



# 20 Shades of Pediatric Chaos



*Julie L. Bacon, MSN-HCSM, RN  
CPN, CPEN, C-NPT, NE-BC, NPD-BC*



So many choices

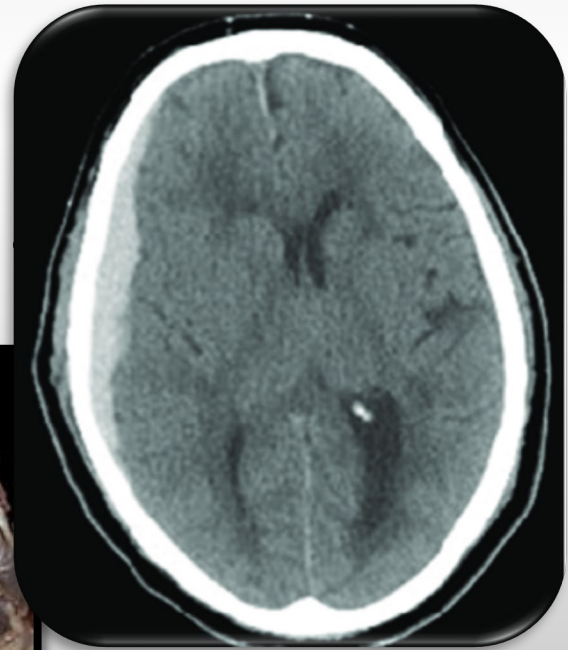
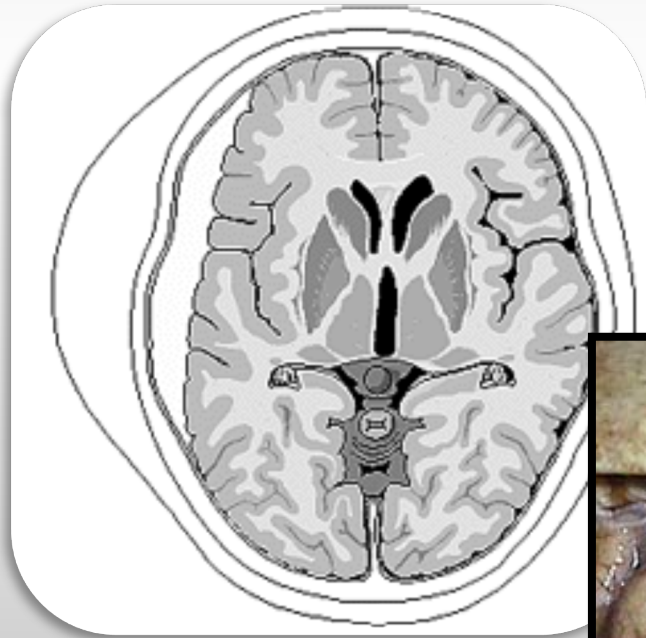
# DIAGNOSIS #1

- 3-month-old infant, born at 33 weeks
- “Shaking arms and legs” then unarousable
- 18-year-old parents waited four hours for grandmother to come home, then called EMS
- On arrival, EMS finds –
  - Obtunded
  - HR 120, RR 30 – mild retractions
  - BP 70/40
  - Firm bulging fontanel




# DIAGNOSIS #1

- Are you thinking non-accidental trauma?
- Shaken Baby Syndrome – **#1 Subdural Bleed**



# DIAGNOSIS #2

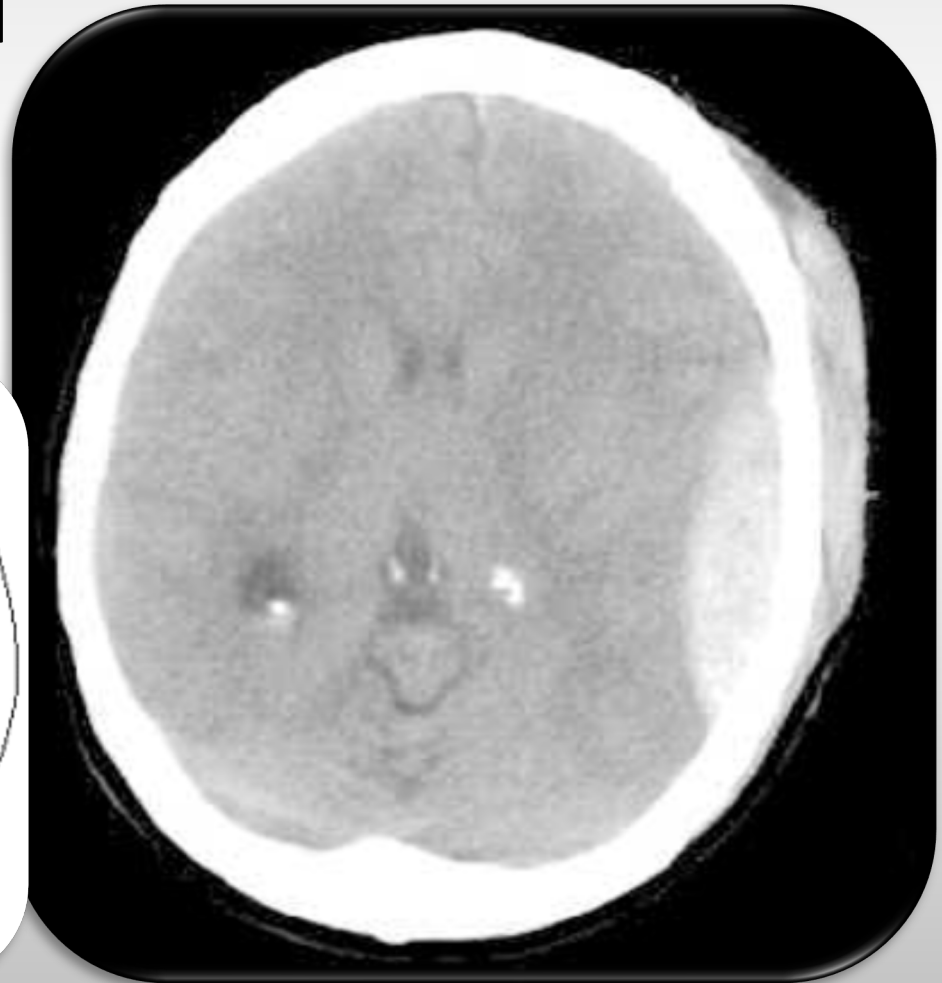
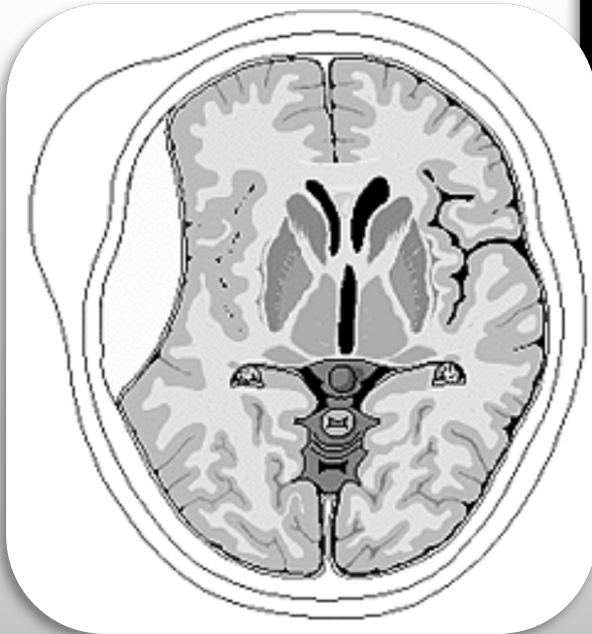
- 8-year-old fell off his new skateboard - Brief LOC
- At home he is nauseous and has a headache
- Does not want to go to ER 
- **#2 Epidural Bleed**

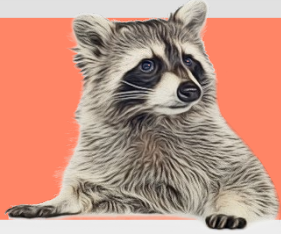


# DIAGNOSIS

## #2 – Epidural Bleed

- Epidural = Arterial Bleed
- Primarily school age



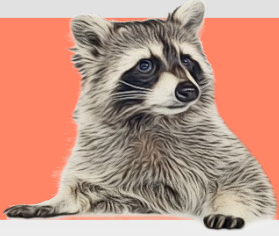


## DIAGNOSIS #3



- 6-month-old carried by the father
- Who tripped over sibling's toys and dropped infant
- Brought into the ER - lethargic but arousable
- Fontanel full and soft

