




Sick or Not Sick?

Pearls of Pediatric Assessment

Texas Children's Hospital®

Baylor College of Medicine

Elizabeth Elliott, MS, PA-C

Kathleen Thompson, MPAS, PA-C

Pediatrics

Disclosures

- Non-Declaration Statement: We have no relevant relationships with ineligible companies to disclose within the past 24 months. (Note: Ineligible companies are defined as those whose primary business is producing, marketing, selling, re-selling, or distributing healthcare products used by or on patients.)

Objectives

- Review the components of the general pediatric assessment
- Apply the findings of the general assessment to determine patient condition
- Identify critical findings in the components of the basic pediatric assessment

Challenges of the Pediatric Exam

- Communication
- Developmental Stages
- Differences in Presentation by Age
- Parents and Adult Caregivers

Practical Components of the Exam

- Observation – “view from the door”

- Initial Assessment
  - Skin
  - Signs of Dehydration
  - Color
  - Breathing
  - Level of Alertness

Observation – "View from the Door"

- Should be done in the context of the child's developmental, emotional, and physical age

- What are you looking/listening for?
  - Response to your presence
  - Activity of child
  - Noisy breathing, retractions
  - Color
  - Rashes

Initial Assessment

- Skin
- Signs of Dehydration
- Color
- Breathing
- Level of Alertness

Skin

- Assessment of Perfusion, and the Cardiac System

- What are you looking/feeling for?
  - Loss of normal pink coloration of mucosa and nail beds
  - Mottling
  - Skin warmth or coolness
  - Prolonged or flash capillary refill

- When to be concerned?
  - Any loss of normal color or change in capillary refill time indicates poor perfusion.

Signs of Dehydration

- Assessment of Vascular and Renal Systems

- What are you looking/feeling for?
  - Infants – sunken fontanelle
  - Absent tears
  - Sunken eyes
  - Skin tenting
  - Dry mucous membranes

- When to be concerned?
  - Any of the above indicates a depletion of intravascular volume.

Color

- Assessment of Cardiopulmonary and Hepatic Systems

- What are you looking/feeling for?
  - Cyanosis
    - Acrocyanosis (can be present if room is cold)
    - Central Cyanosis
  - Jaundice
  - Pallor

- When to be concerned?
  - Any of the above indicates a derangement in the cardiopulmonary or hepatic systems.

Breathing

- Assessment of Pulmonary System

- What are you looking/feeling/listening for?
  - Respiratory Rate (bradypnea/tachypnea)
  - Noises
    - Stridor
    - Wheezing
    - Grunting
  - Retractions
    - Intercostal
    - Suprasternal

- When to be concerned?
  - Any extra noises, fast/slow breathing, or increase work of breathing indicates respiratory difficulty.

Level of Alertness

- Assessment of the Brain/Nervous System

- What are you looking for?
  - How do they respond to you? To questions?
    - Alert – responsive to environment, eyes open, looking around
    - Verbal – responds to verbal commands only
    - Pain – responds to painful stimulation only
    - Unresponsive – no response to any stimuli

- When to be concerned?
  - Any level of consciousness other than alert indicates a problem but being alert does not mean the child is not sick.

Normal Pediatric Vital Signs

- Respiratory Rate

Age	Respiratory Rate (Breaths/Minute)
Newborn – 1 year	30 to 60
1 to 3 years	25 to 40
3 to 12 years	20 to 30
> 12years	12 to 20

Normal Pediatric Vital Signs

- Heart Rate

Age	Heart Rate (Beats/Minute)
Newborn	80 to 200
< 2 years	80 to 180
2 to 10 years	60 to 150
>10 years	60 to 100

Normal Pediatric Vital Signs

- Blood Pressure

Age	Systolic Blood Pressure (mmHg)
Newborn	60
<1 year	70
1 to 10 years	70 + (Age in years x 2)
>10 years	90

Take Home Points

- Much of the initial Pediatric Exam to determine level of illness can successfully be done by observation.
- Parents can help - they know their children well!
- Refer to a higher level of care (Emergency Department) if concerning findings are discovered after stabilization.

References

•American Heart Association. 2020. *Pediatric Advanced Life Support Provider Manual.* ISBN 978-1-61669-599-0.

•Society of Critical Care Medicine. 2018. *Pediatric Fundamental Critical Care Support*. ISBN 978-0-936145-50-1.

Elizabeth Elliott – elliot@bcm.edu

Kathleen Thompson – parks@bcm.edu

Case Studies!

- Let's look at some patients per assessment category
  - Dehydration
  - Level of Alertness
  - Skin
  - Color
  - Breathing

Case #1 -

8-week-old healthy male, full-term, no delivery complications who presents with his parent with two days of vomiting more frequent stooling.

