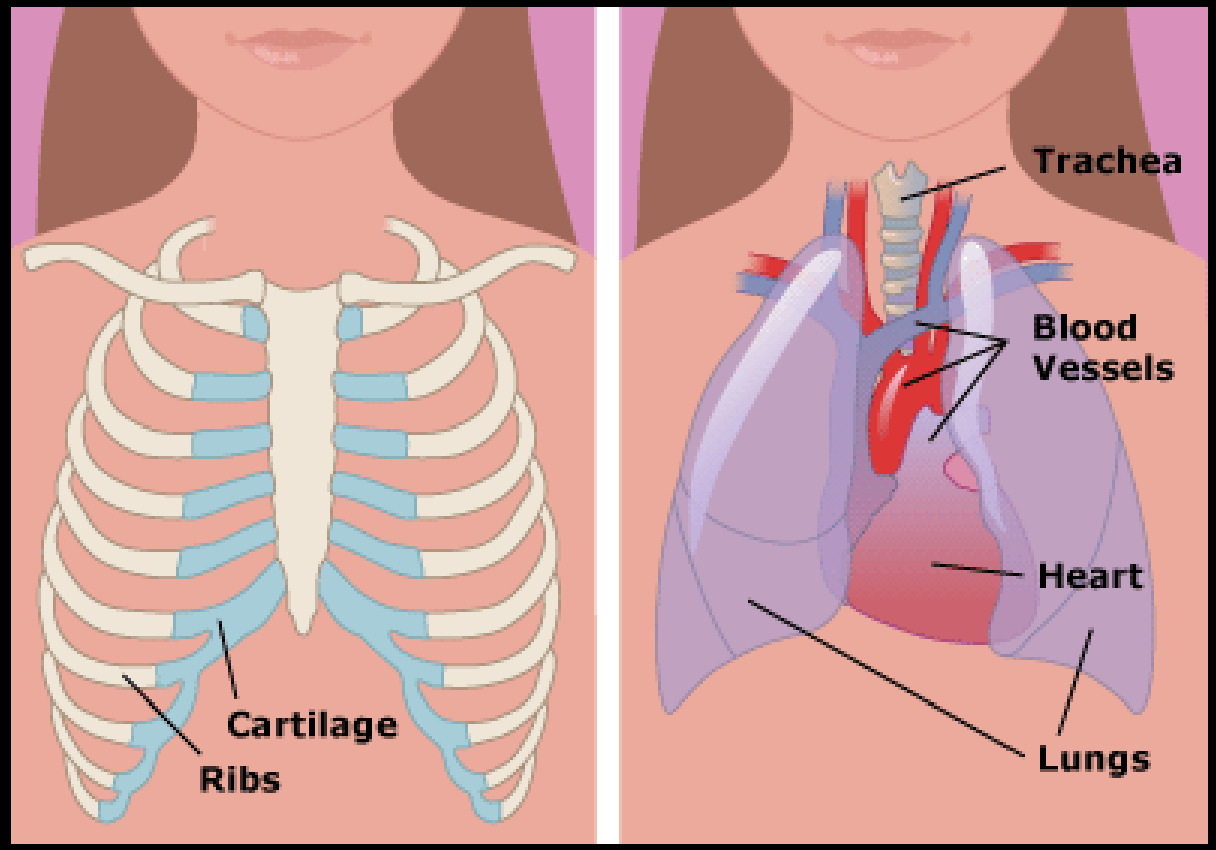
↓ Underpowered to establish definitive rule


