THE PEDIATRICS FOR EMERGENCY PHYSICIANS NETWORK

The Crying Baby

WHAT IS THE DEFINITION OF A CRYING BABY?

"The Crying Baby" actually includes a spectrum of behavior from frankly inconsolable and crying incessantly, to difficult to console with fussy behavior, to only consoling for a very short period of time. All these behaviors, when persistent, are concerning for illness and require further investigation.

WHAT ABOUT CRYING BABIES WHO STOP CRYING TO FEED AND SLEEP?

A baby who is fussy or crying inconsolably may stop to feed vigorously or nap soundly. However, if a baby only stops crying to feed or sleep but, while otherwise awake, cries or fusses, that baby is considered in the category of a crying/fussy baby and requires further investigation as detailed in our discussion below.

WHAT IS THE DIFFERENTIAL DIAGNOSIS FOR A CRYING BABY ? 4 Categories:

(NOTE: Each of these 4 categories contains both BENIGN and more SERIOUS diagnoses)

Category	Benign/ Less Serious	Life Threatening/ Serious
Trauma	Corneal Abrasion Hair Tourniquet	Occult Head Trauma (Abuse) Occult Fracture
Infection	Otitis Media Viral Illness UTI	Sepsis Meningitis
GI/ Surgical	Colic GERD	Volvulus Intussusception Incarcerated hernia Testicular Torsion
Cardiac		Anomalous Left Coronary Artery Arrhythmia

WHAT ARE THE SERIOUS DIAGNOSES YOU DON'T WANT TO MISS?

The **"BIG FOUR"** Diagnoses you should never miss:

1. **Trauma :** Occult head trauma/ child abuse
2. **Infection :** Sepsis/ meningitis
3. **GI/Surgical** : Volvulus/ intussusception
4. **Cardiac :** ALCAPA*/ Arrhythmia *(ALCAPA =Anomalous Left Coronary Artery)

CLINICAL APPROACH TO THE CRYING BABY:

Step 1: **ABC's → Vital Signs → Rapid Cardiopulmonary Assessment**

- If the baby is unstable, provide immediate resuscitation efforts.
- If the baby is stable and vigorous, proceed with algorithm.

Step 2: **Determine whether the baby is consolable by trying console the infant yourself.**

- Try techniques such as swaddling, shushing, rocking, singing, or using a pacifier.
- If the baby is consolable, then the most likely diagnosis is colic.

Step 3: **Perform a complete history and physical exam**

- Even for babies who are consolable, you still MUST do a full H&P.
- If there are part of the history or physical consistent for a concerning diagnosis, even if the baby is consoled, you must still proceed with the work-up. (e.g.- bilious vomiting in a newborn still requires an upper GI to evaluate for volvulus)
- For babies that remain inconsolable or fussy, a complete history and physical is the most important part of management, as it most likely to lead you to the correct diagnosis (ref.) Further testing should be guided by results of the H&P.

Step 4**: When the H&P does not suggest the diagnosis, rule out the BIG 4 Diagnoses**

