




Reconnect & Rediscover:
A Convening Pediatric Experts
and Advocates
Oct. 2-4, 2021

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Pediatric Nurse Practitioners
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Experts in pediatrics, Advocates for children. 1

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**Common Pediatric
Emergencies in Primary
Care**

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Faculty Disclosure


- Conflict of Interest(s): none
- Commercial Support: none
- Joint Providership: none

I have 30 years of experience strictly with pediatrics.
I do not do big people.
No information here is intended to care for adults.
Many medications given to children have never been studies in children and therefor not FDA approved for use in children



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- The plan for today is to review common pediatric cases that may not proceed as a normal case would in young adult.
- Please ask questions
- At the conclusions we will review some common misconceptions and mistakes made with children



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Learning Outcome(s)


- Increase knowledge on approaches (history, diagnostic, and prescriptive) to common pediatric complaints
- Identify unique healthcare issues related to immunogenicity and developmental differences between children and adults.
- Learn at least three unique diagnosis or approach to diagnosis to children
- Walk away with new Pediatric Pearls



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Common Themes

- Pediatric Medications are prescribed based on weight but they still max out at usual adult doses
 - Eg: Tylenol 650 mg
 - Motrin 400mg (can give up to 600 but I usually do not under the age of 12 yrs)
 - Amoxicillin 1000mg for otitis and 2000 for pneumonia
 - Amoxicillin is BID for otitis and TID for pneumonia



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Pediatric Illnesses in a time of a Pandemic

- My approach has changed in the last 20 months. A fever, vomiting, diarrhea, cough and congestion have new meanings
- Fevers greater than 72 hours require more attention
- Chest pain in children needs to be taken seriously and evaluated



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Case #1: 2 ½ year old male with fever

- Two year old male presents with his mother. He "felt super warm" and is "lethargic". Has been this way "all week". Given ibuprofen but the fever keeps coming back.
- No significant past medical or surgical history
- He is allergic to penicillin, "he gets the runs"
- No medications given immediately prior to arrival in ER



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Gather information:

- How high is the fever, how long (time and day)
- Immunizations
- Foreign travel
- Childcare (school day care)
- Symptoms: what is the one main symptom that is bothering you the most
 - Vomiting diarrhea
 - Cough congestion
 - Fever
 - Pain
 - Rash
- Antipyretics: what has been given when and how much
 - Time
 - Dose



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Vital Signs

- VS
 - Resp rate
 - HR
 - BP
 - pulse ox
- Temperature
 - 101.3-104.5 x 7 days
 - Responds to ibuprofen
- Immunized completely
 - Flu shots x 2 years
 - Only received one shot each year
- Recent travel to Mexico 3 weeks prior



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Symptoms and Past Medical History

- Fever responds to ibuprofen but fever returns after 5 hours
- Vomiting
 - Diarrhea
 - Cough congestion
 - Dry cracked lips
 - Conjunctivitis
 - Rash
 - How many wet diapers?
 - Oral Intake?

History of UTI at 8 months, US normal



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Vital Signs

- Temperature: 103.2 rectally
- Heart Rate: 202
- Respiratory Rate: 62
- Blood Pressure: 88/44
- Pulse oximetry 92%



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Physical

- Quiet toddler sitting in gurney
- Dried cracked bleeding lips
- Injected eyes with clear drainage
- Uncircumcised no penile discharge
- Tachycardic and tachypneic

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Differential Diagnosis

- Repeat UTI
- Viral URI
 - RSV
 - Influenza
 - Adenovirus
 - Covid
- Appendicitis
- Kawasaki's Disease
- Pneumonia
- MIS-C

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Work Up

- Age: 2 ½ years
 - Treat fever Ibuprofen 10 mg/kg or Acetaminophen 15mg/kg
- Past Medical History
 - Uncircumcised
 - 1 UTI at age 8 months
 - Immunized
- Orders:
 - Insert IV and 20mL/kg Bolus
- CBC, CMP, Blood Culture, UA/Culture (cath or no cath?)
 - CRP +/- Sed Rate
- Respiratory Panel

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One Hour Later

- VS: Temp 101.0, HR 180, RR 44, BP 94/48 Pulse ox 92% on RA
- Bolus running
- CBC
- CMP
- CRP
- Sed Rate
- UA
- ?influenza or Respiratory Panel
- Covid or Covid antibodies?



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Results

? Ruled out resp or urine causes?