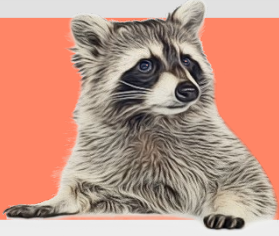




# DIAGNOSIS #3







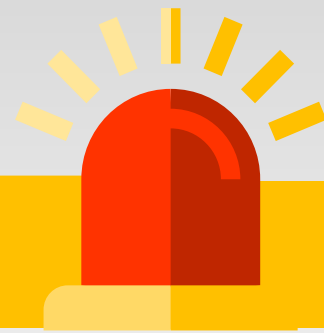
## DIAGNOSIS #3



### #3 Basilar Skull Fracture

- CSF Drainage – what color is drainage?
- How about the halo sign?
- Risk of meningitis
- No –
  - OG/NG
  - Nasal Intubation





## Managing Head Trauma H-Bombs

- **Hypoxia**
  - Keep SpO<sub>2</sub> as close to 100% as possible
  - Early high flow O<sub>2</sub>, even if SpO<sub>2</sub> > 90%
- **Hyperventilation**
  - Maintain EtCO<sub>2</sub> 35-45
  - Decreasing CO<sub>2</sub> can result in vasoconstriction
- **Hypotension**
  - Maintain age-appropriate minimum systolic pressures
  - 70 + (age of patient x 2)

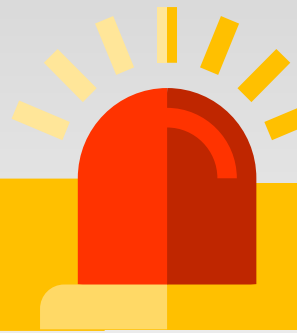
*(HAVE a reasonable suspicion)*



## DIAGNOSIS #4

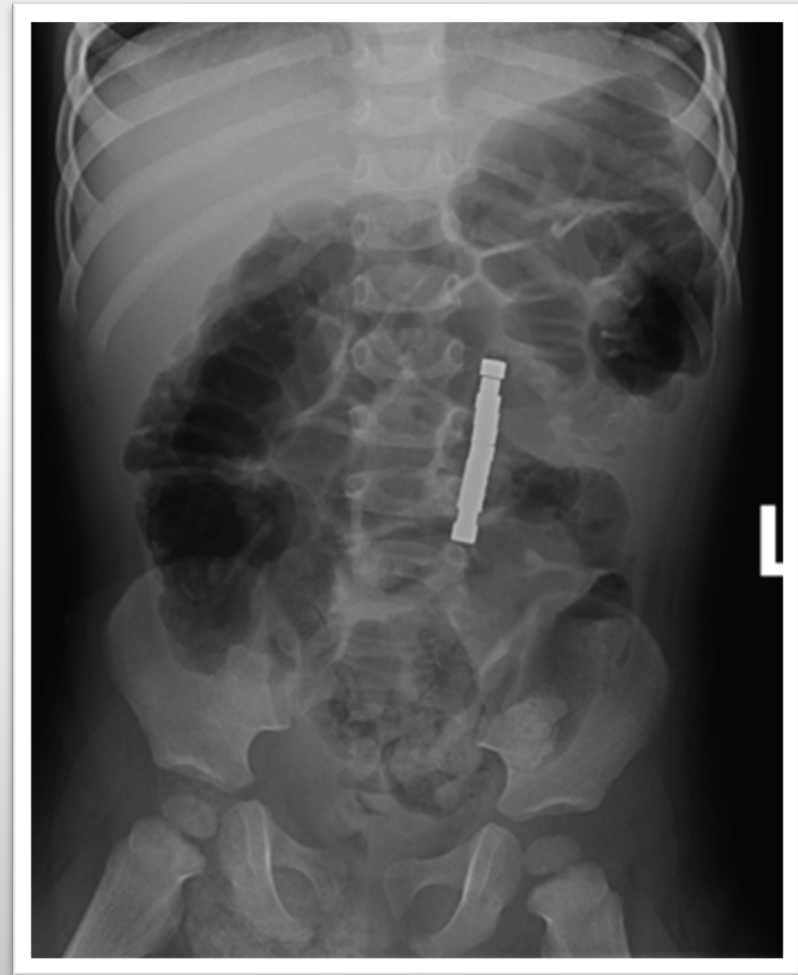
- 2-year-old female
- Presented febrile, acute abdomen
- “looks sick”





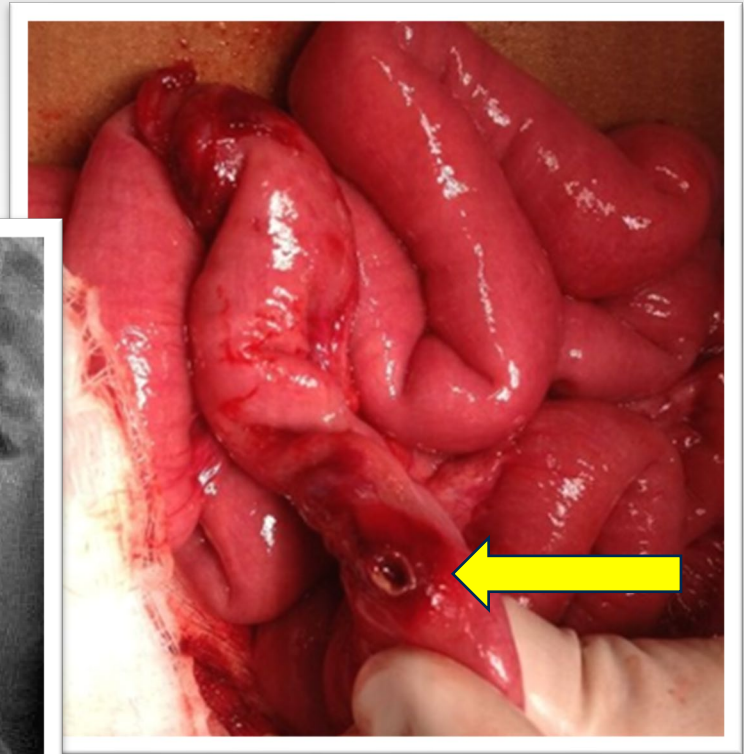
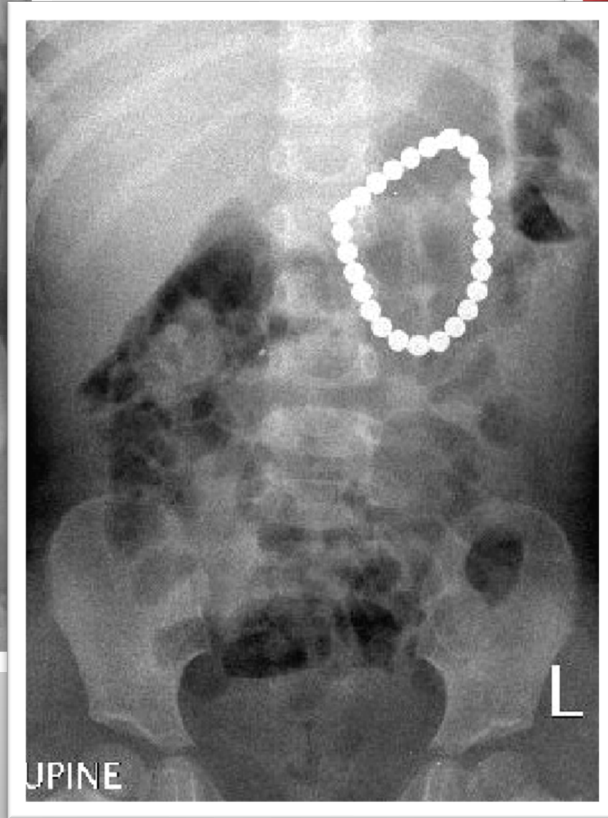
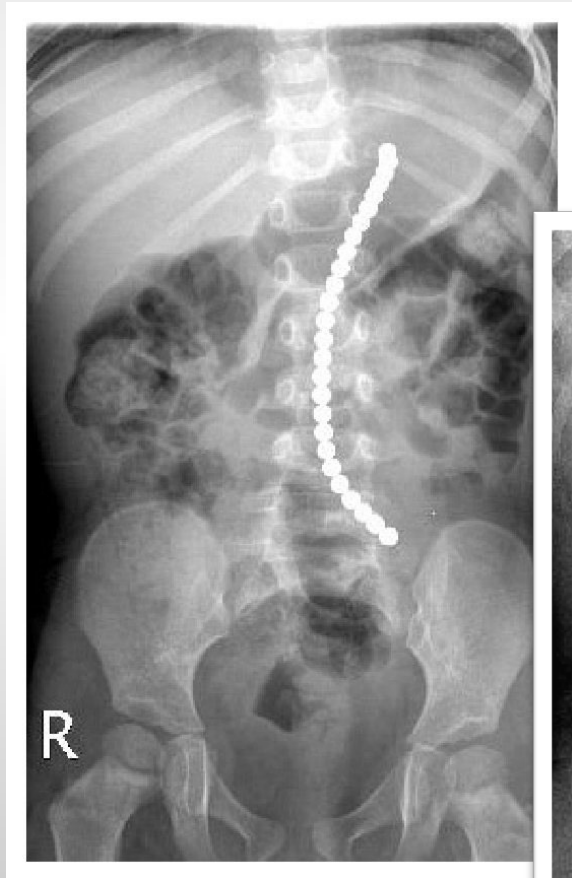
## DIAGNOSIS #4 – FBI MAGNETS

