Outpatient management of common pediatric problems

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Objectives

- Describe common clinical problems encountered in pediatric practice
- Interpret signs and symptoms to identify possible diagnoses
- Formulate appropriate management plan and follow up
Mother brings in her 18 month old daughter with 2 days of fever to 102.3F rectal and increased fussiness

What HPI information would you like?

Previously healthy, no significant PMHX

Associated symptoms? Slight runny nose, teething (drooling a lot)

Input/Output? Not eating much, drinking well, normal diapers, no diarrhea

ROS negatives: no congestion, no sneezing, no cough, no eye symptoms, no rash

Sick contacts? Older sister had runny nose last week but better now

Exposures? Stays home with mom, no daycare, 2 older siblings at school, other parent works outside the home

Treatments? Gave ibuprofen 2x with some improvement
Differential Diagnosis?

- Before you exam the patient, what are your thoughts about what might be going on?
Case 1: Physical Exam

- VS: HR 100 RR 24 Pulse Ox 100% RA Temp 101.9F Weight 10.3 kg
- Gen: Fussy WD WN 18 month AA female, cries on exam but consolable by mom afterwards, non toxic
- HEENT: Head atraumatic, EOMI, no conjunctival injection, TM - see image, Nose clear rhinorrhea Mouth MMM no lesions, Throat no erythema or exudate tonsils 2+ BL
- Heart: RRR, no murmurs
- Lungs CTA BL
- Abd: soft NT ND normal BS
- Skin: smooth soft, no rashes
Case 1: Ear exam shows bilaterally

Case 1: Diagnosis? Treatment? Follow up?

- Dx: Acute otitis media (AOM)
- 3 main bacteria associated with AOM?
  - H. influenzae, M. catarrhalis and S. pneumoniae (less now due to PCV)
- Treatment?
  - Amoxicillin 80-90 mg/kg/day (high dose - why?)
- Length of treatment?
  - 10 days < 2 years of age
  - 7 days for children ages 2 to 5 years
  - 5 to 7 days for children 6 years and older
- If not better in 48-72 hours change to amoxicillin-clavulanate
- PNC allergic?
  - Cefdinir, cefuroxime, cefpodoxime, and ceftriaxone
    - If using ceftriaxone IM, 50 mg/kg IM once daily for 3 days
    - Alternative drug choices include clindamycin or bactrim
- Pain control - Tylenol or ibuprofen dose?
  - Tylenol 15 mg/kg every 4 to 6 hours or ibuprofen 10 mg/kg every 6 to 8 hours with food
Case 1: Diagnosis? Treatment?

- **Dx:** Acute otitis media (AOM)

- **When can you do watchful waiting?**
  - On the basis of joint decision-making with the parents
    - unilateral, non severe AOM in children aged 6-23 months
    - non severe AOM in older children may be managed either with antibiotics or with close follow-up and withholding antibiotics
      - unless the child worsens or does not improve within 48-72 hours of symptom onset

- **What if had AOM 3 weeks ago and treated with amoxicillin?**
  - Use Augmentin
  - Dose?
    - 25-45 mg/kg/24 h divided BID or Augmentin E 600 90 mg/kg/24 h divided BID

- **What if had AOM 3 weeks ago and treated with augmentin?**
  - Use Cefdinir
  - Dose?
    - 14 mg/kg/24h ONCE per day
      - Distinct side effect?
Case 1: Follow up?

- Dx: Acute otitis media (AOM)
- Follow up?
  - 2-3 weeks in office for resolution
- Criteria for ENT follow up (P-ENT)
  - 4 acute episodes of OM within the last year or 3 in last 6 months
  - Persistent bilateral middle ear fluid for 3 months
  - Persistent unilateral middle ear fluid for 3 months
  - Persistent acute OM in spite of continuous antibacterial treatment for 1 month
Calculating Dosage