- Respiratory Panel (-)
- CXR with perihilar bronchial thickening
- UA with no WBC, trace leuk esterase and (-) Nitrites
 - Urine culture is pending

Needs to be investigated further

- CBC
 - Elevated WBC and mild anemia
- CRP
 - Elevated
- Sed Rate
 - Elevated
- CMP
 - BUN 20, creatinine 0.7, BiCarb 17

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Diagnosis

- Unknown at this time, admit for further work up
- Rule out Kawasaki's Disease
 - Usually under age 5yrs
 - 5 days of fever +
 - Conjunctivitis
 - Cracked lips
 - Strawberry tongue
 - Desquamating rash
 - swollen and red hands and feet
 - swollen lymph nodes



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Next tests

Follow lab markers

Electrocardiogram. This test uses electrodes attached to the skin to measure the electrical impulses of your child's heartbeat. Kawasaki disease can cause heart rhythm complications

Echocardiogram. This test uses ultrasound images to show how well the heart is functioning and can help identify coronary artery abnormalities, if present.

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Treatment for Kawasaki's Disease

To begin as soon as possible

Aspirin. High doses of aspirin may help treat inflammation. Aspirin can also decrease pain and joint inflammation, as well as reduce the fever.

Gamma globulin. Infusion of an immune protein (gamma globulin) through a vein (intravenously) can lower the risk of coronary artery problems.

Pediatric infectious disease recommendations and follow up

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Questions: Covid MIS-C Kawasaki Disease

Kawasaki Disease

- Not known cause or trigger
- Higher incidence in Asian descent
- Young (0 months to 5 years)
- Short to rare
- Myocardial dysfunction is rare

MIS-C

- Older children
- Higher incidence in black deserts
- Positive Covid IgG

Acute Covid Cardiovascular Syndrome

- Adults
- Simultaneous with or shortly following pneumonia
- Positive Covid PCR

MIS-C/Covid CV syndrome	Short to long course	Cardiogenic shock	Myocardial dysfunction	Myocarditis
MIS-C/IKD	Acute onset	Lymphadenopathy	Coronary artery dilation	No Myocarditis
IKD/Covid CV syndrome	Acute	Myocardial dysfunction		

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Case 2:



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History

History of previous UTIs and pregnancy termination 6 weeks prior to arrival in ER

'Friend' keeps answering for her

Unknown immunization status

Difficult too get answers, keeps looking at friend
Denies sexual activity



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Physical

- TMs clear, pharynx with petechia, lungs clear no murmur
- Skin with old and healing scars on wrists and legs, home made tattoo on right shoulder with "Albert 121"
- Abdomen soft non-tender
- Refusing genital exam



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Work up

- UA
 - Dirty and clean
- Rapid strep (reflex culture)
 - PCR test available
- Refusing genital exam and friend refusing to leave room
 - Encourage for complete exam
 - Walk with patient to the bathroom to talk privately



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Result

- UA with TNTC WBC, (+) nitrites
- Rapid strep (-) throat culture pending



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Diagnosis

Concern for safety

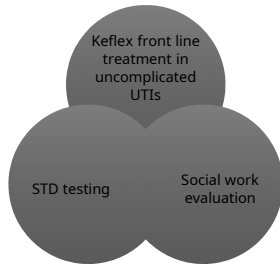
? STD

UTI



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Treatment



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Human Trafficking Victim

- Human trafficking victims present in clinics, schools, hospitals, and emergency rooms. A 2014 (Ledere & Wetzel) study estimated 87% of rescued trafficking victims had encounter(s) with a healthcare provider during captivity in which they were not recognized as victims, missing an opportunity for rescue and improved health outcomes.



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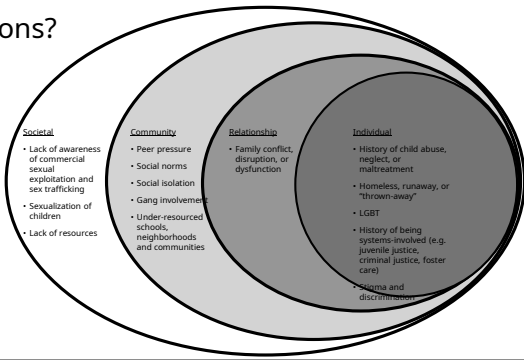
Human Trafficking

- Risk factors for trafficking include low self-esteem, orphan-status, abuse, poverty, and runaways. The average age for entry into trafficking is 12-14 years old. 1 in 3 runaways are approached by a pimp within 48 hours.
- Children can not consent to prostitution, they are victims and not criminals



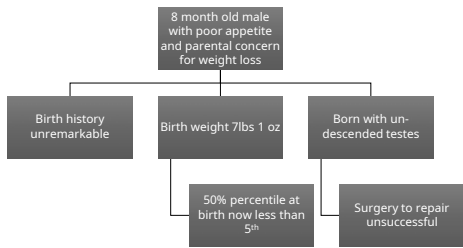
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Questions?