- Rare Earth Magnets
- “Shiny, Many Rule”
- Real Danger –
  - More than one
  - With something metal
- If symptomatic, primarily GI

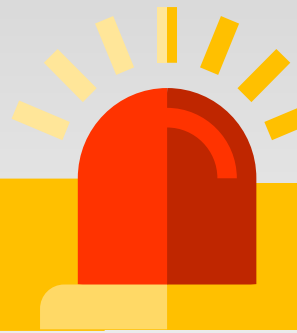




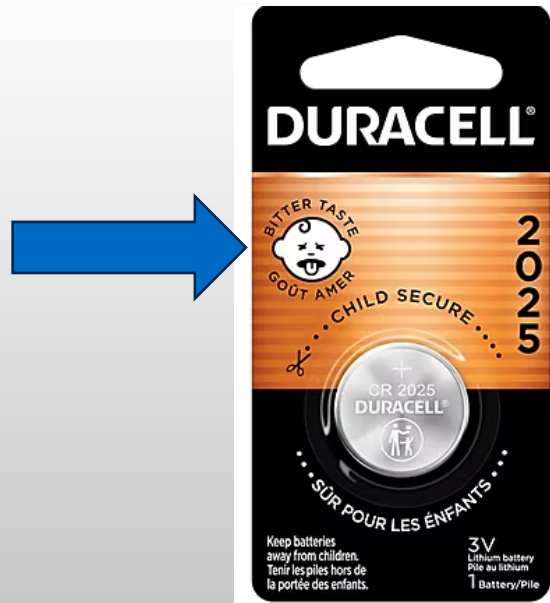
# DIAGNOSIS #4 – FBI MAGNETS

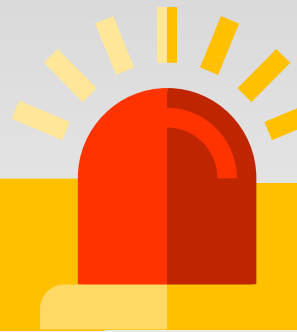


## DIAGNOSIS 5

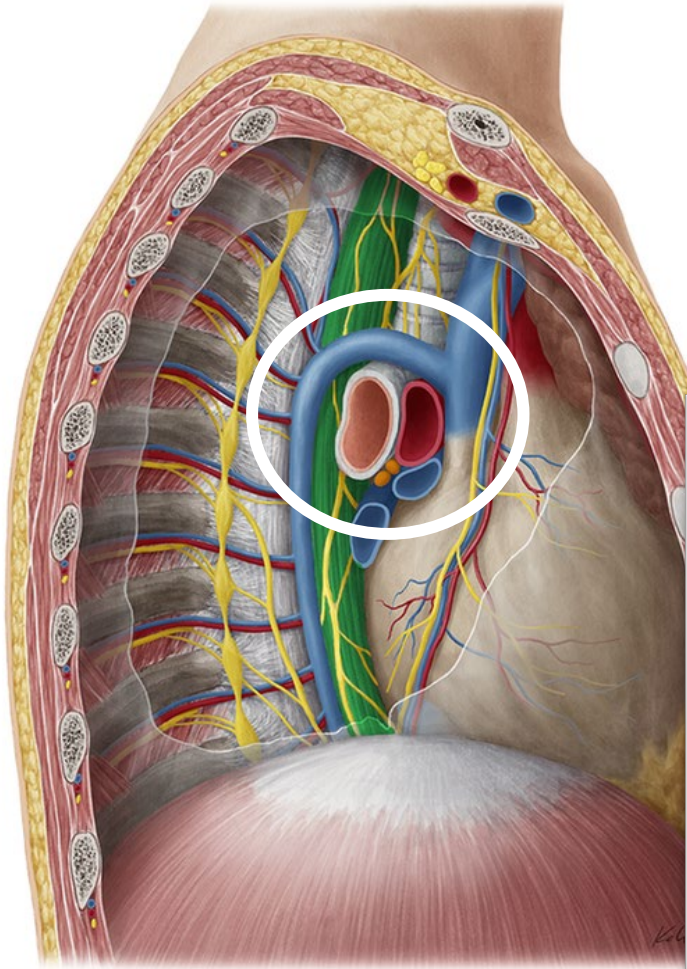


- 2-year-old female - witnessed battery ingestion
- In ER, vomits corroded 20mm button battery

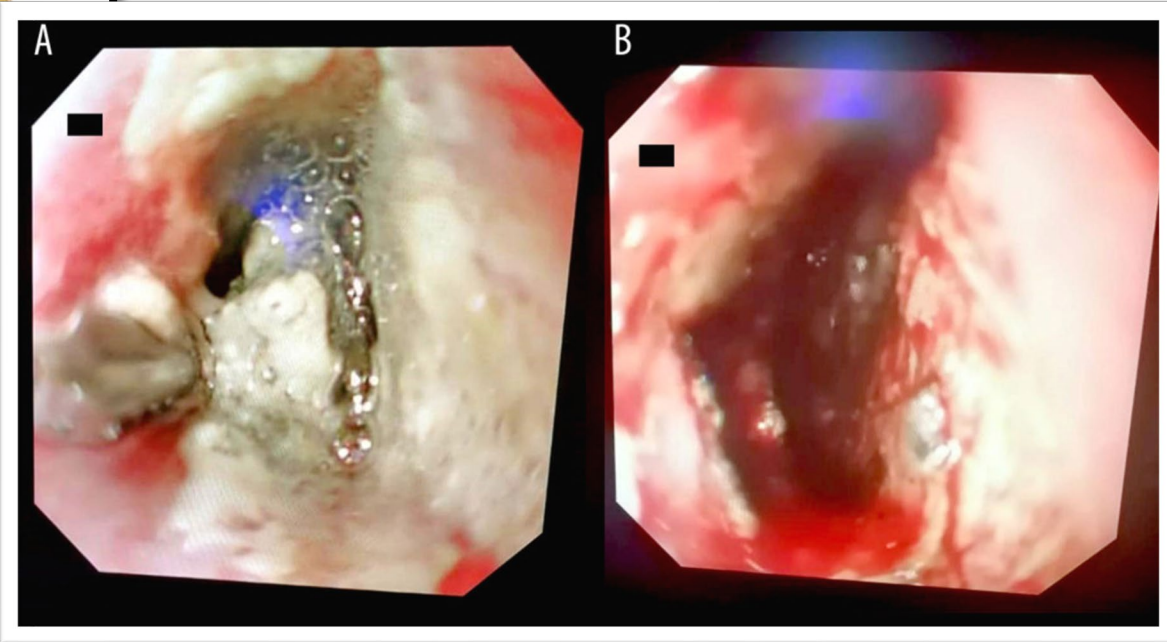




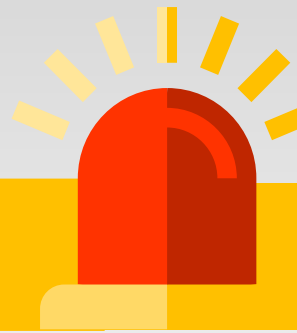
## – BUTTON BATTERIES



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- Mortality – erosion into the major vessels
  - Aorto-esophageal Fistula (AEF)



## DIAGNOSIS #5 – BUTTON BATTERIES

- Immediate Interventions –
  - Do not induce vomiting!
  - >12 months – honey 10ml PO q10m x 6 doses
  - <12 months – Carafate 1g PO q10m x 3 doses
- Critical Points –
  - Xray (anterior and lateral) to determine position
  - Exsanguination can occur up to 14 days after
    - Any bleeding – be prepared for Massive Transfusion Protocol



# DIAGNOSIS #6

- Preparing for electrical outage
- Out come the “hurricane lamps”
- *3-year-old* started *persistent* coughing, choking
- Further inspection – one lamp is almost empty

