The Delivery

- Your patient, Saffron, is delivering at 41 weeks, with meconium
- Baby Cardamom is delivered vaginally, and you expect the OB team to suction at the perineum, and the pediatric team to intubate
- Instead they warm, dry and stimulate, and he begins to cry vigorously.
- What’s changed?

Fast Facts: Updates to NRP (2010)

- Meconium
  - Intrapartum suctioning no longer routinely recommended
  - Intubation only for “non-vigorous” infants

- Oxygen in resuscitation
  - Initiate resuscitation with room air
    - 100% O2 only if HR < 60 after 90 sec of resuscitation
  - O2 sat only when resuscitation is anticipated, persistent PPV, or persistent cyanosis
  - O2 sat < 85% normal up to 10 minutes of age
The Apgar Score

- 90% have score of 7-10 (no intervention)
- 10% require intervention
- 1% require extensive intervention

The Nursery Visit

- Saffron is excited about her new baby, but has a few questions for you.
- She’s heard that circumcising her baby can protect him from getting HIV, and wonders if you recommend it.

Fast Facts: 2012 AAP/ACOG Policy Statement

- “Preventive health benefits ... outweigh the risks”
  - UTI, penile cancer, HIV
- Insufficient to “recommend routine circumcision”
- “Sufficient to justify access...and to warrant third-party payment”
- Clinicians should “routinely inform parents of the health benefits and risks...in an unbiased and accurate manner”
- “Parent ultimately should decide...medical benefits alone may not outweigh other considerations”

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Discharge Visit

- Saffron elects not to circumcise baby Cardamom.
- She’s curious about why they did a bunch of stuff to Cardamom and when she will know the results
  - Poked his heel
  - Stuck a red light on his finger
  - Put some earphones on him while he slept

What’s on the Newborn Screen?

- All 50 states:
  - PKU and congenital hypothyroidism
- Nearly all:
  - Galactosemia and hemoglobinopathies
- Some (including CA):
  - MSUD, CF, homocystinuria, biotinidase deficiency, CAH, tyrosinemia, toxoplasmosis
- 2006: American College of Medical Genetics panel of 29 disorders – adopted by 21 states

Other Newborn Screens

- Hearing screen: recommended for all newborns
  - Improves detection and outcomes
  - Repeat if +, refer to audiology for 2 + screens
  - Intervention before 6 months for optimal speech
- Pulse ox screening: recommended for all newborns (2011)
  - Post-ductal sat at > 24 hrs of life, minimum ≥ 95%
- Bilirubin screening: not yet universal

Case Continued

- During your discharge exam, you notice a “click” on the left hip with the Barlow maneuver.
- What does this mean?
Ortolani ("out")
Barlow ("back")
Positive test = dislocatable ("clunk")

Fast Facts: Screening for Developmental Dysplasia of the Hip (DDH)
- About 6% of infants have some abnormality at birth
  - 90% stabilize by 2 months of age
- Risk factors:
  - Female, breech, family hx, uterine cramping
  - 12% risk of DDH in breech girls
- Instability on Barlow/Ortolani is the only exam finding predictive of DDH

AAP Recs for Hips (2000)
- Breech girls (~12% risk)
  - Ultrasound at 6 wks
- Newborn:
  - Exam + ➔ refer to ortho
  - Exam equivocal ➔ defer to 2 weeks
- 2 week visit
  - Exam + ➔ refer to ortho
  - Exam nl but other signs concerning ➔ U/S

"Secondary" signs
- Hip Abduction Should be > 45° after 3 mo of age
- Thigh Folds Galeazzi Test
The One Month Visit

- Saffron brings Cardamom in for his 1 month visit.
- She is concerned that his skin is still yellow and he’s “breaking out”
  - He had a transcutaneous bili of 10 on DOL #4
- Cardamom is indeed jaundiced, to his knees.
  - A Tc bili = 16.5
- What would your next step be?

Breast Feeding vs Breast Milk Jaundice

<table>
<thead>
<tr>
<th>Etiology</th>
<th>Breast Feeding Jaundice</th>
<th>Breast Milk Jaundice</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poor intake, poor output</td>
<td>→ increased enterohepatic circulation</td>
<td>→ induction of beta-glucuronidases in intestinal wall → increased enterohepatic circulation</td>
</tr>
</tbody>
</table>

Newborn Rashes: A Quick Review

- Erythema Toxicum
  - 50% of newborns
  - 2-5 days after birth
  - Trunk > extremities

How about this one?

- Neonatal Acne/Seborrheic Dermatitis
  - Onset at 2-3 weeks
  - May last up to one year
  - Topical corticosteroids/ketoconazole if severe
A pustular eruption present at birth...