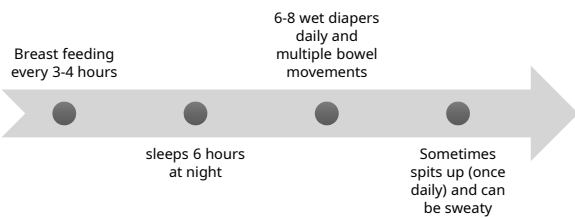
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Case #3:



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History



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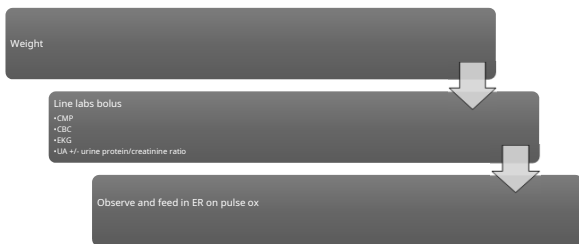
Physical

male with weight loss of possible 1 kg (>10%) in approx. 2 month
Increase in weight of wet diapers
"sweaty" with feed
No diarrhea, fevers, or irritability
Circumcised with hypospadias and undescended L testicle
No murmur
4 extremity blood pressures normal



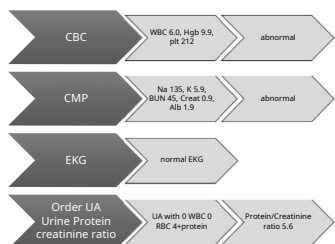
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Work up



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Results



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Differential Diagnosis

- Concern for cardiac disease
 - Sweats when eating
 - Weight loss
- Kidney disease
 - Nephrotic Syndrome
 - Protein creatinine ratio 5.6 (>5 is grossly abnormal)
 - trace is the same as negative
 - if 1+ repeat in 3-4 weeks
 - if 2+ or more, quantify with a spot sample for protein / creatinine ratio
 - Urine dip is sensitive but not specific
 - Always look at microscopic



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Treatment

- Admit for feeds and weight watch
 - Measure feeds, weight diapers
- IVF
 - Maintenance fluids
 - Albumin infusion with possible diuretic
- Referral to Kidney Disease
 - ? Biopsy
 - Genetic work up



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Denys Drash Syndrome

- Kidney Disease that develops in the first months of life
- Characterized by glomerulosclerosis (usually FSGS, focal segmental glomerulosclerosis)
- genitalia abnormalities (ambiguous to minimal changes such as hypospadias)
- 90% chance of Wilm's Tumor
 - Nephrectomy and transplant



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Case 4

10 month old female fell in booster seat strapped to a chair when she kicked the table in front of her.

She cried immediately. No loss of consciousness and no vomiting.

Chair fell backwards with her strapped in it

Called on call PMD an spoke to the nurse who advised them to watch her for the next few hours and call back if vomiting or lethargy



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Patient breast fed normally

Took an hour nap

Noted bump on back of head when she woke up

Called on-call line again and immediately triaged to ER

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On arrival

- VS Temp 99.0 rectal HR 180 RR 32 Pulse ox 100% BP 116/80
- Physical exam: happy infant in dad's arms with bump to left side of occiput tender to touch. No erythema or boggy edema
- What do you want to do?



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PCARN Pediatric Emergency Care Applied Research Network

PCARN

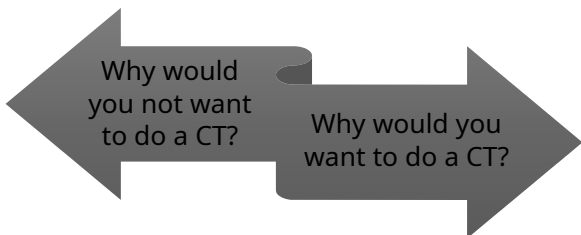


• <http://pecarn.org/currentResearch/index.html>

- Appendicitis
- Gastroenteritis
- Febrile infant
- Predicting cervical Spine injuries
- Pediatric sepsis
- MTBI (Minor traumatic brain injury)

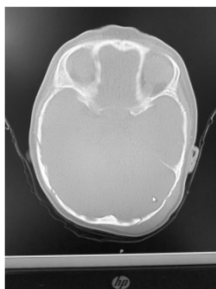
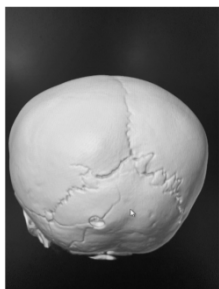
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Work UP



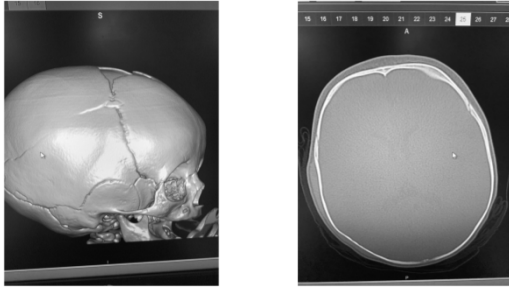
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L Occipital Skull Fracture