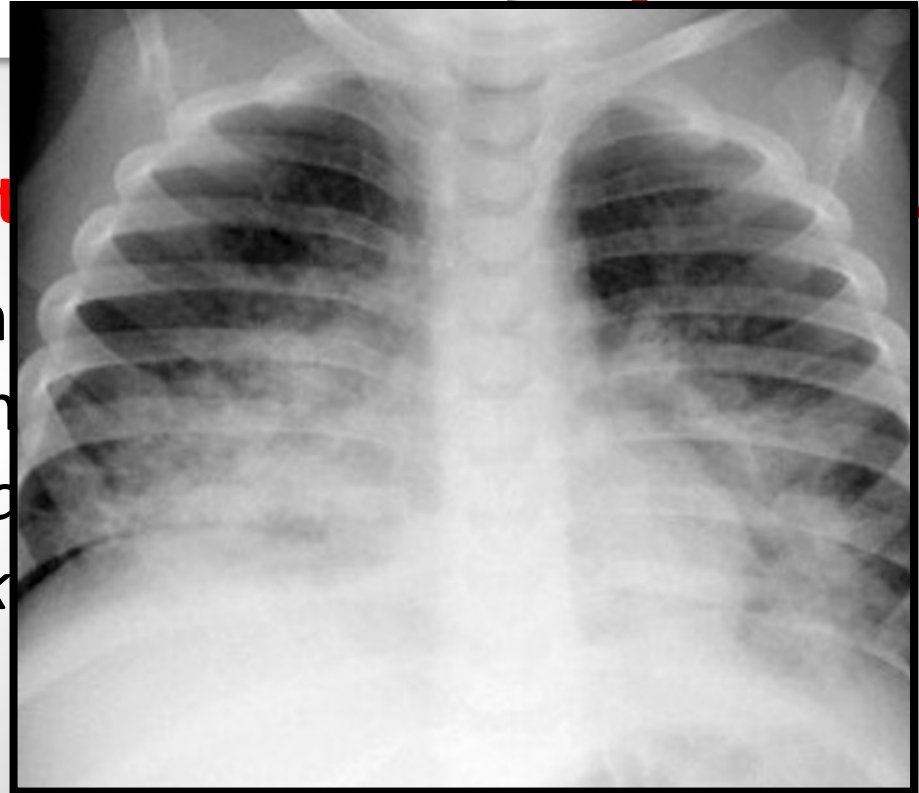


# DIAGNOSIS

## #6

### #6 – Hydrocarbon Ingestions

- Ex: gasoline, kerosene
- Ingestion most common
- The danger is the *viscous*
- *Leading to asthma like*



#### • Critical Tips –

- DO NOT encourage vomiting
- **Supportive Care** and Decon
- Dx: S/S, Hx, X-ray, and Pulse Oximetry

s)

nitis



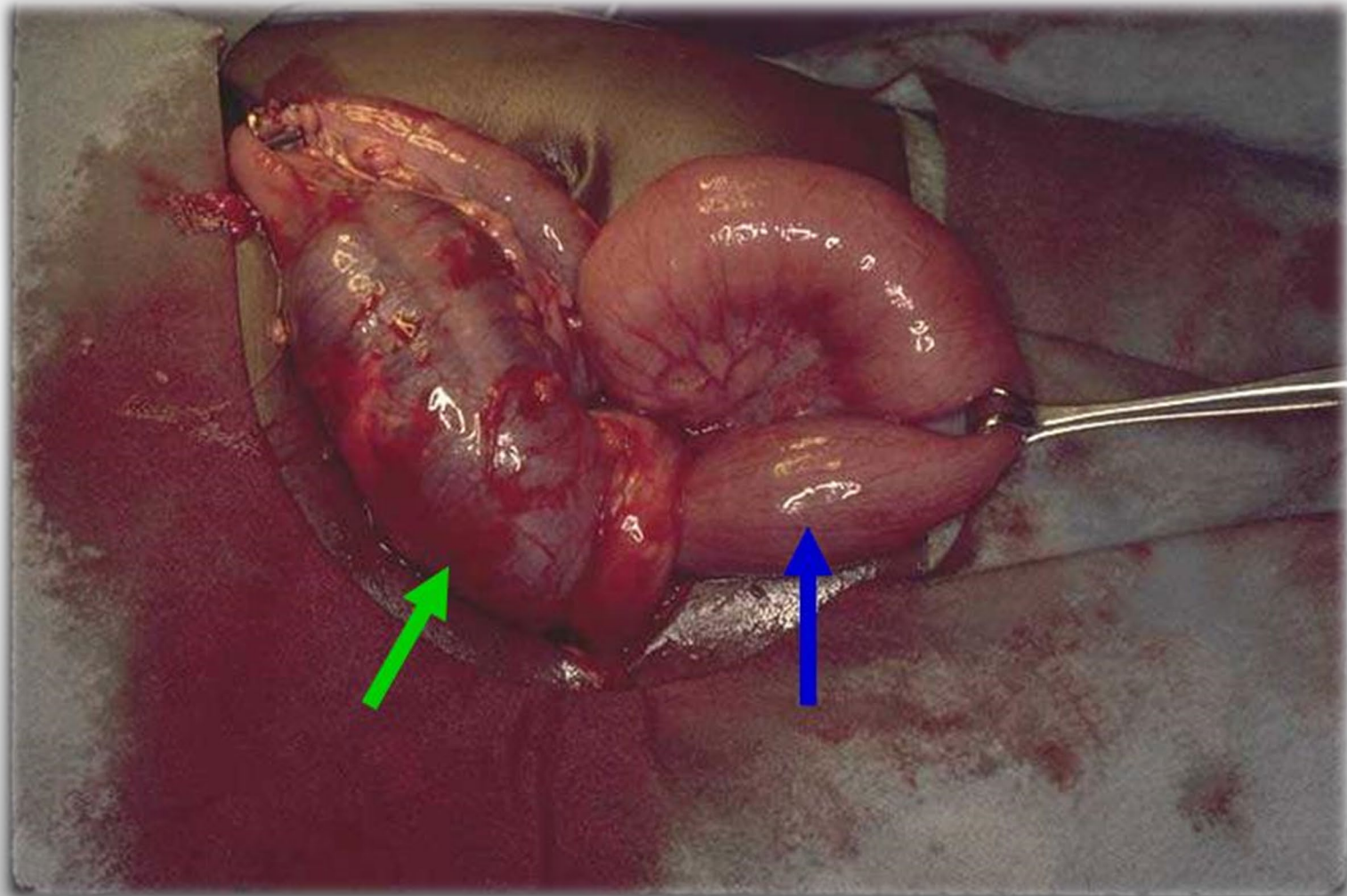
## DIAGNOSIS #7

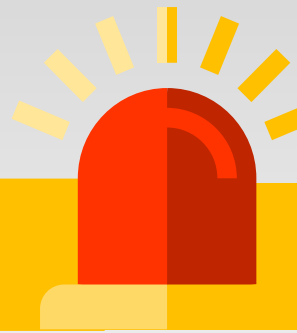
- Mother's report:
  - 9-month-old
  - Sudden loud crying – pain!
  - Now persistent
  - “Lump in the stomach”
  - *Red Currant Jelly Stool*





## DIAGNOSIS #7 - INTUSSUSUSCEPTION

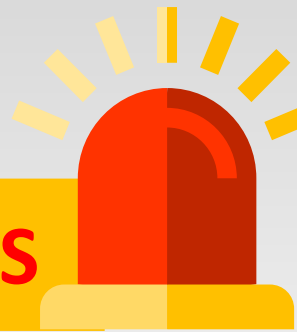




## DIAGNOSIS #7 - INTUSSUSUSCEPTION

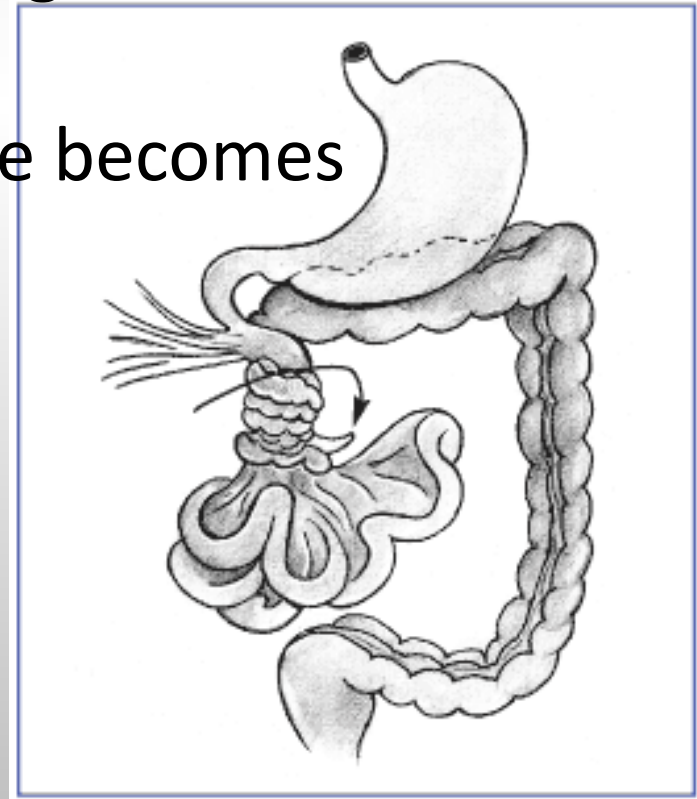
- Telescoping of the bowel
  - Most common - ileocolic
- 90% are under the age of 3 years
- Diagnosis:
  - Presentation
  - Enema – barium or air
  - This can also be a treatment!
  - Surgery if unsuccessful