View From the Door

- Parent holding cooing infant
- No signs of distress
- Parent looks worried
- Lips are pink

Discussion

- What do you notice that is concerning? Not concerning?

Additional History

Patient is breast and formula fed, no recent changes to feeding history. Four-year old brother attends daycare and had a history of vomiting one day prior to baby brother becoming ill. No fevers, no rashes. Vomiting large volumes about 6 times a day, stooling 8 times a day. Still taking bottles and interested in eating. Still making wet diapers independent of stooling. Infant is sleeping a little more than normal since the illness began.

Discussion

- What do you notice that is concerning? Not concerning?
- What do you want to prioritize with the physical exam?

Physical Exam

- General: awake, tracking, alert and smiling male infant
- HEENT: fontanelle flat, mucous membranes moist, no rhinorrhea or oropharyngeal erythema
- Pulm/Cardio: RR 50 bpm, lung sounds clear, no retractions, pulse strong at 130 bpm, regular rate and rhythm, no murmurs
- Abdomen: soft, non-distended, bowel sounds present, no hepatosplenomegaly, no pain with palpation, no masses
- Skin: capillary refill < 2 seconds, warm and pink, no rashes or lesions
- GU: wet diaper present

Discussion

- What do you notice that is concerning? Not concerning?
- How would you classify this patient?

Alternative Disposition (Dehydration)?

- What if this was the case?
  - 8-week-old full-term previously healthy male with two days of vomiting and one day of more frequent stooling, + ill contacts, not interested in feeding, more lethargic per parent report, last urine output yesterday
  - Physical exam: sleepy infant, depressed fontanelle, cool skin, dry mucous membranes, tachycardia (180), prolonged capillary refill, increased respiratory rate (70)
  - How would you classify this patient?

Case #2 -

15-month-old female with a history of a URI four weeks ago (resolved) who presents with a 4-day history of rhinorrhea, now with cough and low-grade fever.

View From the Door

Toddler sitting still in parent's lap, not playful. You notice he is drooling and intermittently coughing. The cough sounds harsh, noisy, and high-pitched. You notice suprasternal retractions.

Discussion

- What do you notice that is concerning? Not concerning?

Additional History

Parent reports she became ill four days ago with a typical runny nose. Cough started two days ago, just at night. She has been running around and acting normally until today. Parent reports that today she seems to be less playful and the cough is happening at rest. No rashes, no sick contacts, eating and drinking well until today.

Discussion

- What do you notice that is concerning? Not concerning?
- What do you want to prioritize with the physical exam?

Physical Exam

- General: alert, lethargic, clingy toddler
- HEENT: mucous membranes moist, + rhinorrhea, difficult to view the oropharynx, high pitched upper airway noises on inspiration
- Pulm/Cardio: RR 40 bpm, lung sounds clear, suprasternal retractions, pulse strong at 120 bpm, regular rate and rhythm, no murmurs
- Abdomen: soft, non-distended, bowel sounds present, no hepatosplenomegaly, no pain with palpation, no masses
- Skin: capillary refill < 2 seconds, warm and pink, no rashes or lesions

Discussion

- What do you notice that is concerning? Not concerning?
- How would you classify this patient?

Alternative Disposition (Breathing)?

- What if this was the case?
  - 15-month-old healthy female with four days of rhinorrhea and two days of high-pitched barking cough (worse at night and with strenuous activity during the day), no ill contacts, still playful and acting herself
  - Physical exam: awake, alert, engaging toddler, no retractions, no cough at rest, no upper airway noises
  - How would you classify this patient?

Case #3 -

3-year-old female with a history of hydronephrosis (stable) and recent history of viral gastroenteritis (resolved) who presents with a 3-day history of high fevers (103-104 Fahrenheit).

View From the Door

Preschool child in parent's lap, awake, alert, skeptical of your presence. No obvious distress, but not playful.

Discussion

- What do you notice that is concerning? Not concerning?

Additional History

Parent reports that the child was feeling well and acting normally until 3 days ago. Since that time, she has had intermittent high fevers that are relieved with medication but return when medication wears off. She has had slight rhinorrhea and has been acting herself in between the episodes of fever. She has had slight decrease in appetite, but still drinking fluids. This morning, the parents noticed a concerning rash on her chest that prompted them to bring her to the office.

Discussion

- What do you notice that is concerning? Not concerning?
- What do you want to prioritize with the physical exam?