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Right Parietal Skull Fracture



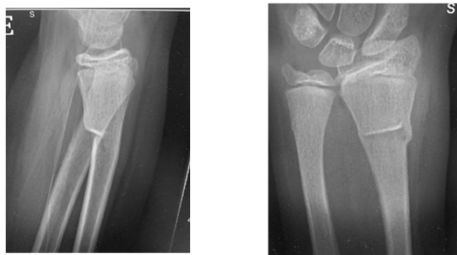
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Pediatric Pearls

- Weight based care Kilos
 - One size does not fit all
- Talk to the children
 - Their stories are so much better
- Involve the parents
 - Anything I did not ask about that you think is important for me to know?
 - Do not alienate them, question with concern and praise what they have done right

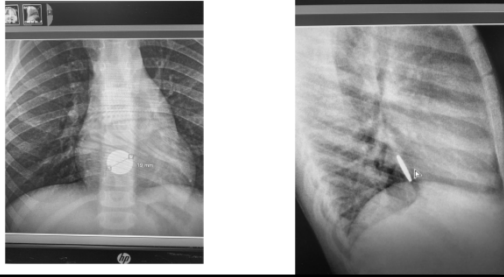
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Children's bones can buckle...



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Kids eat the darndest things



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Some can be dangerous



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Bronchiolitis is different than Bronchitis

- Most common in children under the age of 2 years
- Albuterol does not help and can make things worse
- CXR are not necessary unless
 - no improvement with suctioning
 - Dyspnea
 - Tachypnea
- fever greater than 3 days
- cough greater than 2 week

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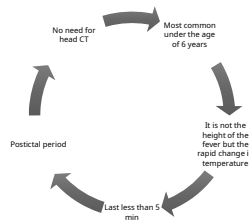
Antibiotic Stewardship

- Fevers are good. You do not treat a number, you treat the patient (unless history of febrile seizures)
- Antibiotics do not help with symptoms. Have a diagnosis you are treating or culture pending. Most illnesses in children caused by viral etiology
- Narrower is better with Antibiotics!
- Less is more



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Febrile Seizures



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Nephrotic Syndrome

- Can have elevated Blood Pressure (needs immediate evaluation)
- Microscopic findings (Hematuria)
- Repeat testing (orthostatic proteinuria)
- Kidney biopsy findings:
 - focal segmental glomerular sclerosis (FSGS)
 - membrano-proliferative glomerulonephritis (MPGN)
 - lupus nephritis
 - crescentic glomerulopathy
 - reflux nephropathy
- Often misdiagnosed as allergies
- BP are ignored
- Syncopal spells
- Anemia
- Watch for dependent edema



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Abdominal Pain in Children

- Constipation, constipation, constipation
- Appendicitis
- Intussusception
 - Intermittent severe colicky abdominal pain
 - Bloody stools
 - Abdominal Xray with target lesion
 - US showed target lesions with surrounding swelling



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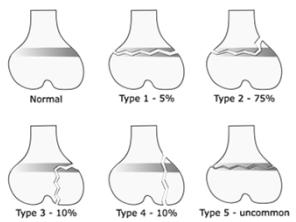
Fractures

- SALTER Harris Fracture
- I - S = **Slip (separated or straight across)**. Fracture of the cartilage of the physis (growth plate)
- II - A = **Above**. The fracture lies above the physis, or **Away** from the joint.
- III - L = **Lower**. The fracture is below the physis in the epiphysis.
- IV - TE = **Through Everything**. The fracture is through the metaphysis, physis, and epiphysis.
- V - R = **Rammed (crushed)**. The physis has been crushed.



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Salter Harris Fracture



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Common Testing

- No need to test for strep prior to age 3 years
 - Children under 3 cannot make the antibodies to cause rheumatic fever JUST DON'T DO IT ☺
- UTI catheterized specimens
 - Can not concentrate WBC in urine if not trained
 - Always sent a urine culture if catheter specimen
 - Keflex first line treatment in children under the age of 2 years 50mg/kg/day tid
- Amoxicillin
 - AOM: 90mg/kg/day bid x 10 days under the age of 2yrs and 7 days above age 2
 - Pneumonia: 90mgs/kg/day TID (MIC higher) Max 4g daily



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Pediatric Hypertension Guidelines

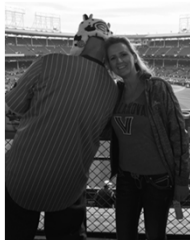
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Questions

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