- 10.3 kg patient
- Dosage 80-90 mg/kg/day divided BID
- What is the concentration of the medication?
  - Most commonly used is 400 mg/5 ml
- Calculate mg dose in ml and enter your answer in the chatbox
  - 90 mg/kg/day x 10.3 kg = 927 mg/day divided by 2 = 463.5 mg/dose
  - 400 mg/5ml = 80 mg/ml
  - 463.5 mg/dose divided by 80 mg/ml = 5.79 ml/dose BID
    - **DO NOT EXPECT A PARENT TO DRAW UP 5.79 ml OF ANYTHING**
    - They will likely draw up 6 ml which would be 93 mg/kg/day - overdosing
- Give the parent a reasonable volume to administer
  - 5.5 ml BID would be 440 mg/dose or 880 mg/day or 85 mg/kg/day
Algorithm created by Claudette Gonzales, MD, and Gabriela Saca, MD, based on information from: Lieberthal AS, et al.

**Diagnosis of Acute Otitis Media**

- No Bulging or MEE
  - No AOM
- Mild Bulging or MEE
  - Acute Pain < 48h OR Intense Erythema
  - Moderate to Severe Bulging OR New Onset Otorrhea
- AOM

**Treatment of Acute Otitis Media**

- Severe Symptoms:
  - Bilateral or Unilateral
  - > 6 Months Old
  - Treat
  - Follow Up Within 48-72 Hrs of Onset of Symptoms
- Without Severe Symptoms
  - < 24 Months Old
    - Bilateral
      - Treat
    - Unilateral
      - Observe With Follow-Up Within 48-72 Hrs of Onset of Symptoms
  - > 24 Months Old
    - Observe With Follow-Up Within 48-72 Hrs of Onset of Symptoms
    - Treat If Symptoms Persist

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*Severe symptoms defined as moderate or severe otalgia or otorrhea for at least 8 hours, or temperature 103°F [39.5°C] or higher.

**Middle Ear Effusion


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Case 2: 18 month old with fever and fussiness

- Mother brings in her 18 month old daughter with 2 days of fever to 102F rectal and increased fussiness
- What HPI information would you like?
- Previously healthy, no significant PMHX
- Associated symptoms? teething (drooling a lot), some loose stools a few days ago
- Input/Output? Not eating much, drinking OK but not great, slightly less wet diapers
- ROS negatives: no runny nose, no congestion, no sneezing, no cough, no eye symptoms, no rash
- Sick contacts? none
- Exposures? Stays home with mom, no daycare, 2 older siblings at school, other parent works outside the home
- Treatments? Gave Tylenol last night with no improvement
Differential Diagnosis?

Before you exam the patient, what are your thoughts about what might be going on?
Case 2: Physical Exam

- VS: HR 110 RR 30 Pulse Ox 100% RA Temp: 102.4F rectal
- Gen: Fussy WD WN 18 month white female, cries on exam but consolable by mom afterwards, non toxic but mildly ill appearing
- HEENT: Head atraumatic, EOMI, no conjunctival injection, TM - see image, Nose WNL Mouth MMM no lesions, Throat no erythema or exudate tonsils 2+ BL
- Heart: RRR, no murmurs
- Lungs CTA BL
- Abd: soft NT ND normal BS
- Skin: smooth soft, no rashes
Case 2: TM exam BL
What do you do next?

- Now what are your thoughts about what might be going on?
- What do you need to figure out?
  - What is causing the fevers? This is FUO
- What else would you like to do? Other tests or labs?
  - Could this be covid?
- How would your approach differ if this patient was
  - 3 weeks old - what is the threshold for fever in this age group? What is the workup?
  - 8 year old - what else could present with fever alone?
  - 17 year old - what other risk factors in this age group?

- What else do you need to consider?
Risk Factors for UTI

- **Females**
  - Age < 12 month
  - White race
  - Temp > 102.2F
  - Fever > 2 days
  - Lack of other sources of infection

- **Males**
  - Non black race
  - Temp > 102.2F
  - Fever > 2 days
  - Lack of other sources of infection

- For females probability of UTI is < 1% with no more than 1 risk factor, < 2% with no more than 2 risk factors

- For uncircumcised boys with fever probability of UTI is 1% without other risk factors
To cath or not to cath?

