



Pediatric Readiness Education Series

October 15, 2026



EIIC
EMSC Innovation and
Improvement Center

TEXAS
Pediatric Readiness
Education Series

Before We Begin

- Session is being recorded for future viewing
- Archives can be found <https://emscimprovement.center/education-and-resources/webinars/pediatric-readiness-education-series/>
- Please submit your questions using the Q&A feature in Zoom
- For questions regarding today's session, please contact our team at quest@austin.utexas.edu



EIIC
EMSC Innovation and
Improvement Center

TEXAS
Pediatric Readiness
Education Series

Acknowledgements

The Health Resources and Services Administration (HRSA), Department of Health and Human Services (HHS) provided financial support for this and other educational works. The award totaled \$2.5M with 10% of this total used to support this and other educational works. The contents are those of the author. They may not reflect the policies of HRSA, HHS, or the U.S. Government.



EIIC
EMSC Innovation and
Improvement Center

TEXAS
Pediatric Readiness
Education Series

Today's Speaker



- Health Sciences Clinical Associate Professor of EM and Pediatrics Step II, David Geffen School of Medicine at UCLA
- Medical Director, Pediatric Emergency Department, Harbor UCLA Medical Center
- Chair, Pediatric Advisory Committee, Los Angeles County EMS Agency
- LA Peds Ready, Simulation co-lead

Patricia Padlipsky, MD, FAAP



EIIC
EMSC Innovation and
Improvement Center

TEXAS
Pediatric Readiness
Education Series

COMMON PARENTAL CONCERNS IN NEONATES – Safe to Send Home?



Patricia Padlipsky, M.D.
Associate Professor of Pediatrics
Department of Pediatrics and Emergency Medicine
David Geffen School of Medicine at UCLA
October 15, 2026

INTRODUCTION



- Infants being sent home 24 hours after birth
- As medical professionals we need to be able to tell when the parental concern is a normal finding, issue of little concern, or when further workup/treatment or admission is necessary.
- Many have little experience working with infants

NORMAL INFANT EXAM



Stanford.edu newborns (look under photo gallery)

PediNeurologic Exam Utah (videos)



CHIEF COMPLAINT: THINK S.P.I.T.

What is **Serious**:

Potentially causing loss of life, limb, or significant life function Consider serious or life-threatening conditions first

What is **Probable**:

Think about the most likely or common causes

What is **Interesting**:

Unique or novel from the health care provider or the parent or patient's theory of causation

Less common but interesting or unusual diagnoses that could explain the presentation

What is **Treatable**:

Ensure treatable conditions are not missed; even if rare.

Judy Paukert PhD 2013



Original idea: Credited to Judy Paukert PhD in Medical Education

SAEM 2013: "Taking Advantage of the Teachable Moment: A Workshop for Efficient, Learner-Centered Clinical Teaching" by Todd Guth MD, Elise Lovell MD, Sneha Shah MD, Mike Epter DO

S.P.I.T Mnemonic

Helps ensure:

- You don't miss life-threatening conditions.
- You consider what's most likely based on presentation.
- You stay open to less obvious causes.
- You identify what you can act on to help the patient quickly.

Case 1: 7-day old infant coming in for “Blood in her Diaper”

Start thinking SPIT

Serious

Probable

Interesting

Treatable



CASE 1: CC - 7 DAY OLD WITH BLOOD IN HER DIAPER

- From chief complaint can begin to form differential diagnosis...start to think about what it could be..
 - **Serious:** Potentially causing loss of life, limb or significant life function
 - **Probable:** Given the patient's life situation, age, gender, work, exposures, etc
 - **Interesting:** Unique or novel from the physician perspective or the patient's theory of causation- very important if they have a theory about the cause
 - **Treatable:** Responsive to a known therapy

DIFFERENTIAL DIAGNOSIS

● Vaginal Bleeding

- Congenital Adrenal Hyperplasia
- Hormonal withdrawal
- Sexual abuse
- Labial adhesion that has been torn
- Abrasions/lacs - straddle injuries;
- older child Vaginitis
- Vaginal foreign bodies

▪ Urethral/Urine

- Blood in the urine - UTI
- Urate crystals
- Urethral prolapse
- Balanitis (boy)
- Torn foreskin (phimosi)

▪ Rectal/Stool

- Swallowed maternal blood - from birth or from breast
- Milk protein allergy
- Fissure
- Malrotation
- Intussusception,
- Necrotizing enterocolitis
- Bleeding diathesis
- Meckel's Diverticulum

BASED ON THE DIFFERENTIAL CAN HONE YOUR QUESTIONS FOR HPI

Serious:

- Intussusception - rare in this age...bouts of crying/vomiting
- malrotation with volvulus - any vomiting or spit up/ color
- necrotizing enterocolitis - any drug use in mom, apgar scores....
- Abuse
- Coagulopathy - born at home? Received Vit K, family hx

Probable

- Not blood - urate crystals
- Hormonal withdrawal
- UTI
- Swallowed maternal blood - blood from nipples
- Anal fissure - raw anus/ hard stools/ frequent stools
- Milk protein allergy
- Diaper rash

KEEP THE INTERESTING IN MIND

Interesting

- ▶ Meckel's diverticulum
- ▶ Intussusception
- ▶ Bleeding diathesis; medication induced indomethacin;
- ▶ NSAIDs, heparin, and tolazoline, which are used for persistent fetal circulation
- ▶ Maternal medications can cross the placenta Aspirin, cephalothin, and phenobarbital are well-known causes of coagulation abnormalities in neonates
- ▶ Eosinophilic colitis - rare cause of bloody stools in infants

Treatable

- ▶ Anal fissure
- ▶ CMPA
- ▶ Intussusception
- ▶ NEC

Category	Condition	Key Features	Next Steps
S - Serious	Necrotizing enterocolitis (NEC)	Premature, abdominal distention, lethargy	Admit, NPO, IV antibiotics, imaging
	Volvulus / malrotation	Bilious vomiting, sudden onset pain	Surgical emergency, imaging (UGI series)
	Intussusception	Intermittent pain, "currant jelly" stools	Air enema reduction, surgical consult
	Coagulopathy (e.g., Vit K deficiency)	Bleeding from multiple sites, bruising	Coagulation studies, give vitamin K
P - Probable	Anal fissure	Small streaks of blood, hard stools	Hydration, stool softeners, barrier cream
	Swallowed maternal blood	Normal-appearing infant, breastfeeding	Apt test (distinguishes maternal vs fetal blood)
	Cow's milk protein allergy (CMPA)	Mucousy or bloody stools, fussy feeding	Eliminate dairy from diet/formula
I - Interesting	Meckel's diverticulum	Painless bright red blood, rare in infants	Meckel scan (technetium-99m), surgery
	Hirschsprung-associated enterocolitis	Distention, foul stools, poor feeding	Contrast enema, rectal biopsy
	Eosinophilic colitis	Allergy-related, blood + mucous in stool	Allergen elimination, GI consult
T - Treatable	CMPA	See above	Diet change, monitor growth
	Anal fissure	See above	Supportive care
	Intussusception	See above	Timely intervention = full recovery
	NEC (early stages)	See above	May avoid surgery with prompt care