Physical Exam

- General: awake, alert preschooler, no obvious distress
- HEENT: mucous membranes moist, mild rhinorrhea, no oropharyngeal erythema
- Pulm/Cardio: RR 25 bpm, lung sounds clear, no retractions, pulse strong at 100 bpm, regular rate and rhythm, no murmurs
- Abdomen: soft, non-distended, bowel sounds present, no hepatosplenomegaly, no pain with palpation, no masses
- Skin: capillary refill < 2 seconds, warm and pink, no lesions, maculopapular blanchable rash covering the trunk and extending to the extremities and neck

Discussion

- What do you notice that is concerning? Not concerning?
- How would you classify this patient?

Alternative Disposition (Skin)?

- What if this was the case?
  - 3-year-old female with a history of hydronephrosis and recent viral gastroenteritis with a three-day history of high fevers, mild rhinorrhea. No recent urine output.
  - Physical exam: alert preschooler, slight tachycardia (150), moist mucous membranes, warm skin, no rash
  - How would you classify this patient?

Case #4 -

8-year-old previously healthy male who has a previous diagnosis of strep pharyngitis, on day 5 of antibiotic therapy who presents again today for muscle pain, fatigue, and continued high fevers.

View From the Door

School aged child laying on bed, looks tired.

Discussion

- What do you notice that is concerning? Not concerning?

Additional History

Patient initially presented 6 days ago with a three-day history of headache, painful swallowing, and high fevers. He was diagnosed with strep pharyngitis and prescribed Amoxicillin 90 mg/kg/day and has been compliant. He continued with fevers and malaise and then developed myalgias over the last two days. His parents brought him back today because he is having pain with walking and climbing. No recent trauma.

Discussion

- What do you notice that is concerning? Not concerning?
- What do you want to prioritize with the physical exam?

Physical Exam

- General: awake, but slow to respond
- HEENT: mucous membranes tacky, oropharyngeal erythema present, no tonsillar exudates, no rhinorrhea
- Pulm/Cardio: RR 24 bpm, blood pressure 90/40, lung sounds clear, no retractions, pulse strong at 120 bpm, regular rate and rhythm, no murmurs
- Abdomen: soft, non-distended, bowel sounds present, no hepatosplenomegaly, no pain with palpation, no masses
- Skin: capillary refill 3 seconds, warm and pink, no rashes or lesions
- MSK: tender to palpation and edema along right anterior superior iliac spine; pain with movement of right hip joint

Discussion

- What do you notice that is concerning? Not concerning?
- How would you classify this patient?

Alternative Disposition (Color)?

- What if this was the case?
  - 8-year-old previously healthy male diagnosed with strep pharyngitis and compliant with antibiotics who returns to the clinic for continued high fevers and nausea.
  - Physical exam: awake child, ill-appearing, but answers questions, mucous membranes moist, slight tachycardia to 110, BP 104/56, RR 20, capillary refill 2 seconds.
  - How would you classify this patient?

Case #5 -

14-year-old female with a history of well-controlled asthma who presents with a several hour history of headache and low-grade fevers, vomiting x 3, and neck pain.

View From the Door

Teenager in the fetal position on the exam table, jacket covering head.

Discussion

- What do you notice that is concerning? Not concerning?

Additional History

Patient has no recent illness and looked well when dad dropped her off at school this morning. The school nurse called and asked the parents to come pick her up from school. She had asked to see the nurse for a headache and the nurse was concerned that the lights were bothering her. When the nurse evaluated her, she had a low-grade fever, and threw up several times in her office. The parents picked her up from school and brough her to your office.

Discussion

- What do you notice that is concerning? Not concerning?
- What do you want to prioritize with the physical exam?

Physical Exam

- General: eyes closed, very short responses to questions, lethargic
- HEENT: PEERL (but doesn't like this part of the exam), no rhinorrhea, no pharyngeal exudates
- Pulm/Cardio: RR 18 bpm, lung sounds clear, no retractions, pulse strong at 110 bpm, regular rate and rhythm, no murmurs
- Abdomen: soft, non-distended, bowel sounds present, no hepatosplenomegaly, no pain with palpation, no masses
- Skin: capillary refill < 2 seconds, warm and pink, no rashes or lesions
- Neuro: moves all extremities. When supine, hips are flexed to 90 degree, there is pain with passive extension of knee. And there is flexion of the hip and knee when the neck is flexed.

Discussion

- What do you notice that is concerning? Not concerning?
- How would you classify this patient?

Alternative Disposition (Level of Alertness)?

- What if this was the case?
  - Teenager, previously healthy with a 1-day history of low-grade fever, nausea, vomiting, and neck stiffness/pain.
  - Physical exam: awake, talkative, but tired and laying on the exam table. PERRLA. HR 80, RR 16. Clear to auscultation bilaterally. RRR S1 & S2. Mildly tender to palpation to c-spine. Negative Kernig's and Brudzinski's.

- How would you classify this patient?