- Can’t we just bag her???
- Urine collection via a bag is acceptable for urinalysis but NOT FOR CULTURE
  - If urine dip shows evidence of inflammation (moderate or large leukocyte esterase or nitrites) then must obtain catheterization sample to send for culture
Case 2: Urine Dip

Color - yellow
Glucose - negative
Ketones - trace
Blood - negative
SG - 1.010
Leukocyte Esterase - positive
Nitrite - positive

What do you want to do next?
Do you empirically treat?
To treat or not to treat?

- Culture results typically take 1-2 days or longer
  - 12 to 24 hours before bacterial growth is detected
  - 1 to 2 days before the specific bacterium is identified
  - 2 to 3 days before susceptibilities are available

- In infants and often in older children
  - Antibiotics **should be** empirically initiated in suspected UTI
    - After UA result but before culture result is available

- In older children with mild symptoms
  - Wait for culture results
  - Minimize unnecessary or ineffective use of antibiotics
To treat or not to treat?

- What antibiotic?
- What are the bacteria?
  - *Escherichia coli* is the most common bacteria (54% to 67%)
  - *Klebsiella* (6%-7%), *Proteus* (5%-12%), *Enterococcus* (3%-9%), and *Pseudomonas* (2%-6%)
- Empiric oral antibiotic options
  - Augmentin 30-40 mg/kg/day divided TID
  - Bactrim 6-12 mg/kg/day divided BID (not in infants < 2 months)
  - Cephalexin 50-100 mg/kg/day divided 4 times a day
    - Consider feasibility of 4x/day dosing in infants and toddlers!!!!
Case 2: Urine Culture

- At 24 hours urine culture grows > 100,000 e coli colonies/ HPF
- Susceptible to amoxicillin, bactrim, and nitrofurantoin
Case 2: Diagnosis? Treatment? Follow up?

- Dx: Acute UTI
- Treatment: antibiotics based on susceptibilities
- Follow up?
  - Renal and bladder US recommended for pts <24 months of age with 1st febrile UTI to detect anatomic abnormalities
    - 1-2 days for very ill or pts what do not improve in 12-36 hour
    - 1-2 weeks later for non severe infection
  - A voiding cystourethrogram (VCUG) NOT recommended after 1st febrile UTI
    - Unless abnormal renal US
Case 3: 9 year old female with fever and rash

- Mother brings in her 9 year old daughter who has fever 101F for 1 day and rash on chest
- What HPI information would you like?
- PMHX: none
- Associated symptoms? Throat a little sore, maybe some stomachache, mild HA
- Input/Output? Not eating, has no appetite, hurts to swallow but drinking some, normal urine and stools, no diarrhea
- ROS negatives: no congestion, no sneezing, no cough, no eye symptoms
- Sick contacts? No one sick at home but some kids out sick at school
- Exposures? In school, 1 younger sibling at home, 1 older sibling who also goes to school, both parents work outside the home
- Treatments? Ibuprofen with reduction in fever
Before you exam the patient, what are your thoughts about what might be going on?
Case 3: Physical Exam

- VS: HR 90 RR 16 BP 95/60 Pulse Ox 100% RA Temp 101.5F
- Gen: WD WN mildly ill appearing, subdued 9 year old AA female
- HEENT: Head atraumatic, EOMI, no conjunctival injection, TM - no erythema or fluid Nose WNL Mouth MMM no lesions, Throat - see image
- Heart: RRR, no murmurs
- Lungs CTA BL
- Abd: soft mild generalized tenderness ND normal BS
- Skin: see image
Case 3 Skin Exam

https://pedsinreview.aappublications.org/content/pedsinreview/39/8/379/F2.large.jpg

What does this rash feel like?

What are your thoughts now?
Case 3 Pharynx

Strawberry tongue?
What do you do next?

- Now what are your thoughts about what might be going on?
- What else would you like to do? Other tests or labs?
  - Throat swab done - rapid strep negative
  - Throat culture positive @ 24 hours
Case 3: Diagnosis? Treatment? Follow up?