CASE 1: 7 day old with blood in diaper for 2 days

- Parents report small amount of blood in diaper yesterday morning and this pm
- Can't tell where coming from.
- Had prenatal care
- **Birth hx:** FT born at 3800 grams; NSVD; not home birth; apgars 8/9. Home in 2 days. Vit K and erythro eye ointment
- **Feeding/ elimination:** breast feed and bottle feed - Enfamil with iron. 2-3 ounces every 2-3 hours. 1-2 soft seedy stools per day no blood mixed in stool. 5-7 wet diapers per day. Occasional wet burb; no vomiting. No hard stools
- **Immunizations:** Had hep B at birth
Present illness: No fevers, no URI symptoms. No sick contacts; Not been excessively fussy; No noted abdominal distention; Not seen where blood coming from Mom without any bleeding from her nipples

PE:

❖ T: 37C, HR 140, RR 40, O2 Sat 100% on RA
wt. 3750 gm

General: Well appearing, alert, MAEs

PE : normal except in diaper small amount
of red streaking.

GU: no labial adhesions, no lacs, no
significant erythema, small amount of
blood-tinged whitish discharge was seen
coming from the vagina.

Rectal exam : no fissures, no erythema

Rest of exam normal, normal tone, normal
suck, MAEs, no rashes, normal skin.....

CASE 1:



MOST LIKELY CAUSE FOR THIS PATIENTS CC:

Hormonal Withdrawal “pseudomenses”- blood uterine in origin and represents withdrawal bleeding as maternal estrogen levels decline in the infant.

Management: Send the patient home

If a lot of blood think of bleeding diathesis or vit K deficiency

What to expect:

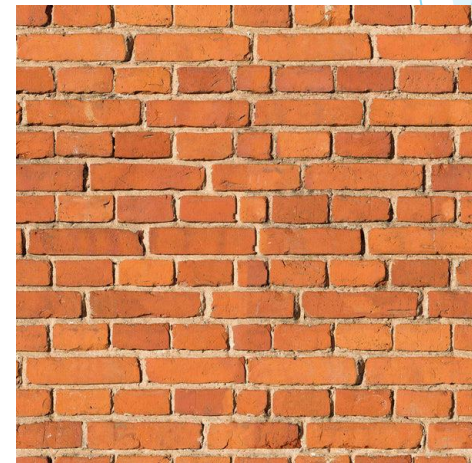
Last a few days

Return to see PMD/ER if longer than 1 week,
Increasing in bleeding, recurrence after gone a few days, fever, lethargy, etc.



Urate Crystals

- Brick stain
- Calcium and urate; substances found in urine
- Crystals form leave red-orange stain in baby's diaper
- More likely when baby is dehydrated as urine becomes more concentrated
- Most common first few weeks of life
- More common in breastfeeding infants if mom has not developed good milk supply
- Colostrum - high protein content favors acidic urine - crystal formation
- Reassurance and home
- ensure hydration

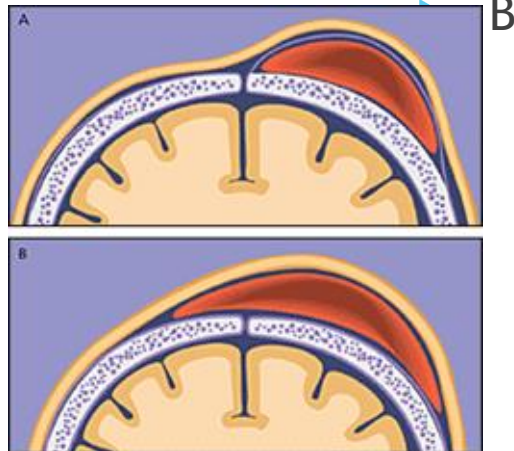
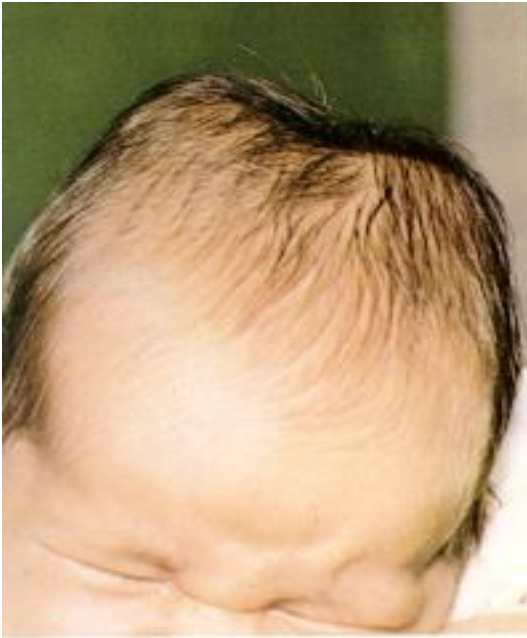