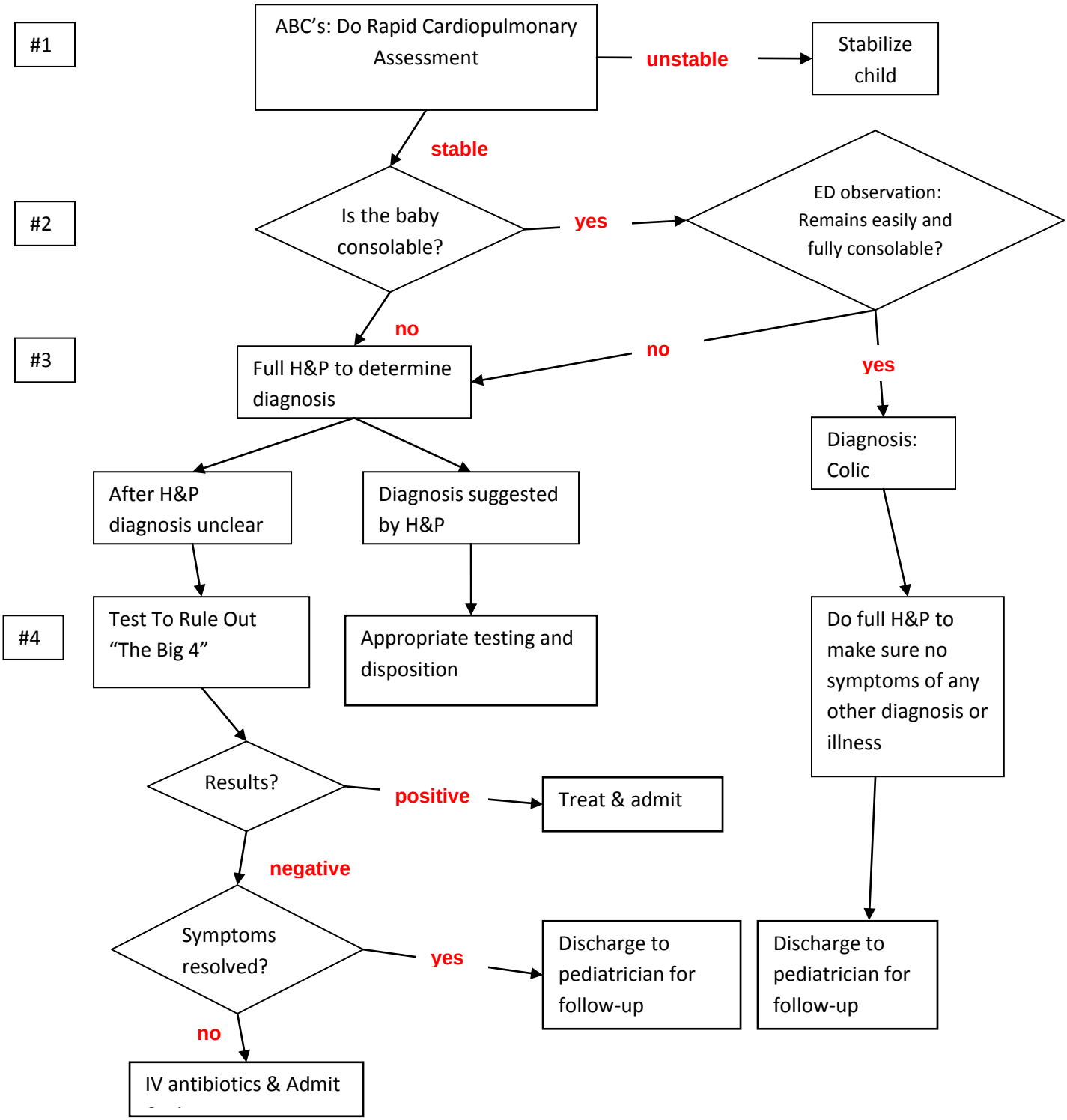
- Trauma/abuse: Do head CT, or admit for MRI, to r/o shaken baby or occult bleed
- Infection: do a "rule-out sepsis" with blood, urine, and CSF studies to rule out sepsis, meningitis or UTI
- Cardiac: do an EKG, CXR, and send a troponin to evaluate for arrhythmia or ALCAPA
- GI/Surgical: do an ultrasound or air enema (institution dependent) to evaluate for intussusception or an upper GI for volvulus
- When in doubt, admit for observation

WHAT IF THE BABY WAS NOT INITIALLY CONSOLABLE BUT THE CRYING LATER RESOLVED?

With a non-alarming history and a normal physical exam, you can discharge this baby home with reliable follow-up. (NOTE: Since symptoms from cardiac angina and intussuception may be intermittent and resolve temporarily, do an EKG and consider U/S prior to discharge. (Some physicians would elect to discharge without any testing and careful instructions to return if symptoms recur.)

ALL THESE PRINCIPLES ARE SUMMARIZED IN THE FOLLOWING ALGORITHM :

EVAUATION AND MANAGEMENT OF THE CRYING INFANT:



CLINICAL PEARLS THAT WILL HELP YOU MAKE THE DIAGNOSIS FROM THE H&P:

GENERAL CONSIDERATIONS: The following discussion underscores the principle that a complete history and meticulous physical exam is the foundation of emergency pediatrics , & most important thing to help you arrive at the correct diagnosis and treatment. Tests and imaging should be only be done selectively, guided by results of the H&P.

COLIC:

DEFINITION OF COLIC:

To define colic, most pediatric textbooks follow the classic description of "The Rule of 3's" : Age of 3 weeks to 3 months with crying for more than 3 hours per day, on more than 3 days per week, and for more than 3 weeks in a row. However, this definition would require weeks to make the diagnosis, and in reality any aged infant (ie- even < 3 weeks old) may present to the ED with a first episode of Colic.

DIAGNOSING COLIC IN THE ED:

For the baby brought to the ED, their crying may represent their very first episode of colic., Therefore, the key to being comfortable making a diagnosis of colic in the ED is to be feel certain that the baby easily consoles and returns to normal, and after further ED observation the baby remains **consistently** and **fully** consolable. **"Consolability" is the hallmark that distinguishes a baby that is well** from the inconsolable child who will require further work-up.