- **Dx:** Strep throat/scarlet fever (has rash)
- **Bacteria?**
  - *Streptococcus pyogenes* (also known as group A *Streptococcus* [GAS])
- **Treatment?**
  - Amoxicillin 50 mg/kg (max 1 g) divided BID for 10 days
  - Technically it is once daily but NO pharmacy in the area will fill that script without calling you to check if it is correct
- **If PCN allergic?**
  - Azithromycin at strep dosing which is?
    - 12 mg/kg (max 500 mg) once daily for 5 days
- **If also allergic to azithromycin?**
  - Clindamycin 20 mg/kg (max 1.8 g/day or 300 mg/dose) divided TID for 10 days
- **Replace toothbrush after 24 hours**
- **Return to school after 24 hours on antibiotics (afebrile and covid NEG)**
- **OK to treat symptomatic siblings without testing**
- **Follow up PRN if not resolving**
Why do we treat GAS pharyngitis?

- Self limited infection which will resolve in 2-5 days
- Sequela of GAS infection include
  - Acute rheumatic fever (ARF) (3% of untreated GAS)
    - Dx via Jones Criteria (2 major or 1 major and 2 minor)
    - Major criteria: Arthritis, carditis, sydenham chorea, erythema marginatum, subcutaneous nodules
      - Echo should be done in any suspected cases
    - Minor criteria: polyarthritis, fever > 101F, elevated ESR or CRP, prolonged PR interval
    - Untreated can lead to Rheumatic Heart Disease (RHD)
  - Poststreptococcal glomerulonephritis
    - nephritogenic strains of GAS (such as type 12 and type 49)
    - Highest risk is children < 7 yo
  - Streptococcal toxic shock syndrome
  - PANDAS - Pediatric autoimmune neuropsychiatric disorder
    - children whose symptoms of obsessive compulsive disorder or tic disorders are exacerbated by GAS infection
Erythema marginatum.
Case 3: Follow up

- Parent brings patient in 2 days later. Sore throat is worse, not eating or drinking at all, miserable. Having fevers every day. Can’t get her to take the medicine - says it tastes GROSS. Spitting out or gagging and vomiting most of the dose. Not even taking the Tylenol or motrin now. Mom doesn’t know what to do. Can pt just get a shot to treat her strep throat?

- Can you treat strep throat with something IM?
  - benzathine penicillin (bicilin LA) 600,000 U/dose IM x 1 in pt > 1 month old and < 27 kg
    - Why don’t we do this routinely? Painful, expensive, not always available

- What do you do?
  - Examine the patient
Case 3: Physical Exam - Follow up

- VS: HR 125 RR 25 BP 95/60  Pulse Ox 100% RA Temp 102.9F
- Gen: WD WN  ill appearing 9 year old AA female
  - definitely looks worse than the last time you saw her
- HEENT: Head atraumatic, EOMI, no conjunctival injection, TM - no erythema or fluid, Nose WNL, moderate tender cervical lymphadenopathy
- Mouth: dry mucus membranes
- Throat: unable to visualize pharynx as pt will barely open her mouth
- Heart: tachycardia, no murmurs
- Lungs CTA BL
- Abd: soft NT ND normal BS
- Skin: wwp fading papular rash on chest
What do you do next?

- Now what are your thoughts about what might be going on?
- What else would you like to do? Other tests or labs?
- How would your approach differ if this patient was
  - Unimmunized?
    - What would you be worried about?
  - Leaning forward, tripoding, anxious, drooling?
- What if her pharynx looked like this?
Case 3: Diagnosis? Treatment? Follow up?

**Peritonsillar Abscess**

- Most common deep neck infection in children and adolescents
- Most frequent in older kids but can be seen in younger children
- Usually polybacterial but prominent bacteria include Group A strep
- Lab work up generally not needed
- Imaging not necessary to confirm diagnosis but is often used
  - Soft tissue neck XR, US, CT
- Needs to be evaluated for possible drainage by ENT
Case 4: 4 year old male with rash

- Mother brings in her 4 year old son for well visit, mentions he has had a rash for months, not going away
- What HPI information would you like?
- PMHX: none
- Associated symptoms? None, doesn’t really bother him
- Input/Output? Eating and drinking well, normal urine and stools, no diarrhea
- ROS negatives: no fevers, no congestion, no sneezing, no cough, no eye symptoms
- Sick contacts? none
- Exposures? In daycare/preschool, 1 younger sibling at home, 1 older sibling who goes to school, other parent works outside the home
- Treatments? Nothing, didn’t know what to do
Differential Diagnosis?