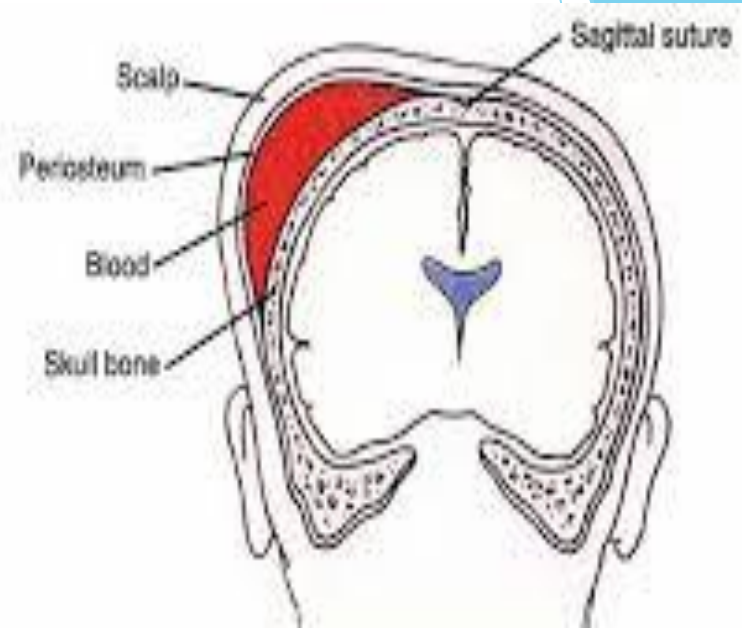
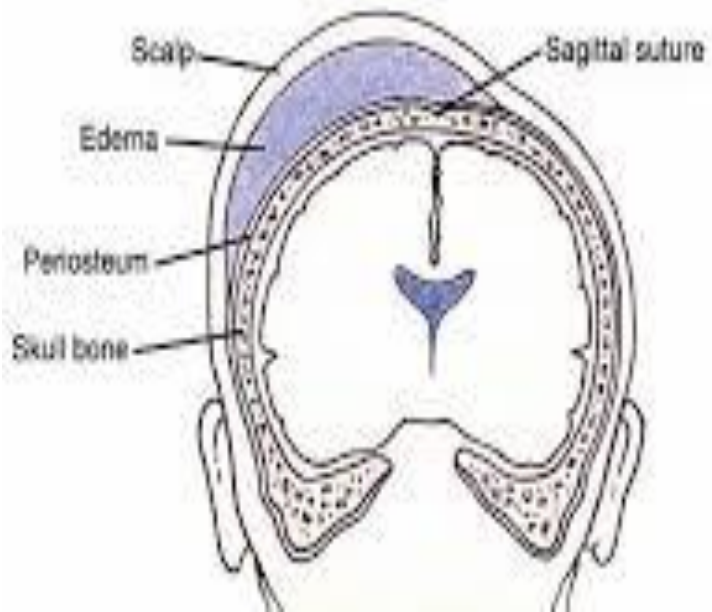
I sit on a baby's head so small,
Not caused by bumps or trips or fall.
I come from birth, a squeeze too tight,
Pressure made me overnight.

I'm under the scalp, but over the bone,
In just one spot—I stay alone.
I never cross where skull bones meet,
A swelling firm, not soft or sweet.

I don't bruise skin or make one cry,
Though I may give docs a watchful eye.
No need for pokes or cuts to fix—
Time and care will do the tricks.

Cephalohematoma vs Caput Succadaneum (Caput)





Feature	Cephalohematoma	Caput Succedaneum
Content	Blood	Serous fluid
Location	Under periosteum (does not cross sutures)	Subcutaneous (can cross sutures)
Onset	Appears hours after birth	Present at birth
Feel	Firm, well-defined	Soft, boggy
Resolution	Weeks to months	Few days
Cause	Birth trauma (esp. instruments)	Pressure during delivery
Complications	Jaundice, calcification	None
Treatment	Observation	Reassurance

CASE 2: 4-WEEK-OLD MALE WITH INCREASED CRYING

- Start thinking differential from the onset
 - Very long list of causes...
- Serious
- Probable
- Interesting
- Treatable

extra

For increased crying and vague complaints keep thinking broad. Need to think about -

Pain - from where - Ears, nose, throat, neck, head, chest, abdomen, bladder, bones, etc.

AMS - head trauma, meningitis, etc.

Uncomfortable: Hungry, Cold, overwhelmed

Respiratory: Can't breathe

"doesn't feel well"- fever etc.

Cardiac

Serious

- Infectious: meningitis, Pyelo, sepsis
- GI: intussusception
- NAT
- Metabolic disorders
 - ▶ Electrolyte / glucose abn
- SVT
- Respiratory distress

Probable

- Hunger/ over feeding
- Diaper rash
- Colic
- GE reflux
- UTI
- Constipation

Interesting

- Testicular torsion
- Milk protein intolerance
- Corneal abrasion
- Tourniquet

Treatable

- Most things on previous lists
- UTI
- Constipation
- Colic - reassurance

Tips:

1. Ask about **feeding, sleep, stooling, and urination**.
2. Perform a **head-to-toe** exam — including fingers, toes, genitals, and fontanelles.
3. **Red flags**: poor weight gain, fever, lethargy, inconsolability. Still crying in the ED

CASE 2: 4-WEEK-OLD BABY BOY WITH INCREASED CRYING FOR THE LAST WEEK.

Differential Diagnosis

- Infection - meningitis, encephalitis, sepsis, pneumonia, UTI, osteomyelitis, septic arthritis, herpes stomatitis, oral thrush, AGE, herpangina
- NAT - fractures, intracranial bleed, rib fracture, pneumothorax, intra-abdominal blunt trauma
- Accidental trauma - falls, corneal abrasions, hair tourniquets
- Metabolic - inborn errors of metabolism, electrolyte abnormalities, acid/base derangement, hypoglycemia
- Foreign body - oral, nasal, ear, pharynx, eye
- GI - intussusception, dehydration, constipation, GERD, hungry, milk protein intolerance
- CV - SVT
- GU - testicular torsion
- Colic

Case 2:

4 week old male with increased crying this week....



- The young mother is tearful and appears exhausted. She tells you that for the last week the baby has had increased crying. First baby.
- What else do you want to know....

DIFFERENTIAL DIAGNOSIS OF INCREASED CRYING

Serious:

Infectious: meningitis, UTI
GI: intussusception
NAT
Metabolic disorders
 Electrolyte/glucose abn
SVT
Respiratory distress

Interesting

Testicular torsion
Foreign bodies
Milk protein intolerance

Probable

Corneal abrasion
Tourniquet
Hungry/over feeding
Colic
GE reflux
UTI
Constipation

Treatable

Almost all causes

Things to Consider to help Hone in on DX

- How is the baby doing when not crying?
- Is the baby eating well?
- Stooling normal?
- Fevers, URI symptoms, vomiting
- How many times per day is he crying, when and for how long?
- Known history of trauma?
- Do they think the baby is in pain...if so, why?
- Abdominal distention
- How mixing formula -
- Any changes in mom's diet
- Support system
- What are parents doing to soothe baby

HISTORY RESPONSE TO QUESTIONS

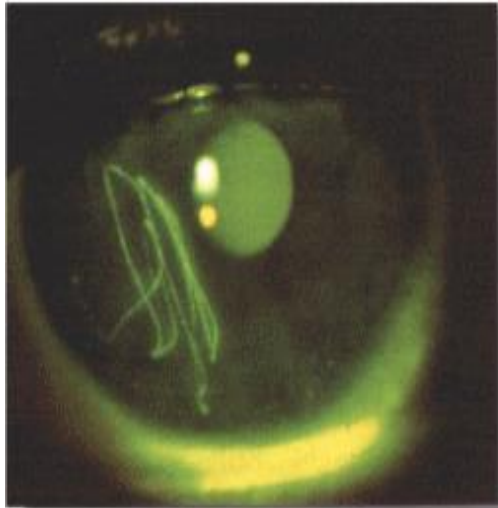
- Ex 3700 gram male, FT, NSVD, no complications
- Breast feeds - 10 -15 minutes per breast; eating well during the day; no change in mom's diet
- Stools 2-4 times yellow seedy soft/day;
- 5-7 wet diapers per day
- No blood in stool/no increased vomiting or diarrhea
- No known trauma; no recent illness
- Mixing formula: 1 scoop to 2 ounces water
- Patient seems fine during the day...
- Description of crying episodes: Occurring last week; inconsolable crying that lasts more than 3 hours at a time- it has occurred 3 - 4 times in the last week
- During the episodes the baby grimaces, clenches fist and draws up his legs
- Parents not sure what to do - that have tried rocking him, dimming the lights, feeding him more