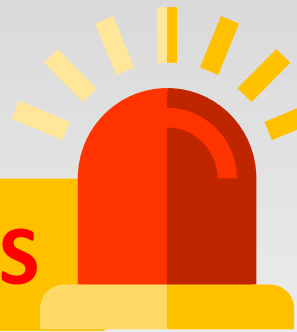




## DIAGNOSIS #8 – MALROTATION/VOLVULUS

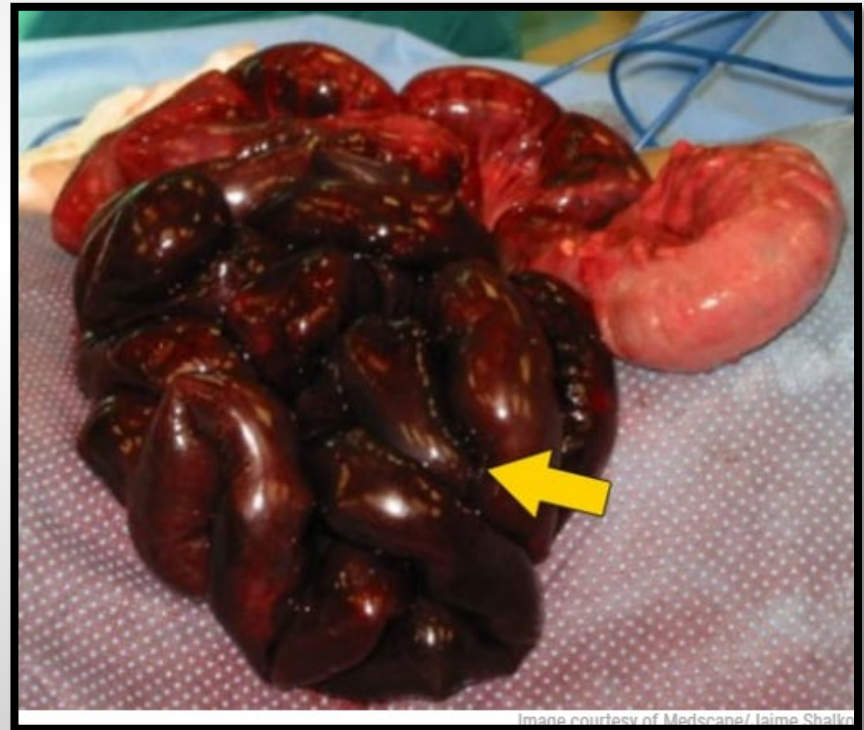
- Two Diagnosis in One
  - Intestinal **malrotation** is the congenital malformation of the GI tract
  - A **volvulus** is when the intestine becomes twisted



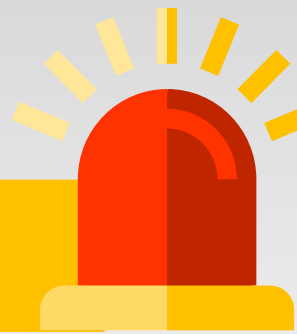


## DIAGNOSIS #8 – MALROTATION/VOLVULUS

- **Presentation:**
  - 75% under one year
  - S/S Acute Abdomen
- **Interventions:**
  - Barium Enema
  - CT Scan
  - UGI
  - Surgical Emergency!



## CRITICAL CONSIDERATIONS - BOWEL



- Both presentations –
  - Bowel obstruction
  - Impaired blood flow
- Presentation may be “generic”
- Is your patient shocky?
- Mortality and Morbidity depends on:
  - Other congenital abnormalities
  - Time to definitive treatment!!







# DIAGNOSIS #9 - DKA



- 4-year-old newly diagnosed DKA at community hospital
- Past two weeks – polyuria, polydipsia, weight loss
- 3 Hrs Ago - pH 7.09, HCO<sub>3</sub> 10, **Glucose 895**, K 2.8
- Bolus insulin given, followed by 1 liter of NS wide open
- Blood glucose is now **225!!!** YAY!! Yay??



- **Patient is getting restless . . Now lethargic**
- ***Now obtunded – come now!!!!***





# DIAGNOSIS #9 - DKA



## • CEREBRAL EDEMA –

- 0.5 – 1% of all DKA events
- Most common cause of mortality in children with DKA
- Usually develops 4 – 12 hours into treatment – why?
- Monitor for S/S of increased ICP
- Decrease glucose no more than 100 mg/dl per hour and NO Bicarb!

## • Cerebral Edema Treatment

- Mannitol
- 3% (Hypertonic) Saline
- Base treatment on S/S

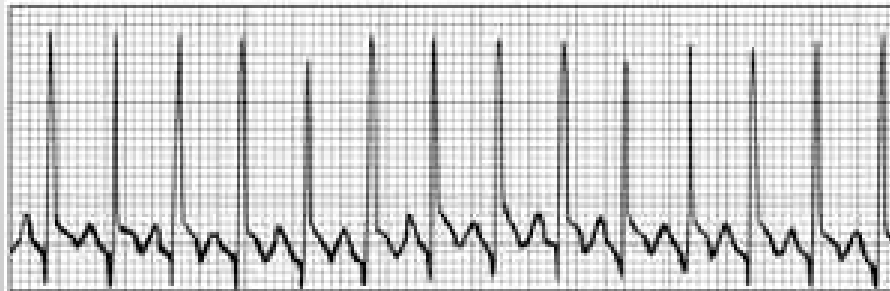




# DIAGNOSIS #10

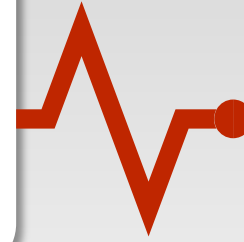


- 12-month-old brought to pediatrician
  - Poor feeding, fussy, weak cry
  - Heart rate recorded as “very rapid”
- Shortly after arrival, decreased LOC
  - EMS called
- **#10 Supraventricular Tachycardia**





## DIAGNOSIS #10 - SVT



- Child > 180 bpm
- Infant > 220 bpm
- Usually well tolerated in children
- Danger – may lead to cardiovascular collapse!



**1 - Is the patient stable/LOC?**

- If yes, age-appropriate vagal maneuvers

If no - -

**2 – Do we have IV access?**

- If yes, Adenosine 0.1 mg/kg

If no - -

**Synchronized Cardioversion**  
0.5-1.0 j/kg



# DIAGNOSIS #11



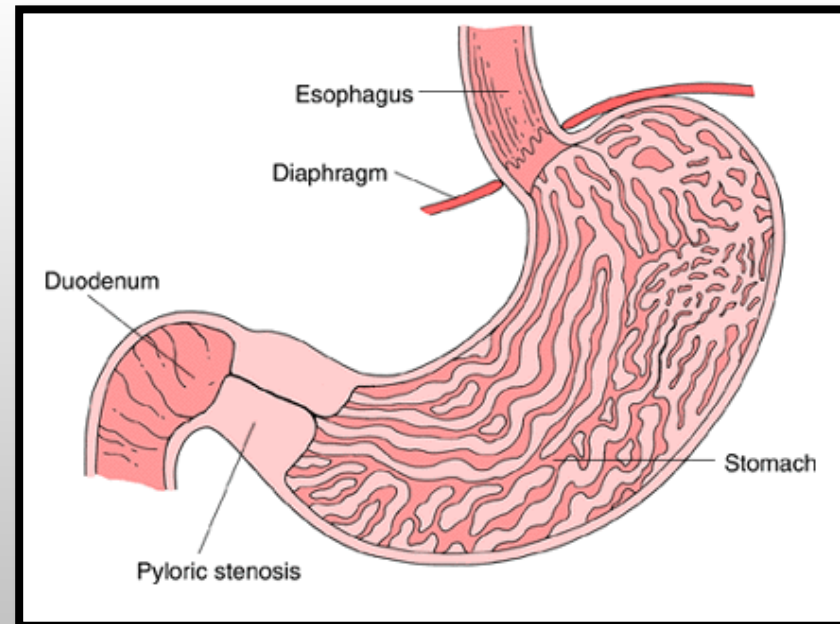
- Call to EMS for 45 day old female patient
- Grandmother states she is “vomiting across the room – something is terribly wrong!”
- On arrival, EMS finds infants alert, rapid HR, apparently small for age, dry lips and sunken eyes
- *What is going on here?*
- **#11 Infantile Hypertrophic Pyloric Stenosis**



# DIAGNOSIS

## #11 Pyloric Stenosis

- Appears 3 weeks
- Progressively worse
- *Projectile vomiting w/o bile or nausea*
- *Olive shaped mass to the right of the umbilicus*
- *Diagnosis with ultrasound*
- Pyloromyotomy





# DIAGNOSIS #12



- A 14-year-old boy is brought to the ER
- Alert, diaphoretic
- Parents describe he has a “sudden severe pain in his groin”
- **#12 Testicular Torsion**





# DIAGNOSIS #12 TESTICULAR TORSION



- Spermatic cord cuts off the blood flow to the testicle by twisting around itself
- Usually under age 30, *peak age of 14*
- It has no known cause and can result in the death of the affected testicle – six-hour time clock!