Before you exam the patient, what are your thoughts about what might be going on?
Case 4: Physical Exam

- VS: HR 90 RR 16 Pulse Ox 100% RA
- Gen: well appearing WD WN 4 year old white male in NAD
- HEENT: Head atraumatic, EOMI, no conjunctival injection, TM - no erythema or fluid Nose WNL Mouth MMM no lesions, Throat no erythema or exudate tonsils 2+ BL
- Heart: RRR, no murmurs
- Lungs CTA BL
- Abd: soft NT ND normal BS
- Skin: see image
Case 4  skin lesions
Case 4 : Diagnosis? Treatment? Follow up?

- Dx: Molluscum Contagiosum
- Natural history - self limiting
- Treatment: benign neglect if not inflamed or infected, topical bactroban or oral antibiotic for infected lesions (which antibiotic?)
- Follow up
  - As needed
  - If on face or wide distribution - will sometimes to refer to derm
Case 5: 4 year old male with rash

- Mother brings in her 4 year old son for well visit, mentions he has had a rash for months, not going away
- What HPI information would you like?
- PMHX: allergic to eggs and milk
- Associated symptoms? Seems itchy, he scratches a lot
- Input/Output? Eating and drinking well, normal urine and stools
- ROS: some runny nose and sneezing on and off, no fevers, no congestion, no cough, no eye symptoms
- Sick contacts? none
- Exposures? In daycare/preschool, 1 younger sibling at home, 2 older siblings in school, both parents work outside the home
- Treatments? Tried coconut oil on it, seemed to get a little better for awhile but then came back
Differential Diagnosis?

- Before you exam the patient, what are your thoughts about what might be going on?

- What things stand out about his HPI?
Case 5: Physical Exam

- VS: HR 100 RR 24 Pulse Ox 100% RA
- Gen: WD WN 4 year old white male, non toxic in NAD, intermittently scratching at arms during interview
- HEENT: Head atraumatic, EOMI, no conjunctival injection, TM - pearly gray, w/o fluid or erythema, Nose clear rhinorrhea Mouth MMM no lesions, Throat mild cobble stoning - see image, tonsils 2+ BL w/o erythema or exudate
- Heart: RRR, no murmurs
- Lungs CTA BL
- Abd: soft NT ND normal BS
- Skin: see image
Case 5  skin lesions
What do you do next?

- Now what are your thoughts about what might be going on?
- What else would you like to do? Other tests or labs?
Case 5: Diagnosis? Treatment? Follow up?

- **Dx:** Atopic dermatitis aka eczema

- **Treatment?**
  - Gentle hypoallergenic soaps or non soaps for skin cleansing, lukewarm water baths
  - Adequate skin hydration with heavy emollient, ointments, or creams
  - Low to mid potency topical steroids for flares
    - 2.5% hydrocortisone BID
    - 0.1% triamcinolone BID
  - Use topical steroids until skin is clear
  - Coconut oil was superior to olive oil in decreasing *S aureus* colonization and AD severity in 2 studies

- **Follow up?**
  - Frequent - skin will continue to flare
  - May need referral to derm for severe cases
Proposed treatment model/eczema action plan for pediatricians and other primary care providers.

**Mild Disease**

**Basic Management for All patients at All times** (add Maintenance and/or Acute Treatment as needed)

1. **Skin Care**
   a. Moisturizer* (choice dependent on patient preference) liberal and frequent
   b. Warm baths or showers using non-soap cleansers or mild soaps generally once daily followed by application of moisturizer* (even for ‘uninvolved’ skin)

2. **Antiseptic Measures**
   Dilute bleach baths* (or equivalent) twice weekly or more (daily for more severely affected children), especially for patients with recurrent skin infections

3. **Trigger Avoidance**
   Avoid common irritants (eg, soaps, wool), temperature extremes, and proven allergens

**Moderate-to-Severe Disease**

**Maintenance TCI**
- (pimecrolimus or tacrolimus)
- TCI two to three times weekly*16-22
- OR (if patient is non-responsive)
- TCI once to twice daily*22, 24, 25