Case 2: Physical Exam - You must examine the baby Head to toes

T 37.7 C, HR 130, RR 40, O2
Sat 98% on RA Wt: 4300
grams

General: Pt is not crying,
take him out of car -seat
put him on gurney - undress
him





BASED ON HPI AND PE SIMPLIFY DIFFERENTIAL

Can rule out many things based on HPI and PE

- HPI indicates no concerns

- Baby looks well...not crying

- No findings on exam

If you think the baby is sick or is still crying think serious.....

If baby looks well, not crying think probable....

If patient continues to cry in the ED something is wrong.....

DIFFERENTIAL DIAGNOSIS OF INCREASED CRYING

Serious:

- Infectious: meningitis, UTI
- GI: intussusception
- NAT
- Metabolic disorders
 - Electrolyte/glucose abn
- SVT
- Respiratory distress

Interesting

- Testicular torsion
- Foreign bodies
- Milk protein intolerance

Probable

- Corneal abrasion
- Hungry/over feeding
- Tourniquet
- Colic
- GE reflux
- UTI
- Constipation

Treatable

- Almost all causes

I'm fed and dry, yet still I wail,
My cries stretch long and parents pale.
At evening time, I raise the storm,
Though I'm well-fed, and mostly
warm.

You'll rule out gas, reflux, or more—
But find no cause you can explore.
Three hours, three days, three weeks
go by,
What name do you give my mystery
cry?

COLIC - WHAT IS IT?

Diagnosis of exclusion

- Behavioral state characterized by unexplained paroxysms of inconsolable crying in an otherwise healthy baby, lasting greater than 3 hours and occurring more than 3 days per week.
- 10-30% of all infants
- Usually occurs in late afternoon or evening
- Onset usually around 2-3 weeks and peaks about 6-8 weeks and resolves by 3 months
- Infant may grimace, pass flatus, clench fists, draw up legs
- Cry is prolonged, high- pitched, loud and “piercing”

Exact Cause Unknown

Gastrointestinal Issues

- **Gas or bloating:** Babies may swallow air while feeding or crying, leading to discomfort.
- **Immature digestive system:** A newborn's digestive system may not be fully developed, leading to difficulty processing food.
- **Reflux (GERD):** Gastroesophageal reflux can cause pain and lead to excessive crying.
- **Food intolerances or allergies:** Sensitivities to cow's milk protein or lactose (in formula-fed babies) or to certain foods in the mother's diet (in breastfed babies) can cause discomfort.

Neurological Development

- An immature nervous system might struggle to handle sensory input, leading to overstimulation and crying.

Psychosocial Factors

- **Parental stress:** Babies can pick up on the caregiver's anxiety, which may contribute to fussiness.
- **Lack of self-soothing ability:** Some infants take longer to learn how to self-regulate and calm themselves.

Feeding Issues

- Overfeeding or underfeeding
- Improper feeding techniques or bottle types that cause excess air intake

Environmental Factors

- Overstimulation from lights, noise, or people
- Changes in routine or surroundings

Normal Infant Behavior

- Some experts believe colic may just be an extreme end of normal crying behavior and not due to any specific underlying condition.

Concerning symptoms:

If the crying is accompanied by symptoms such as vomiting, diarrhea, fever, poor feeding, or weight loss, medical evaluation is necessary to rule out other causes.

CASE 2 - Management

Reassurance; self-limited

- Encourage frequent parental rest breaks - family members that can help
- If frustrated put baby in safe environment - crib and take a few moments for self
- Suggestions on things to try - swings, swaddling, taking for walk, car ride, rocking, vibrating chairs, early response to crying
- Changing formulas is not recommended
- Simethicone (mylicon) - clinical trial support the use but not well designed; excellent safety profile
- Close follow-up is essential for re-check and parental support

Infant with intermittent crying and normal exam always consider checking a urine....UTI



CASE 3: 10-DAY OLD MALE WITH WATERY DRAINAGE FROM HIS RIGHT EYE FOR 1-2 DAYS

- Differential diagnosis:
 - Serious
 - Probable
 - Interesting
 - Treatable
- What is important information to gather?
Think about your differential.

CASE 3: 10-DAY OLD MALE WITH WATERY DRAINAGE FROM HIS RIGHT EYE FOR 1-2 DAYS

Serious

- ▶ Congenital Glaucoma
- ▶ Infectious:
 - ▶ Viral - Herpes
 - ▶ Bacterial - staph, GC, chlamydia
 - ▶ Dacrocystitis
- ▶ Nasolacrimal duct cyst or mucocele with infection

Probable

- ▶ Nasolacrimal duct obstruction - often unilateral
- ▶ - Conjunctivitis
 - ▶ Chemical/antibiotic induced
 - ▶ 1-3 days antibiotic induced (erythromycin)
 - ▶ Viral
 - ▶ Bacterial
- ▶ -Corneal abrasion

Interesting

- Foreign body (older infant)
- Congenital dacryocystocele - bluish swelling near medial canthus
- Congenital lacrimal fistula

Treatable

- NLDO
- Bacterial Conjunctivitis
- Chlamydia Conjunctivitis
- Dacryocystitis

WHAT IMPORTANT INFORMATION TO GATHER

HPI: What is important?