L
Supine
Horizontal Ray

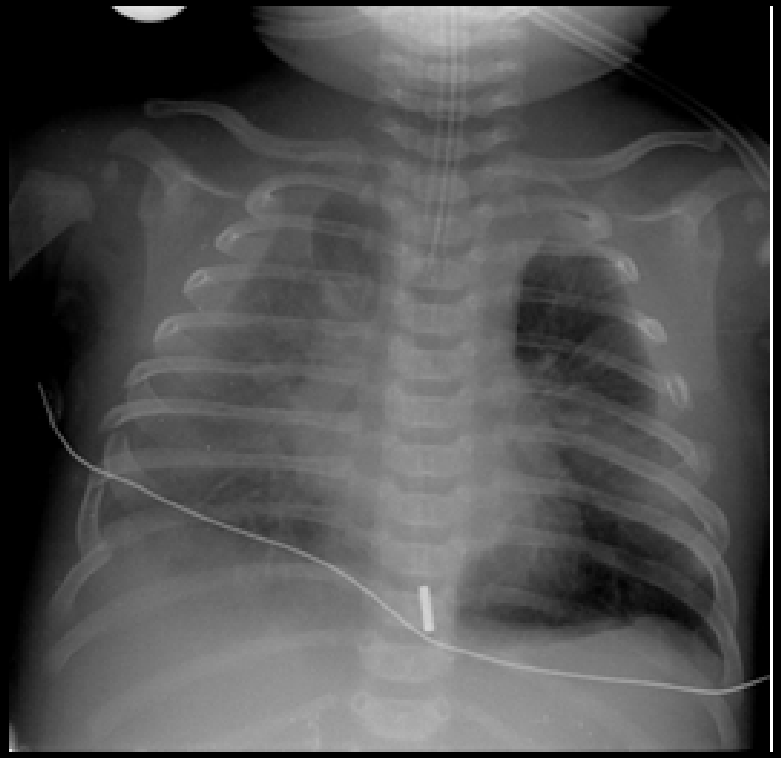
SCIWORA (Spinal Cord Injury WithOut Radiological Abnormalities)