**Maintenance Topical Corticosteroids**
- Medium potency topical corticosteroids (Class III-IV, see Table 3) once to twice weekly (except for face/eyes)22
- AND/OR (depending on patient/physician preference and lesion location)
- Low potency topical corticosteroids (Class V-VII, see Table 3) once to twice daily (including face and eyes)

For Relapsing Course (frequent/persistent flares despite treatment)
- Topical Anti-inflammatory Medication Applied at First Signs/Symptoms or to Flare-Prone Areas

**Acute Treatment**
- Topical Anti-Inflammatory Medication Applied to Inflamed Skin
- Low potency topical corticosteroids (Class VII, see Table 3) twice daily for up to 3 days beyond clearance

*Flare* (acute worsening of symptoms necessitating escalation in treatment)

**Acute Treatment**
- Topical Anti-Inflammatory Medication Applied to Inflamed Skin
- Medium potency topical corticosteroids (Class III-IV, see Table 3) twice daily for up to 3 days beyond clearance
- Consider possible secondary infection that may require oral antibiotic

**Flare not resolved within 7 days**
- Consider nonadherence, infection, misdiagnosis, referral


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Case 6: 4 year old male with rash

- Mother brings in her 4 year old son who has had a rash for 4 days, getting worse
- What HPI information would you like?
- Started on Friday wouldn’t walk on leg. Had rash on knee. Red swollen angry. Don’t know if got an injury or was scratching it? Went to ER. Given oral steroid and antibiotic cream. This morning, temp 102.5F and rash looks way worse. Still having trouble walking, not bearing weight on it. Tylenol 1 hour ago. Scratching like crazy. Shaking.
- PMHX: significant allergies and eczema, delayed immunizations
- Associated symptoms? Fever 102F today Really cranky, just not himself
- Input/Output? Eating and drinking OK, normal urine, 1x diarrhea
- ROS negatives: no congestion, no sneezing, no cough, no eye symptoms
- Sick contacts? none
- Exposures? In daycare/preschool, 1 younger sibling at home, other parent works outside the home
- Treatments? Oral steroid and antibiotic topical cream without relief
Differential Diagnosis?

- Before you exam the patient, what are your thoughts about what might be going on?
Pulse 140 | Temp 98.7 °F (37.1 °C) (Temporal) | Resp 32 | Wt 28 lb 11 oz (13 kg)

Gen: Ill appearing, crying, distressed 4 year old male, scratching all over

HEENT: Head atraumatic, EOMI, no conjunctival injection, TM - pearly gray, w/o fluid or erythema, Nose clear rhinorrhea Mouth MMM no lesions, Throat tonsils 2+ BL w/o erythema or exudate

Heart: tachycardic, no murmurs

Lungs CTA BL

Abd: soft NT ND normal BS


Skin: see image
Case 6  Skin Lesions
What do you do next?

- Now what are your thoughts about what might be going on?
- What else would you like to do? Other tests or labs?
Case 6: Diagnosis? Treatment? Follow up?

- **Dx:** Eczema Herpeticum
  - overwhelming HSV skin infection (typically HSV-1) in pts w eczema
- **Treatment?** immediate hospitalization for IV acyclovir
- **Follow up?** Post hospitalization for skin care management
Case 7: 10 year old male with stomachache

- Father brings in 10 year old son who has had stomachache for 2 weeks
- What HPI information would you like?
- PMHX: none
- Description of pain: intermittent, 3/10 mostly but sometimes 7/10, has it most days, lasts from 20 mins to several hours, right side of abdomen, feels kind of achy, hard to describe - just hurts. Missed school 1x and had to come home early 2x due to pain
- Associated symptoms? None
- Input/Output? Sometimes not wanting to eat, drinking OK, normal urine and stools, no diarrhea
- ROS negatives: no fever, no HA, no congestion, no sneezing, no cough, no eye symptoms, no vomiting
- Sick contacts? none
- Exposures? In school, parents both work outside the home
- Treatments? Hot packs, massage, tums, and Tylenol without relief
Differential Diagnosis?