- Prenatal care?
- How born - C-section vs NSVD; where born
- Mom's history of STDs
- When did the symptoms start
- ▶ Sick contacts/Recent illness/URI

10-DAY OLD MALE WITH WATERY DRAINAGE FROM HIS RIGHT EYE FOR 1-2 DAYS NOW MORE MUCOUSY

- Ex 3700 gram male, FT, NSVD, no complications; mom with good prenatal care and no history of STIs
- Was born in a hospital
- Breast feeds - 10 -15 minutes per breast; eating well during the day; no change in mom's diet
- Stools 2-4 times yellow seedy soft/day;
- 5-7 wet diapers per day
- No recent illness
- No increased fussiness
- Patient has had a watery eye off and since birth but now the drainage is more mucousy
- No fevers; otherwise acting well
- Has a sibling that never had this problem
- No one at home with conjunctivitis or other illness

PE

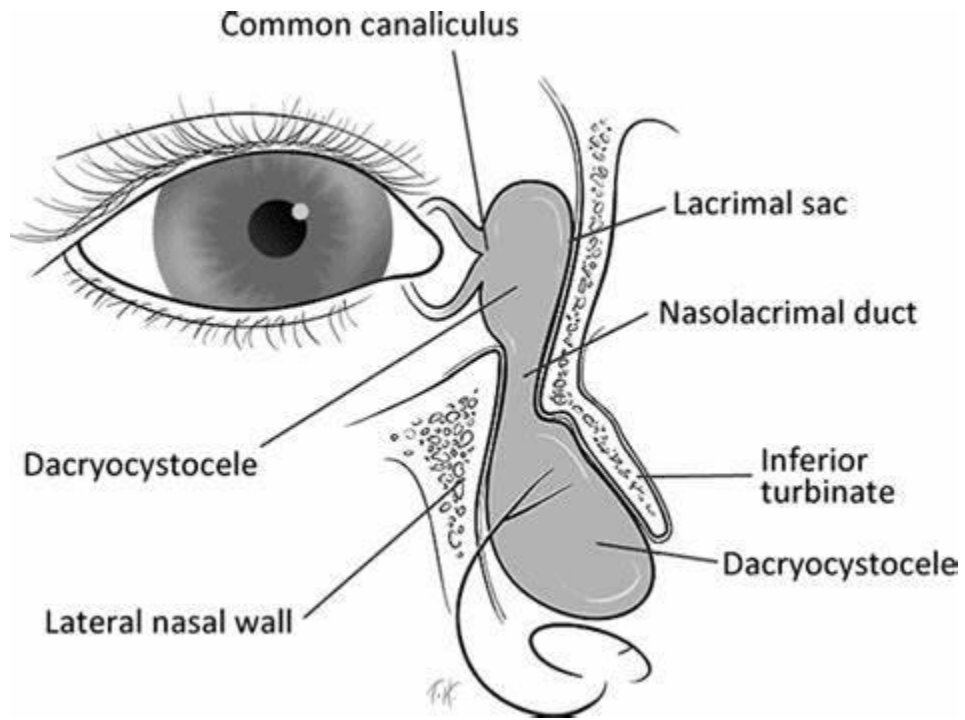


Diagnosis

Nasolacrimal duct obstruction; Dacryostenosis

CONJUNCTIVITIS IN NEONATE

- Nasolacrimal duct obstruction; Dacryostenosis
 - Unilateral watery eye with matting or crusting of eyelids
 - Can become mucousy
 - Can worsen with URI or in wind and cold
 - Not injected
- Chlamydia
 - incubation 5-14 days
 - Usually, mild inflammation and discharge
 - Cause of 20-40% of neonatal conjunctivitis
 - DX: culture of epithelial cells from conjunctiva
 - Eye infection precedes respiratory infection
 - TX: culture and GS of eye/NP/ PCR
 - Macrolide x 10 days for conjunctivitis, admit for pneumonia
- Gonorrhea:
 - incubation 2-5days
 - begins w/mild inflammation and serosanguinous d/c
 - >24h=thick, purulent d/c w tense edema of eyelids and marked chemosis
 - Complications: corneal ulcers/sepsis/vision loss
 - Tx: culture/GS, admit IV antibiotics (ceftriaxone) and hourly eye irrigation
- Chemical: 1-3 days antibiotic induced (erythromycin)





Source: Strange GR, Ahrens WR, Schafermeyer RW, Wiebe RA: *Pediatric Emergency Medicine, 3rd Edition*: <http://www.accessemergencymedicine.com>
Copyright © The McGraw-Hill Companies, Inc. All rights reserved.

Cause of eye Discharge	Presentation	Age of Onset	Need for ROS	Management	Notes
Chemical Conjunctivitis	Non-purulent conjunctivitis	Hours after birth	No	None	Much less of an issue now that silver nitrate no longer used
Dacryostenosis	Scant yellow discharge without conjunctival injection	Days to months after birth	No	Warm compresses and gentle duct massage	Referral to ophthalmologist if persists beyond 6-9 months
Dacryocystocele	Fluid collection with bluish hue in the inferomedial canthus	Variable	No unless infected	Referral to ophthalmologist	60% will become infected
Acute Dacryocystitis	Warmth, redness, purulent discharge from punctum	Variable	ROS w/u and antibiotics	Admit and ophthalmologist consultation	Often requires surgical intervention
Gonococcal Conjunctivitis	Copious Purulent discharge	2-5 th day of life	ROS	Saline eye washes in the ED. Admit to hospital and systemic antibiotics	Can rapidly progress to corneal ulcer and globe rupture.
Chlamydia Conjunctivitis	Purulent discharge with conjunctival injection	5-14 day of life	Check for chlamydia pneumonia	Systemic macrolide. Some also say erythro eye ointment	Chlamydial pneumonia may present up to first 8 weeks of life
HSV Conjunctivitis	Tearing with conjunctival injection. Often associated with vesicular skin lesions, dendritic corneal lesions, abnormal liver function tests, or fever	Variable	ROS	Admit to hospital, consider parenteral antibiotic until cultures negative, parenteral acyclovir, anti-hsv topical drops	Potentially sight threatening. Can be associated with skin lesions, viremia, and meningoencephalitis. Ophtho consult

GC CONJUNCTIVITIS



CASE 4: 5 WEEK OLD WITH VOMITING

- Differential Diagnosis (LOOOOOOOOONG)
- Again...start thinking of DDX by SPIT
 - Serious
 - Probable
 - Interesting
 - Treatable

DDX FOR INFANT WITH VOMITING

Serious

- **Congenital adrenal hyperplasia**
- **Inborn error of metabolism**
- Infectious: sepsis, meningitis, Pyelonephritis, OM
- **NAT**: abdominal trauma, BHT
- Increased intracranial pressure - hemorrhage, hydrocephalus
- **volvulus** with malrotation,
- NEC
- Incarcerated hernia
- Pyloric stenosis - especially if dehydration and electrolyte abnormalities

- **Probable** - common causes of vomiting in infants
 - Overfeeding
 - GE reflux
 - Viral AGE
 - Food intolerance or allergy
 - UTI
 - Colic

Interesting

Rare or uncommon causes that are noteworthy:

- Congenital adrenal hyperplasia
- Intracranial tumor
- Testicular torsion
- Cannabinoid hyperemesis syndrome (adolescent infants, if exposed via breastfeeding or environment)

Treatable

Conditions with effective treatment if correctly identified:

- **Pyloric stenosis** (surgical correction)
- **GERD** (lifestyle or medical treatment)
- Infectious
- **Cow's milk protein allergy** (formula change)
- **Electrolyte imbalance or dehydration** (rehydration therapy)
- Congenital adrenal hyperplasia