# DIAGNOSIS #13



- High School baseball game
- 14-year-old batter is ready!!
- But instead of the bat hitting the ball –
- The ball hits the player squarely in the chest –
- And he collapses to the ground





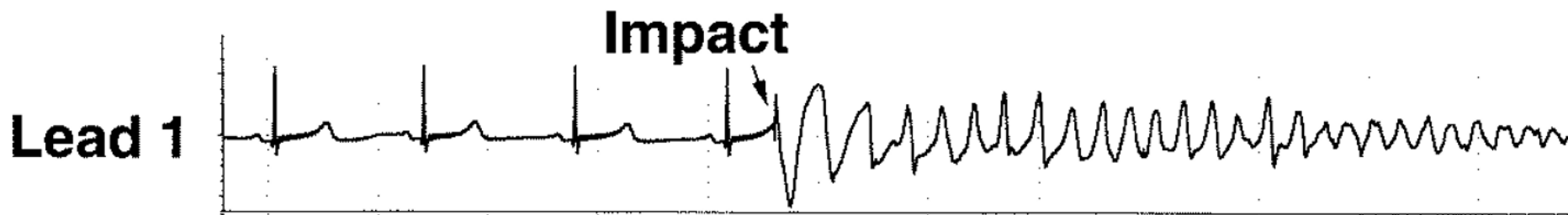
# DIAGNOSIS #13



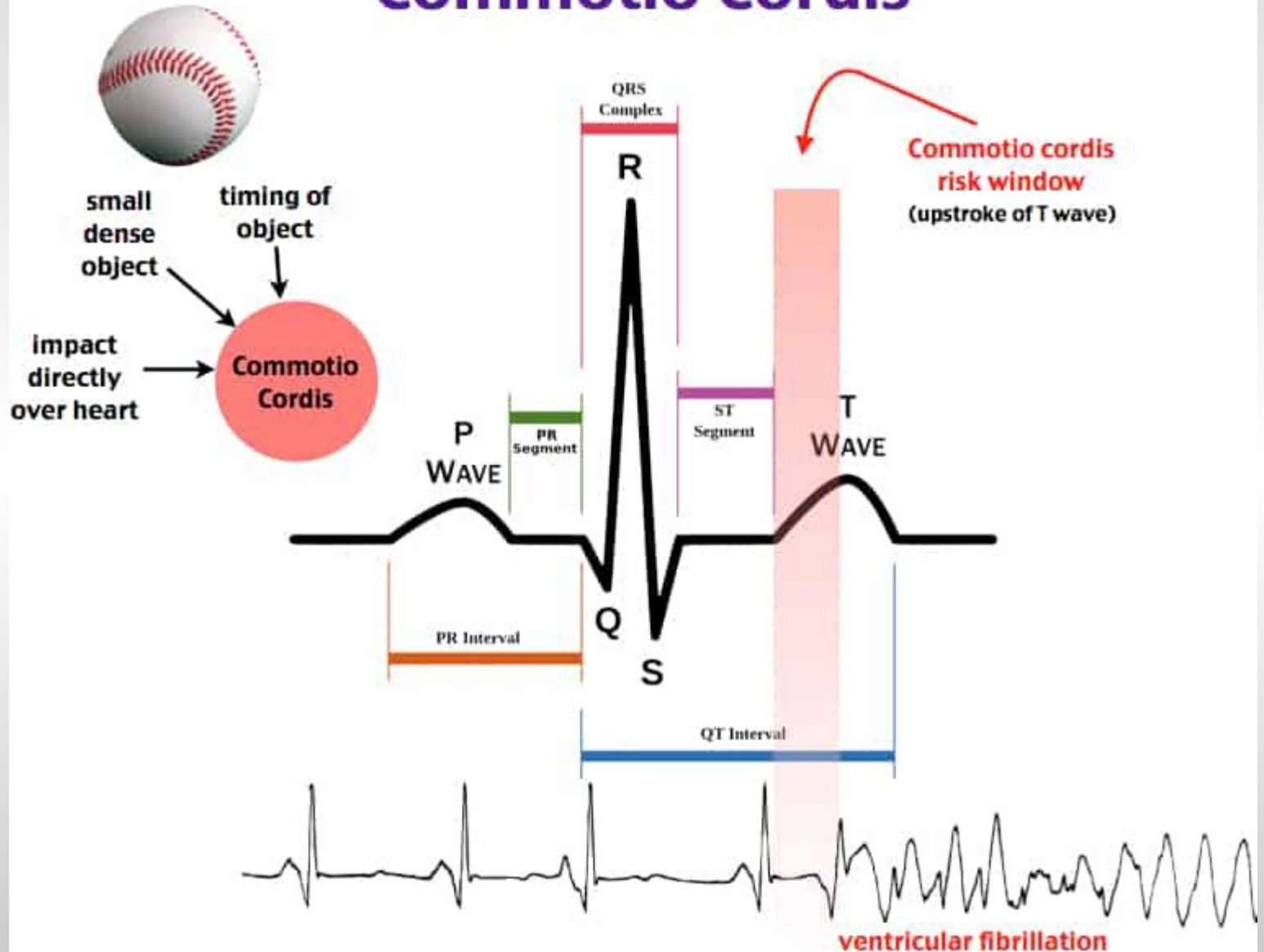
- EMS was called and arrived five minutes later. They found:
  - Patient unresponsive – only significant history was the baseball event
  - Effective compressions in progress
  - Patient in vfib – defibrillation with ROSC

# DIAGNOSIS #13 – Commotio Cordis

- Vfib and sudden death caused by a blunt, non-penetrating blow to the chest
- Without damage to bony structures or any internal organs
- 95% males, average age 10 – 18 years
- **Survival rate approximately 24%**



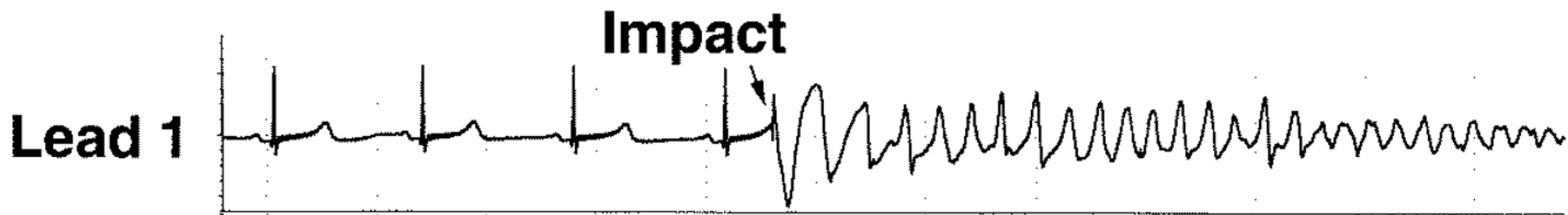
# Comotio Cordis





# DIAGNOSIS #13 – Commotio Cordis

- Pediatric/young adult chests more susceptible
- Survival rates are based on:
  - Early CPR and Defibrillation!
  - Precordial Thump?
- Looking ahead -
  - AED at sports facilities
  - Protective gear



# DIAGNOSIS #14

- It's the call we hate more than anything else
- **#14 Let's Stabilize the Neonate**