- Before you exam the patient, what are your thoughts about what might be going on?
Case 7: Physical Exam

- VS: HR 90 RR 16 BP 110/70 Pulse Ox 100% RA
- Gen: well appearing WD WN 10 year old male in NAD
- HEENT: Head atraumatic, EOMI, no conjunctival injection, TM - no erythema or fluid Nose WNL Mouth MMM no lesions, Throat no erythema or exudate tonsils 2+ BL
- Heart: RRR, no murmurs
- Lungs CTA BL
- Abd: soft, mildly decreased BS, mild tenderness to palpation in RUQ and RLQ, no rebound no guarding, no masses, no CVA tenderness, jumps on 2 feet without abdominal pain
- Skin: WWP no rash
What do you do next?

- Now what are your thoughts about what might be going on?
- What else would you like to do? Other tests or labs?
- Would you like more history?
Case 7 Additional History

- When was the last time he had a stool?
  - Can’t remember

- What are normal stools for this patient?
  - Hard pebbles or big lumpy logs
  - Has to push hard to get them out
  - Sometimes painful to pass stools

- How often does he have a BM?
  - Once every 3-4 days, won’t go at school, doesn’t want to stop playing to go
  - Dad says they know he has gone because toilet is clogged up

- Does the abdominal pain get better with stooling?
  - Not while he is pooping but for a little while afterwards

- How is his diet?
  - Typical teenage, junk food and soda. Rarely drinks water
Case 7 : KUB
Case 7: Diagnosis? Treatment? Follow up?

- Dx: Constipation
- Treatment: Clean out of retained stool followed by establishing regular bowel routine
- Clean out
  - Polyethylene glycol 3350 mixed as 17 g/8 oz of water, juice, or other liquid
    - >3 y of age 1-1.5 g/kg per day for 3 d, may be continued for up to a week
  - Magnesium citrate 4 mL/kg per day - generally given on 2 consecutive evenings
  - Lactulose 1 mL/kg, twice a day, for up to 12 wk then tapered over 4 wk
- Maintenance
  - Polyethylene glycol 3350 0.5-1.5 g/kg per day (start low and titrate up with a maximal dose of 17 g/day)
  - Lactulose 1-3 mL/kg per day in 2 divided doses
  - Magnesium hydroxide <2 y: 0.5 mL/kg per day
- Follow up - frequent as this is likely a chronic problem
Case 8: 10 year old male with stomachache

- Father brings in 10 year old son who has had stomachache for 1 day
- What HPI information would you like?
- PMHX: none
- Description of pain: woke up with pain this morning, constant, 8/10, at first was in the middle but now is on right side of abdomen, can’t describe pain - just hurts. Could not go to school today due to pain. Complained of pain with every bump in the road when Dad was driving him to appointment
- Associated symptoms? Nausea, vomited 2x (NB NB), fever to 101F at home this AM
- Input/Output? Not eating, drinking some water, peed this morning when he got up, no stools
- ROS negatives: no HA, no congestion, no sneezing, no cough, no eye symptoms,
- Sick contacts? none
- Exposures? In school, younger siblings in same school, parents both work outside the home
- Treatments? Tylenol this morning without relief
Differential Diagnosis?

- Before you exam the patient, what are your thoughts about what might be going on?
Case 8 : Physical Exam

- **VS:** HR 130 RR 30 BP Pulse Ox 100% RA Temp 101.1F
- **Gen:** Ill appearing, uncomfortable 10 year old male
- **HEENT:** Head atraumatic, EOMI, no conjunctival injection, TM - pearly gray, w/o fluid or erythema, Nose clear rhinorrhea Mouth MMM no lesions, Throat tonsils 2+ BL w/o erythema or exudate
- **Heart:** tachycardic, no murmurs
- **Lungs** CTA BL
- **Abd:** pain with moving to lay supine on exam table, absent bowel sounds, guarding, palpation of LLQ causes tenderness in RLQ, worse with palpation of RLQ, rebound tenderness, when asked to stand and jump on 2 feet, pt refuses
- **Skin:** WWP no rash
What do you do next?

- Now what are your thoughts about what might be going on?
- What sign does the patient have?
  - Positive Rovsing sign (pain in the right lower quadrant with palpation of the left side)
The frequency of appendicitis in these studies varies by PAS as follows:

- PAS ≤2 to 3 – 0 to 2 percent
- PAS 3 to 6 – 8 to 48 percent
- PAS ≥7 – 78 to 96 percent

Case 8 : Diagnosis? Treatment? Follow up?