CASE 4: ALMOST 5-WEEK-OLD BABY WITH VOMITING

- **Differential Diagnosis (LOOOOOOOOONG):**
 - **Medical Conditions**
 - Ingested maternal blood or mucous (right after birth)
 - Overfeeding - most common cause of spitting up in infants
 - Milk protein allergy-
 - 30% also allergic to soy. Assoc symptoms diarrhea, rhinorrhea, eczema and growth failure
 - Reflux
 - Infection: Meningitis, OM, UTI
 - AGE
 - Inborn error of metabolism
 - Galactosemia - vomiting, jaundice, dehydration, cataracts, hepatomegaly
 - Congenital adrenal hyperplasia
 - Males 10-14 days of age - vomiting and hyperkalemia, hyponatremia develops later
 - Females usually picked up in nursery because of ambiguous genitalia
 - Increased ICP/ trauma - vomiting not associated with feeds

DIFFERENTIAL DIAGNOSIS OF VOMITING

● Surgical Conditions

- Pyloric stenosis - most common surgical condition associated with vomiting in infants
- Incarcerated hernia
- Testicular torsion
- Increased ICP/ trauma
- Malrotation
- Atresias: esophageal, duodenal, ileal ; may have history of polyhydramnios or single umbilical artery
- Intussusception
- Volvulus

CASE 4: HISTORY OF PRESENT ILLNESS

- CC: vomiting for 1 week
- FT, NSVD no complications
- BW 3000 grams
- Saw her PMD 5 days ago for similar symptoms and she was told the baby had reflux and was started on a medicine. The baby has not improved.
- No diarrhea - no stool for the last few days, decreased urine output.
- Seems hungry/ wants to eat but vomits shortly after
- Is there other information you would like to know before do PE?

- History of present illness
- Character of Vomit
- Feeding history
- Growth and development
- Stool and urine output
- Associated symptoms
- PMhx
- Family and Social history

- **Nature of the vomiting**
- **Symptoms associated with vomiting**
- **Relationship with meals**
- **What and how much being fed**
- **What medications taking**
 - **Growth and development**
 - **Worsening?**
 - **Changes in formula**
 - **Over feeding**
 - **Wet diapers**
 - **Associated symptoms**

HISTORY CONT.

- Vomiting is not bilious, not bloody; it does come out with force per mom and contains curdled milk at times
- The baby has “vomited” since birth but worse over the last 5-7 days
- Last few days less active, no diarrhea, not stool, no URI symptoms, no fever
- Vomiting occurs approx 10 - 15 minutes after feeds
- Mother remembers pt weighed 3200 grams last week at the office - 6 days ago
- No trauma, no travel, no sick contacts

CASE 4: PHYSICAL EXAM

- VS: T 37 C, HR 160, RR 35, BP: 72/55 Wt: 3220 g
- General: alert, looking around, tired appearing, rooting
- HEENT: anterior fontanel depressed, TMs nml, mucous membranes dry, anicteric
- CV slightly tachy, no murmur
- Lungs CTA
- Abdomen: soft, decreased bowel sounds, nondistended, no masses palpated
- GU: phimosis, normal testicles
- Skin: slightly mottled
- Rest of exam normal



Floppy/sick

- Sepsis/infection
 - CBC, bld cx, UA, Ucx, lactate, csf studies, stool studies, antibiotics
- Inborn error of metabolism
 - NPO: IVF
 - Ammonia, UA, Chem, istat, lactate
 - Consult
- Volvulus/obstruction:
 - kub, UGI, lactate, septic wu, NPO, IVF, consult
- NAT: increased ICP
 - Head CT, skeletal survey, consult, labs
- Pyloric stenosis...

Good tone/ alert

- GE reflux
- Overfeeding
- Pyloric stenosis
 - Chem: Hypochloremic, hypokalemic metabolic alkalosis
 - NPO; IVF; correct electrolytes
 - consult

EXPECTED WEIGHT GAIN

Babies lose up to 10% of birthweight in first week of life

Birthweight should be regained by 10 - 14 days.

Age	Expected Weight Increase
<u>0-3 months</u>	<u>20-30/day</u>
3 - 6 months	12-21g/day
6-12 months	10-13 g/day
1 year - 6 years	5-g per/day
7-10 years	5-11g /day

WHAT DO YOU THINK MOST LIKELY DIAGNOSIS IS?

I strike the young, just weeks old,
With hungry cries and vomit bold.
A wave may ripple 'cross the gut,
But no food stays once lips are shut.
Olive I seem, beneath the skin,
A blockage where the food goes in.
Fix me fast, or weight won't grow—
Tell me, doctors, what do you
know?

► What am I?

PYLORIC STENOSIS

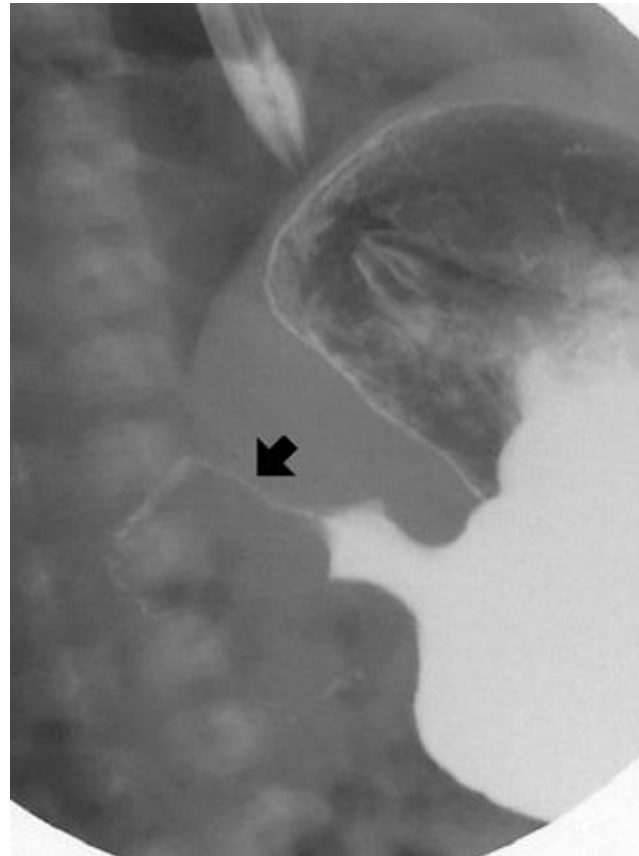
- Cause still unknown; 4-5/1,000 births, >males and first born; familial predilection
- Patho: pyloric hypertrophy develops postnatally in first months of life
- S/S: vomiting (+/-projectile)
 - hungry but vomits soon after eating
 - emesis is nonbilious; may be blood tinged
 - May see peristaltic waves moving from left to right
 - dehydrated w/time;
 - constipated due to lack of nutrition/dehydrated
 - ?shock, ?jaundice.
- May palpate an “olive” in RUQ to mid quadrants, next to right border of rectus muscle (85%)