#6: Chest Trauma is RARE

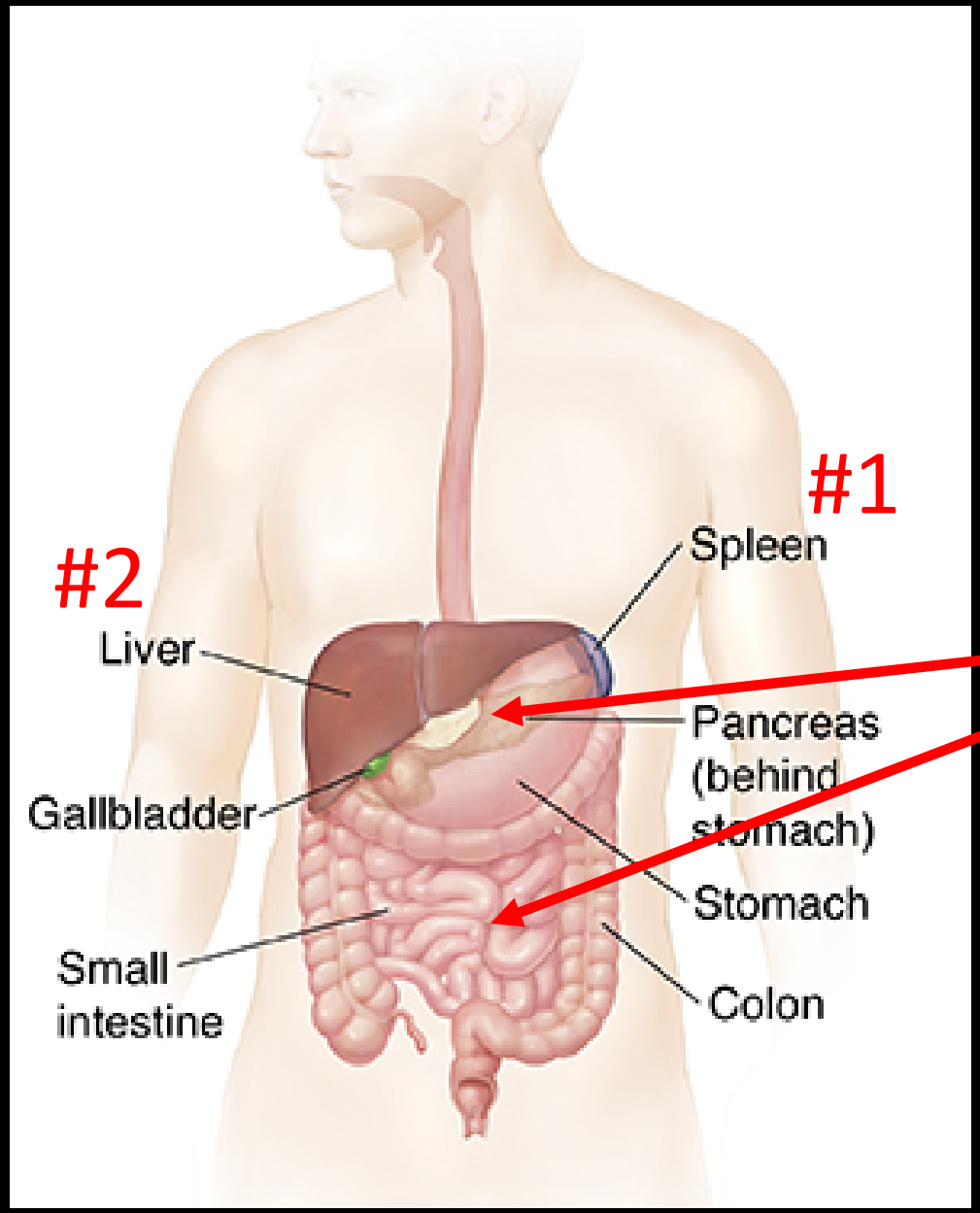

Cartilage
Ribs
Trachea
Blood Vessels
Heart
Lungs

Imaging



https://www.rch.org.au/trauma-service/manual/chest-injury/

#7: Abdominal Trauma Patterns


#1
Spleen
#2
Liver
Pancreas
(behind
stomach)
Gallbladder
Stomach
Small
intestine
Colon

Imaging

EFAST

Yoon et al. 2005

CT

#8: Keep Normotensive!

Permi ive ypo nsion

Low SBP (5%) = 70 + (Age x 2)

#9: Blood Transfusions

PRBC 10mL/kg

Massive Transfusion Protocol

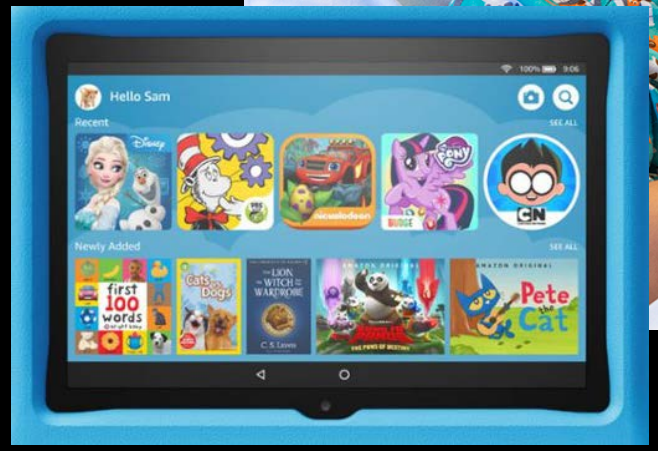
40mL/kg of *Any* Blood Product in first 24 hours

PRBCs : Plasma : Platelets

1:1:1

TEG


#10: Child Life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SEE ALL
first 100 words
Cats & Dogs
THE LION THE WITCH AND THE WARDROBE
C. S. Lewis
Pete the Cat


© Disney

Summary

#1: Big Heads, Small Body
#2: Large % of Surface Area
#3: Airway Differences
#4: Head Trauma Common
#5: Cervical Spine Injuries Uncommon
#6: Chest Trauma is RARE
#7: Abdominal Trauma Patterns
#8: Keep Normotensive!
#9: Blood Transfusions: 10mL/kg
#10: Use Child Life

Thank you!