- Dx: Appendicitis
- Treatment: emergent imaging and/or evaluation by surgery
- Follow up - post surgical
Case 9: 3 year old male with stomachache

- Mother brings in 3 year old son who has had stomachache since last night
- What HPI information would you like?
- PMHX: none
- Description of pain: intermittent, lasts for several minutes then seems to be better, he is OK and then will be curled up and crying in pain, has happened probably 10-15 times in the last 8 hours, seems to be getting more frequent, pt can’t describe the pain - he is 3
- Associated symptoms? Vomited 3 x overnight
- Input/Output? Not eating, drank a little, last urine was overnight, no stools
- ROS negatives: no fever, no HA, no congestion, no sneezing, no cough, no eye symptoms, no vomiting
- Sick contacts? none
- Exposures? In school, younger siblings in daycare, parents both work outside the home
- Treatments? Tylenol without relief
Differential Diagnosis?

- Before you exam the patient, what are your thoughts about what might be going on?
Case 9: Physical Exam

- VS: HR 90 RR 15 BP 95/60 Pulse Ox 100% RA Temp 98.6F
- Gen: tired appearing 3 year old male in NAD
- HEENT: Head atraumatic, EOMI, no conjunctival injection, TM - pearly gray, w/o fluid or erythema, Nose WNL Mouth MMM no lesions, Throat tonsils 2+ BL w/o erythema or exudate
- Heart: RRR, no murmurs
- Lungs CTA BL
- Abd: soft, ND, normal BS, mild tenderness RUQ, no guarding, no rebound
- Skin: WWP no rash
What do you do next?

- Now what are your thoughts about what might be going on?
- What else do you want to do? Labs or imaging?

- As you are contemplating this, a nurse calls you to come immediately to the patients room. When you enter you see this...
Case 9: Diagnosis? Treatment? Follow up?

- **Dx:** Intussusception

- **Ileocolic** intussusception at the ileocecal junction
  - 90 percent of all cases
  - Can be at other areas of the bowel

- **Treatment:**
  - Emergent US
    - Target sign, bullseye, coiled spring
  - Non surgical reduction
    - Air enema

- **Follow up - consideration of lead point**
Conclusions

- Describe common clinical problems encountered in pediatric practice
  - Reviewed several common and a few can’t miss problems
  - Kids are NOT just little adults
  - AGE matters

- Interpret signs and symptoms to identify possible diagnoses
  - Many things can present with similar signs and symptoms
    - It may seem straightforward but always ask yourself, what else could it be?

- Formulate appropriate management plan and follow up
  - Know what to do next
Questions???
References

AOM


Otitis Media To Treat To Refer To Do Nothing PIR 2015 Nov;36(11):480-6; quiz 487-8. doi: 10.1542/pir.36-11-480

UTI

Urinary Tract Infections in Children Eric Balighian and Michael Burke Pediatrics in Review January 2018, 39 (1) 3-12; DOI: https://doi.org/10.1542/pir.2017-0007

https://pedsinreview.aappublications.org/content/39/1/3#T4

References

Strep throat

https://www.uptodate.com/contents/complications-of-streptococcal-tonsillopharyngitis?search=scarlet%20fever%20children&source=search_result&selectedTitle=1-23&usage_type=default&display_rank=1#H4


Strep throat images


https://www.uptodate.com/contents/images/PEDS/63234/Scarletfeverrash.jpg


Peritonsillar abscesses


https://www.uptodate.com/contents/peritonsillar-cellulitis-and-abscess?sectionName=EVALUATION&search=strep%20throat&topicRef=5971&anchor=H6&source=see_link#H14
References

Molluscum image

molluscum contagiosum - Bing images

Atopic Derm


Eczema images

https://www.cliffordlobermd.com/sbtemplates/sbcommon/images/blog/Eczema(1).jpg


https://media.sciencephoto.com/image/c0106664/800wm

Eczema Herpeticum

References

Constipation


Appendicitis


Intussusception


CME validation