PERISTALTIC WAVE IN PYLORIC STENOSIS

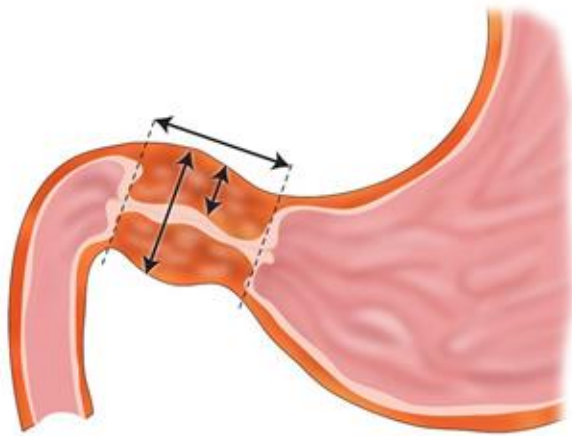


HYPOCHLOREMIC, HYPOKALEMIC MET ALKALOSIS

- **Labs:** volume depletion ($\uparrow$ Bun/creatinine, SG, hct. $\downarrow$ K, $\downarrow$ CL, met alkalosis)
- **US:** $\uparrow$ length >16 mm, $\uparrow$ muscle thickness >4 mm; 95% accurate; diameter > 14 mm
- **UGI:** “string sign” from narrow pylorus; 95% accurate
- **Mgmt:** ABCs, NPO/NGT, fluids, surgery; may be delayed to rehydrate infant



Pyloric stenosis



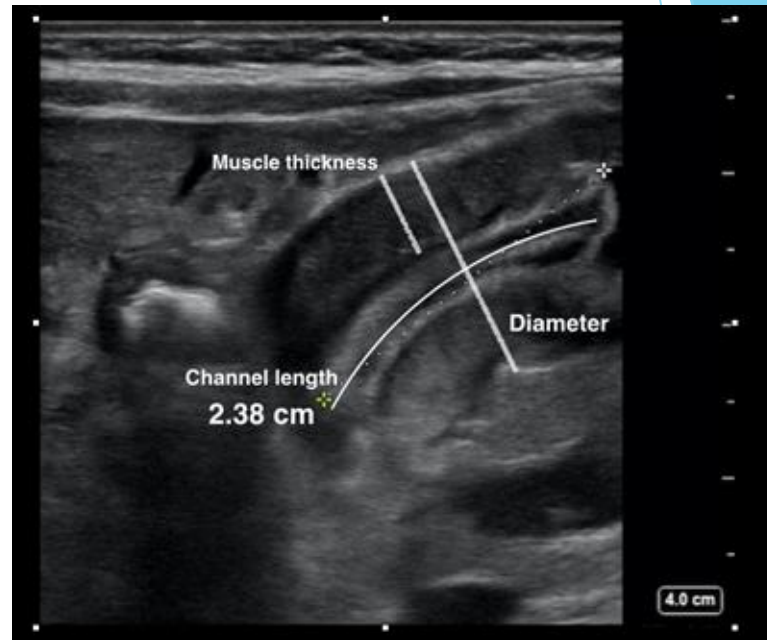
Normal values *

Length: <15mm
Single muscle thickness: <3mm
Pyloric width: <7mm

* values vary somewhat from publication to publication

F. Gaillard
2010

Radepennung CL, NC, SA, BT



Length ≥ 1.6 cm, wall thickness ≥ 0.4 cm, and diameter ≥ 1.4 cm are indicative of pyloric stenosis

BILIOUS VOMITUS



Malrotation with volvulus

- S/S: sudden onset bilious vomit, dehydration, grunting, jaundice, shock, distended abdomen, diffuse abdominal tenderness, blood stools (late)
- 75% occur in 1st month of life
- Malrotation in infants is caused by an **incomplete or abnormal rotation of the intestines during fetal development**, leading to abnormal positioning and increased risk of complications like volvulus or intestinal obstruction.
- 1/500 live births

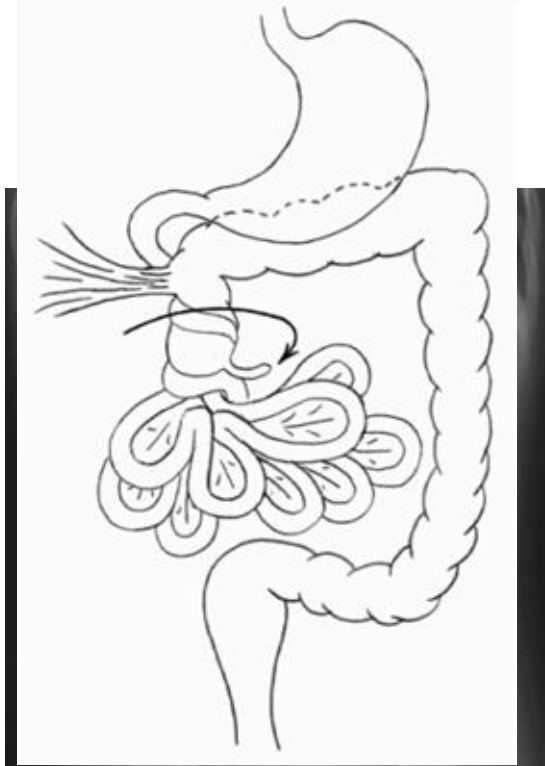
Malrotation with volvulus

- 2:1 male to female ratio

Upper Gastrointestinal (GI) Series - Gold Standard

- This is the most reliable test for diagnosing malrotation.
- **Findings suggestive of malrotation:**
 - The **duodenojejunal junction (DJJ)** is not in its normal position (should be to the left of the spine at the level of the duodenal bulb).
 - **Corkscrew appearance** of the small bowel may indicate **midgut volvulus**.
- **Management:** ABCs, fluid, NPO, NGT, Antibiotics, surgery consultation
- **Surgery** (Ladd's procedure)

RADIOLOGY OF VOLVULUS



CASE 5: 4-week-OLD MALE WITH A BREAST MASS AND NIPPLE DISCHARGE

- **Serious:**
- **Probable**
- **Interesting**
- **treatable**

- **Serious:** Mastitis, abscess, tumor (rare)
- **Probable:** Benign hypertrophy, simple breast cyst
- **Interesting:** Galactoceles (milk-filled cyst), lymphatic malformation
- **Treatable:** Mastitis or abscess, enlarged lymph node, galactoceles or cyst



Breast enlargement
due to maternal
hormones



BREAST HYPERTROPHY

- Breast bud becomes enlarged; unilateral or bilateral; males and females
- Can last for several months
- Result of hormonal stimulation of the infant's breast tissue by maternal hormones that cross into the infant's circulation and travel to the baby's breast tissue and stimulate the tissue to increase in size.
- “witch's milk”
- Resolves on how within a few weeks to few months

Important Notes:

- Both male and female infants can be affected.
- Sometimes the breast tissue may produce a small amount of **milky discharge** (called "witch's milk"); this is also harmless and temporary.
- **Do not squeeze or massage** the breast tissue, as it can lead to irritation or infection (mastitis or abscess).