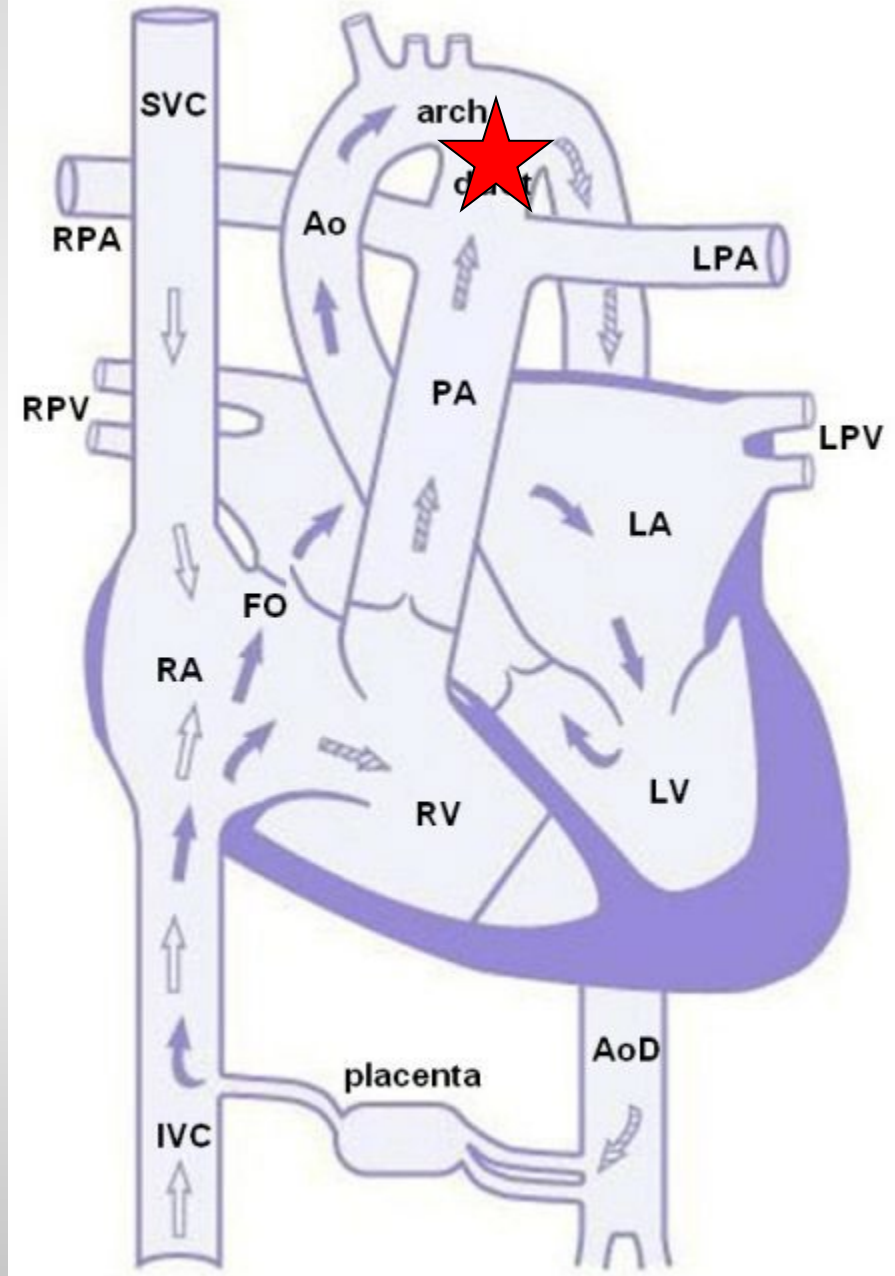




# Ductus Arteriosus



Normal Fetal Heart



# DIAGNOSIS #15

- It's 0300 and you have just fallen asleep when the call comes –
- 2-year-old at home “having a hard time breathing”
- Upon your arrival patient –
  - Is febrile
  - Has mild retractions
  - “barky cough”
  - Strider
- **#15 Croup**





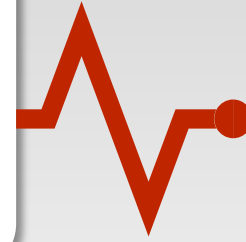
## DIAGN #15 - C

- Viral croup most common – pre school population
- Symptoms typically appear at night
- Upper airway narrowing – inflammation/edema
  - Steeple Sign





# DIAGNOSIS #15 - Croup



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Oxygen?

---

PIV?

---

ICU?

---

Yes to Racemic Epi

---


Yes to Steroids




# DIAGNOSIS #16

- EMS is called for a 16-year-old female who presented to her mother
  - Hysterically crying
  - Two hours ago. she took at least 30 . . . . .what?
  - **#16 Acetaminophen Overdose**



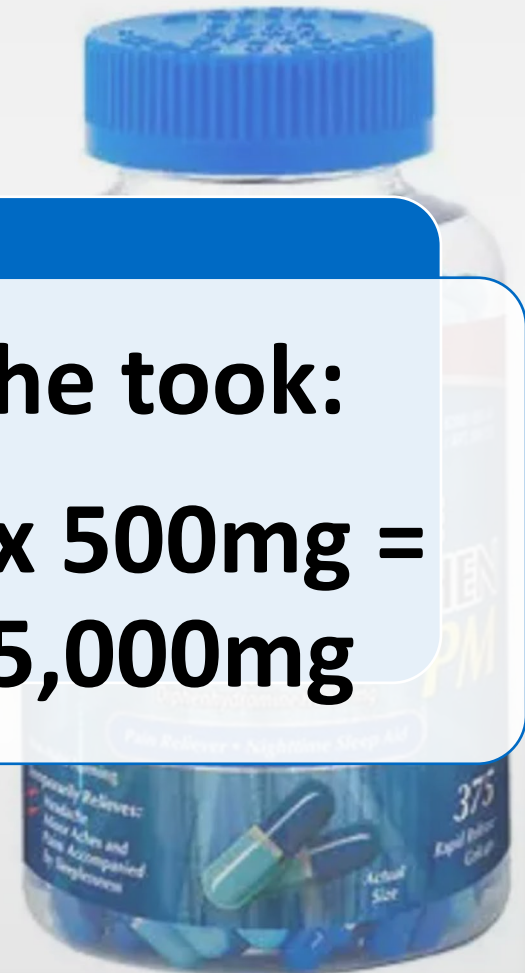


**DIAGNOSIS**  
**#16 Acetaminophen**  
**Overdose**



Safe: 4,000mg  
in 24 hours

She took:  
 $30 \times 500\text{mg} =$   
 $15,000\text{mg}$




# DIAGNOSIS


## #16 Acetaminophen Overdose

- Stage One (30"-24 hours)
  - Relatively asymptomatic
- Stage Two (18 – 72 hours)
  - Emesis, RUQ pain, hypotension
- **Stage Three (72 – 96 hours)**
  - **Renal failure, liver failure, metabolic acidosis, encephalopathy**
- Stage Four (4 days – 3 weeks)
  - Recovery





**DIAGNOSIS**  
**#16 Acetaminophen Overdose**



## **Empty the stomach**

- **Only in the first few minutes after the ingestion**

## **Activated Charcoal**

- **Within first four hours to bind remaining drug**

## **N-acetylcysteine (NAC)**

- **Antidote for toxic acetaminophen overdose**
- **Oral or IV**
- **Give within 8 hours of ingestion**



# DIAGNOSIS #17

- Six-year-old lap belt restrained passenger
- On primary assessment, found to have decreased sensation in his lower extremities





# DIAGNOSIS #17 SCIWORA



- Spinal Cord Injury With Out Radiographic Abnormality (**SCIWORA**)
- Pediatrics – C-Spine elasticity
  - 2/3 severe cervical < 8 yrs
- Decreased sensation
- MOI
- Exam and MRI - Exclusion



# DIAGNOSIS #18

- EMS dispatched for seizing 13-month-old
- Upon arrival –
  - Seizing had stopped (reported 2 – 3 minutes)
  - Hot to touch
  - Pt obtunded, is she apneic?
- **#18 Febrile Seizure**



# DIAGNOSIS

## #18 Febrile Seizure

- What do we need to know?
  - Seizure triggered by a fever (101+) – not epilepsy
  - **Most common reason for fever – ear infections**
  - 1 in 25 children under the age of five



- Safety
- Postictal
- Will it happen again?