TRAUMA:

- **OCCULT HEAD TRAUMA:** This diagnosis should always be considered in crying or fussy babies with other symptoms associated with shaken baby syndrome. These include sleepiness, irritability, abnormal breathing, poor feeding, or vomiting. No physical signs of trauma need to be present.
- **OCCULT FRACTURE:** This is usually diagnosed by history (i.e. related to chief complaint) or otherwise on careful physical exam (i.e. baby not moving a limb or won't bear weight, swelling or bruising noted). **In an infant (< 1yo), a fracture is always concerning for possible abuse.**
- **HAIR TOURNIQUETS:** Hair tourniquets are most often found by the parents, but otherwise can be easily missed by the physician on inspection alone, because hair tourniquets are often so tight that the skin folds over them. Pull back the skin of each individual digit (fingers /toes) and penis in order to expose any hair tourniquet that is buried.
- **CORNEAL ABRASIONS:** Even though the literature conflicts as to how often this is the cause of the crying baby (vs. an incidental finding, and not actually the cause of the

baby's crying), it is suggested that if the H&P highlights a problem with the eye (eg-redness, swelling , etc), flouresine the eye to evaluate for a corneal abrasion. However, be cautious about diagnosing corneal abrasion as the sole cause of a babie's crying, unless either the crying has resolved anyway, or eye findings are so impressive you have no doubt about it. Otherwise, proceed to rule out other causes as well.

INFECTION:

- **SEPSIS/SERIOUS BACTERIAL ILLNESS:** Clinicians may feel hesitant to do a workup for a serious bacterial illness on a crying or fussy infant who otherwise appears well, especially when the baby is afebrile. However, case reports and experience show that early on in their course of illness, babies with a serious bacterial illness (especially urinary tract infections) may present with only crying and no fever. [ref] It is not unreasonable to perform urine studies in these babies and consider blood tests as well (depending on the age). Give the baby a trial period (+/- IV hydration, a nap) because many of these babies will wake up acting fine; this will avoid an unnecessary LP. *When evaluating crying babies that are otherwise very vigorous and well-appearing , time is often an important diagnostic test.*
- **MENINGITIS:** If the well-appearing baby continues with their irritability despite hydration and a time of observation (try to always include a nap!), and other tests are negative, we suggest LP to rule out meningitis, give IV antibiotics (to cover BOTH sepsis and meningitis), and admit.

GI/SURGICAL:

- **VOLVULUS:** (typically babies ≤ 3 months) A volvulus can present either "early" with bilious vomiting (any green or pure yellow) or "late" (dead gut) with the baby appearing very ill or in shock. *A well-appearing vigorous baby with no history of bilious vomiting, essentially rules out this diagnosis.*
- **INTUSSUSCEPTION:** (typically children 3mo-3 yrs) Babies or children with intussusception classically present with intermittent crampy abdominal pain, drawing up of legs, well between episodes, and vomiting. However, intussusception may present in an otherwise vigorous baby with just crying/fussiness alone, and an imaging study, such as *ultrasound, is necessary to rule out this diagnosis (NOTE: The imaging test of choice is institution dependent)***.**
- **TESTICULAT TORSION or INCARCERATED HERNIA:** These conditions are either noted by parents before ED arrival or picked up by physical exam, but otherwise not routinely tested for. *This highlights the importance to always fully undress the patient, and*

perform a COMPLETE physical exam (including taking down diaper and examining genitalia, etc) in order not to miss the diagnosis.

- **GERD:** This diagnosis may be suggested on feeding history, by a history of the baby stopping mid-feed or right after feed and acting uncomfortable or cranky for brief period of time. There also might be spitting up after feeds or "Sandofer's Sign," which is arching of the neck and back after feeds. Take a good feeding history and look for signs of overfeeding.

CARDIAC:

- **ALCAPA (Anomalous Left Coronary Artery from the Pulmonary Artery):** When the left coronary artery anomalously originates from the pulmonary artery (instead of the aorta), it carries oxygen-poor blood to the left side of the heart. This leads to inadequate cxygen delivery that fails to meet myocardial demand, resulting in acute ischemia and/or myocardial infarction. "Baby angina" presents as a fussy or crying baby. A careful history may reveal cardiac symptoms, such as the baby gets diaphoretic, cyanotic, and/or dyspneic during feeds (feeding is a baby's "stress-test"). In a baby who is otherwise vigorous and well-appearing with a normal exam (i.e. good distal pulses, no skin mottling or heart murmur, etc) then a *normal EKG* (no acute ischemia or significant Q waves suggesting old infarction) and a *normal CXR* (no cardiomegaly or CHF) essentially rules out this diagnosis.
- **ARRYTHMIA:** This is difficult to detect in a baby unless they are having an arrhythmia, like SVT, in front of you. Nevertheless, always do an EKG to look for short PR, delta waves, or prolonged QTc .

TAKE-HOME POINTS:

- When approaching a crying baby, first do a rapid cardiopulmonary exam; then try to console the baby. If the baby consoles nicely and remains consoleable, the diagnosis is COLIC and further testing is most often not necessary.
- Always let your careful history and physical exam guide you to your diagnosis.
- If the baby remains fussy or crying and the diagnosis is unclear, rule out the Big Four diagnoses and admit the patient.

******** END ********

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APPENDIX

Colic: Information For Parents on Ways To Calm A Crying Baby:

Parents can learn more at http://www.happiestbaby.com/.