When work-up needed:

- Redness, warmth, or tenderness (signs of infection).
- Swelling that **increases** over time.
- Persistent enlargement **beyond 1 year**.

TAKE HOME POINTS

- After CC think S.P.I.T.
- Normal infants should be growing and gaining weight; 20-30 grams per day
- Vomiting infant - think about volvulus (obstruction), NAT, infections and metabolic disorders; these can kill!!!
- When evaluating the crying infant do a thorough evaluation; look everywhere!
 - The “colicky” baby- make sure there is good support for parents
- Remember the small stuff
 - Breast hypertrophy - benign unless red/hot/tender
 - Vaginal bleeding - benign
 - Conjunctivitis - dacrocystitis/GC/chlamydia



Thank You

Questions?



Resources Available



EIIC
EMSC Innovation and
Improvement Center

TEXAS
Pediatric Readiness
Education Series

Neonatal Resources



Neonatal Resuscitation Competency Checklist (Sample)

Assessment & Management—Quick Competency Check-Off

Emergency Department (RN & Provider)

Name _____ Role ☐ RN ☐ APP ☐ MD/DO
Evaluator _____ Date _____
Validation ☐ Initial ☐ Annual ☐ Remediation

Anticipation, Preparation & Safety

Core Competencies

- ☐ Anticipates need for neonatal resuscitation based on maternal, fetal, or delivery risk factors.
- ☐ Ensures neonatal resuscitation equipment is present, functional, and size appropriate.
- ☐ Assigns team roles and establishes closed-loop communication.
- ☐ Maintains thermoregulation (warm environment, drying, plastic wrap for preterm infants, infant warmer).
- ☐ Applies delayed cord clamping (≥ 60 seconds) when infant does not require immediate resuscitation.
- **Provider:** Determines level of preparedness and team composition. Confirms readiness for advanced airway and medications.
- **RN:** Performs equipment check and prepares resuscitation area. Assists with thermoregulation and team setup.

Initial Assessment of the Newly Born

Core Competencies

- ☐ Performs rapid assessment immediately after birth using:
 - ☐ Tone
 - ☐ Breathing/crying
 - ☐ Heart rate
- ☐ Identifies infants requiring intervention (apnea, gasping, HR < 100 bpm).
- ☐ Provides tactile stimulation when indicated.
- ☐ Uses Apgar score as a supplemental assessment, not to guide initial resuscitation.
- **Provider:** Leads assessment and directs resuscitation pathway. Communicates findings and next steps clearly.
- **RN:** Performs ongoing assessment and reports heart rate and respiratory effort.

Initial Steps & Ventilation

Core Competencies

- ☐ Performs initial steps in correct sequence:
 1. Warm and position airway
 2. Clear airway only if obstructed
 3. Dry and stimulate
- ☐ Initiates positive pressure ventilation (PPV) for apnea, gasping, or HR < 100 bpm.
- ☐ Demonstrates proper mask seal, ventilation rate, and chest rise assessment.
- ☐ Uses heart rate response as the primary indicator of effective ventilation.
- ☐ Escalates ventilation support when response is inadequate.
- **Provider:** Directs ventilation strategy and escalation. Determines need for advanced airway.
- **RN:** Performs PPV within scope and supports ventilation effectiveness checks.

Advanced Airway, Chest Compressions & Medications

Core Competencies

- ☐ Recognizes indications for advanced airway placement.
- ☐ Initiates chest compressions when HR remains < 60 bpm despite effective ventilation.
- ☐ Performs coordinated compressions using the two-thumb technique.
- ☐ Identifies indications for vascular access and emergency medications (e.g., epinephrine).
- **Provider:** Performs or supervises advanced airway placement. Orders and administers medications per protocol.
- **RN:** Assists with airway management and compressions. Prepares and administers medications per scope and protocol.



Search:
Neonatal



Neonatal Resuscitation in the Emergency Department

2024



About

Effective neonatal resuscitation in the emergency department can make all the difference in critical moments. This module provides a concise review of the Neonatal Resuscitation Program (NRP), covering the foundational steps of warming, drying, stimulating, and the MRSOPA (Mask adjustment, Reposition airway, Suction mouth and nose, Open mouth, Pressure increase, Alternative airway) algorithm. You'll also explore key differences between NRP and PALS Pediatric Advanced Life Support, and gain practical knowledge on umbilical vein catheter setup and placement. Take this 30-minute module now to sharpen your neonatal resuscitation skills and improve outcomes for newborns in your care.

Access Resources

[Module](#) [EN](#)

[Ask aRCie About This Resource](#)

Resource Guides

This resource is featured in the following Resource Guide(s):

[Neonatal Nurses](#)

Neonatal Emergencies

2024



About

This module provides an overview of neonatal medical emergencies, including a framework for thinking about the undifferentiated ill neonate.

The key points explained are:

- Neonates often present with nonspecific symptoms of illness. Keep an open mind and a broad differential, and let your exam, laboratory data and imaging narrow it down.
- Use the MISFITS mnemonic as a framework to think through the differential diagnosis for sick neonates.
- Know your resources and capabilities. Many neonatal emergencies require transfer to a pediatric tertiary care center.

Access Resources

[Module](#) [EN](#)

[Ask aRCie About This Resource](#)

Resource Guides

This resource is featured in the following Resource Guide(s):

[Neonatal Nurses](#)



EIIC
EMSC Innovation and
Improvement Center

TEXAS
Pediatric Readiness
Education Series

Upcoming 2026 Sessions

Recurring on the third Thursday of each month at 10 am CT

- November 19 Pain Management
- December 17 Evidence Supporting Pediatric Readiness



EIIC
EMSC Innovation and
Improvement Center

TEXAS
Pediatric Readiness
Education Series

Happening Now: National Pediatric Readiness Open Assessment

Why participate in the open assessment

- Complete anytime—outside of nationwide cycles
- Support local quality improvement
- Self-assess every 1–3 years
- Receive a confidential score, benchmarking info, and gap report

How to participate

- All EDs open 24/7 are eligible
- Complete when your ED is ready
- Use results for local improvement
- 30-45 minutes



PedsReady.org