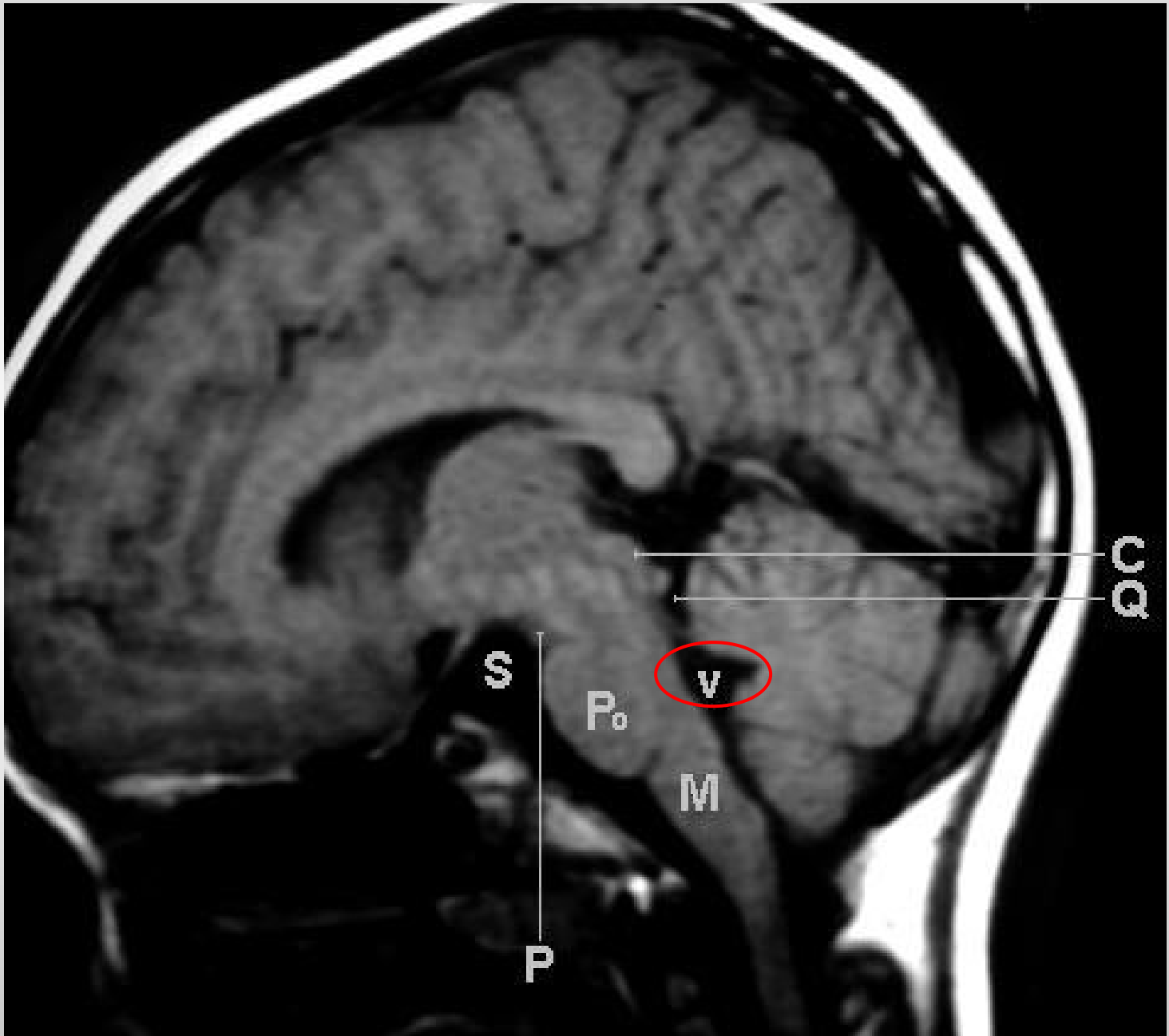


# DIAGNOSIS #19



- Three year old presents to the ER
- Parents state he is increasingly unarouseable
- Febrile
- History of VP shunt
- **#19 Shunt Malfunction**

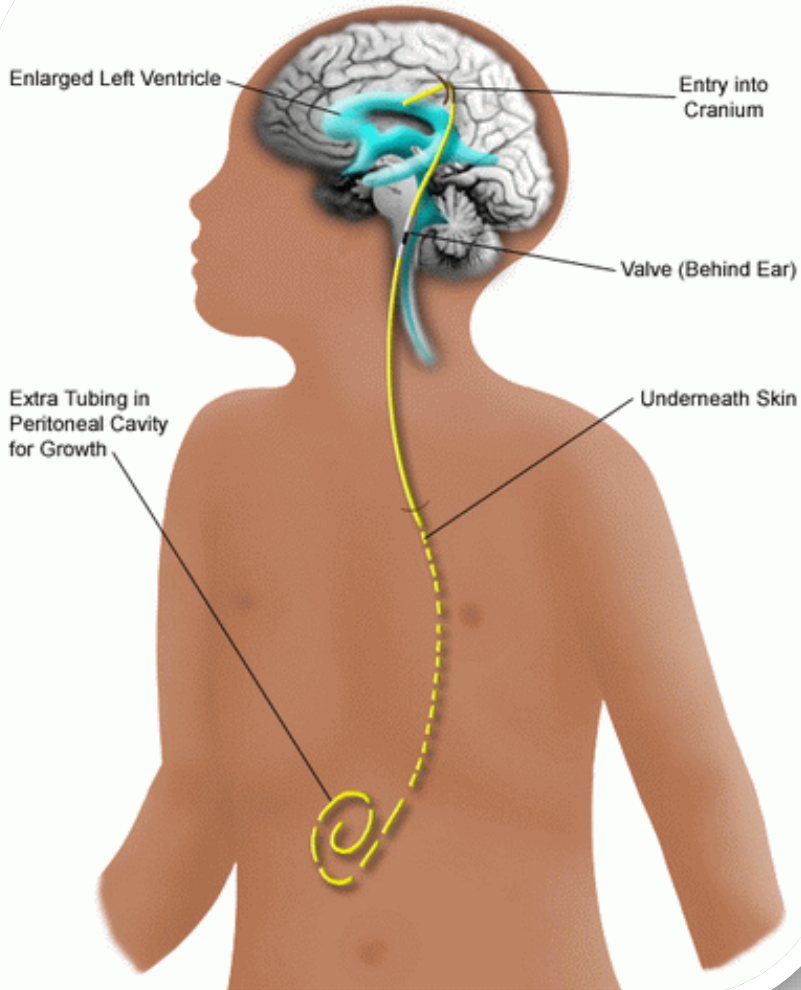






# DIAGNOSIS #19

## Ventriculoperitoneal Shunt Placement



## Shunt Infection –

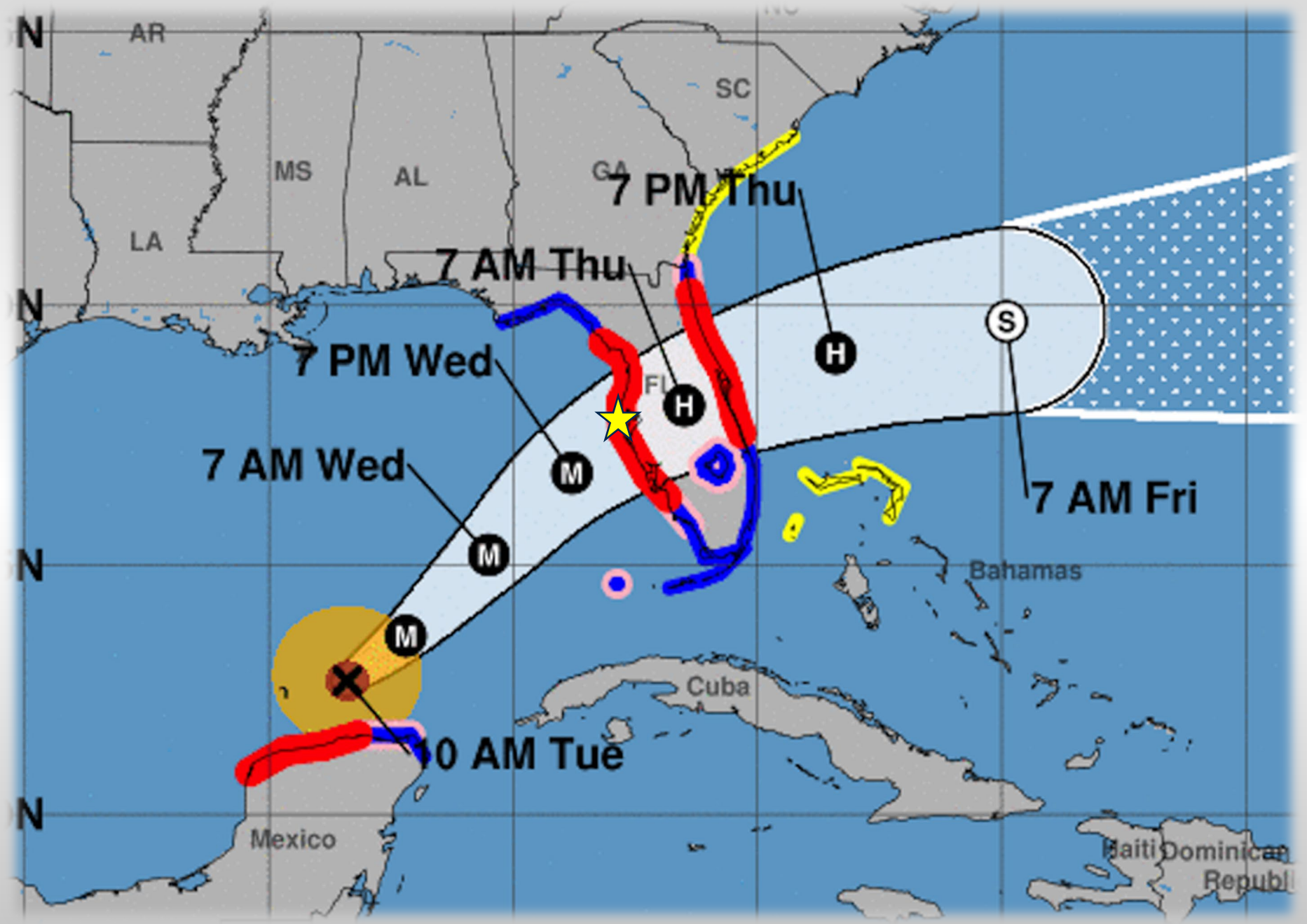
- Fever
- Neuro S/S
- Most common within 6 months of placement
- Support and definitive care!



# CASE #20 TO EVACUATE, OR ..

- JHACH – 259 bed quaternary care
- “Does not evacuate”
- **October 9, 2024**





DT





- 174 critical peds and neo patients
- Total potential area evacuation 1400 patients





[Julie.Bacon@aol.com](mailto:Julie.Bacon@aol.com) 😊



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- [Pediatric DKA | Emergency Medicine Cases](#)
- [DiabeticKetoacidosisCareGuideline.pdf \(choc.org\)](#)
- [Sweet and Salty - fluids in DKA - Don't Forget the Bubbles \(dontforgetthebubbles.com\)](#)