- **Pustular melanosis**
  - Usually present at birth, central > peripheral
  - Leave hyperpigmented marks
  - More common in AA infant

Recurrent pruritic vesicopustules, on hands/soles

- **Acropustulosis of Infancy**
  - Birth – first year
  - Often treated for scabies

Lacy eruption, in response to cold:

- **Cutis Marmorata**
  - Vascular response to cold
  - Cap refill is brisk
  - Resolves with warming

Case Continued:

- Listening to Cardamom's lungs, you hear a short, high-pitched, early systolic murmur
  - Heard best in the R axilla and over the back
- **Peripheral pulmonary stenosis (PPS)**
  - Turbulence across incompletely formed branch pulmonary arteries
  - Peaks at 6 weeks of age due to fall in pulm resistance
  - Gone by 6 months
“Normal” Murmurs: At Birth

- You recall that in the delivery room, during his first exam, you heard a continuous, machinery-type murmur, loudest by the L clavicle.
- Patent ductus arteriosus
  - Systolic or systolic/diastolic, depending on pressures
  - Usually heard in delivery room, gone by minutes/hours of life

“Normal” Murmurs: Toddlers and Kids

- Mom asks you to listen to Cardamom’s 5 yo sister Anise:
- You hear a 2/6 low-pitched, vibratory systolic murmur, at LLSB, loudest when lying down.
- Still’s murmur
  - Unclear origin: vibration of pulm valve leaflets? Chordae tendinae?

Which of the following is NOT characteristic of a benign murmur?
A. Intensity Grade II or less
B. Obscured second heart sound
C. Loudest L sternal border
D. Normal pulses
E. No audible clicks

Benign Murmurs Have...
A. Intensity Grade II or less
B. **NORMAL** second heart sound
C. Loudest L sternal border
D. Normal pulses
E. No audible clicks
F. **No other abnormalities**
The 4 mo Visit

- Cardamom is here for his 4 month visit
- At this visit, Saffron comments that she feels like his head is flat on one side.
  - She is worried he might need to wear a helmet.
- You examine his head, and it is flattened on the R side, and he holds his head to the right

Head Abnormalities

- Macrocephaly—head circumference >2 SD above mean
  - 5% of population
- Microcephaly—head circumference < 2 SD below mean
  - 5% of population
- Abnormal head shape
  - Distortion of the normal oval head shape

Fast Facts: Craniosynostosis

- Premature closure or absence of one or more sutures
  - One suture (usually isolated) = 1-2/1000
- Sutures normally close by 12-24 months
  - Ossified by 8 years, complete by adulthood
- Risk Factors:
  - Assisted vaginal delivery, prolonged labor, unusual birth position, primiparity, male gender

Sutures of the Newborn Skull

- Sagittal suture ~50% (scaphocephaly)
- Coronal suture ~10% (brachycephaly)
- Metopic suture ~10% (trigonocephaly)
Positional Deformities
- Caused by lack of variation in head positioning
- Posterior plagiocephaly (asymmetric)
  - 98-99% due to deformational flattening
  - Increased in frequency due to “back to sleep”
  - Rates peak at 8 mo (20%), down to 3% by 2 yrs
- Exacerbated by
  - Prematurity, supine sleep, torticollis, limited head rotation, decreased activity

Positional or synostotic?

Torticollis

Fast Facts: Deformational Plagiocephaly
- Important to diagnose and initiate treatment by 4-6 months of age
- Modalities of treatment include:
  - Education
  - Physical Therapy
  - Orthotic (Helmet) Use
- Surgery only if synostotic (by 6-12 mo)
Case Continued

As you continue to examine Cardamom, you notice that his right eye appears to drift inward.

Mom says, “yeah, sometimes he looks a little cross-eyed”

Strabismus: A disorder of ocular alignment

- Tropia ("manifest") = always present
  - More likely to result in amblyopia
- Phoria ("latent") = only present when gaze interrupted
- Incidence 2-4%
  - Risk factors = fam hx, low BW, loss of visual acuity
- Primary vs Secondary
  - Secondary more likely due to visual impairment

Amblyopia: a disorder of the brain

- Result of untreated tropias
  - Brain starts to ignore input from deviated eye
- Affects up to 40% of kids with strabismus
- Treatment:
  - Correct visual deficit (eg: cataract)
  - Encourage use of affected eye (patching)
  - Most effective when started early

Types of strabismus

- Esotropia – Eye turned in
  - Light lands on lateral cornea
- Exotropia – Eye turned out
  - Light lands on medial cornea
- Pseudostrabismus – false appearance due to nasal bridge
  - Light lands centrally
Pseudo or Real?

- Hirschberg test:
  - Child fixates on object, light held next to it
  - Observe where light falls

Figure: UpToDate

Cover Test (for tropias)

- Child focuses on target
- Examiner covers one eye, watches for movement in the *uncovered* eye
- If the eye that is NOT occluded shifts to refixate, that eye is tropic
- Pause, refixate, and repeat with other eye
- Management: immediate referral to ophthalmologist

Cover-Uncover Test (for phorias)

- Child focuses on a target
- Place cover over one eye, then remove quickly
- When *uncovered*, a phoric eye will drift back to central position
When to refer?

- Any secondary (new) strabismus
- Any tropia (constant misalignment)
- Esophoria persistent after 4 mo of age
- Parental concern about appearance

The 1 year visit

- Cardamom is now 1 year old, and thriving.
- He has started to cruise, and Saffron is concerned that his legs look “bowed”.

Evolution of Normal Leg Alignment

<table>
<thead>
<tr>
<th>Age</th>
<th>Alignment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Newborn</td>
<td>Moderate genu varum</td>
</tr>
<tr>
<td>1/2 to 2 years</td>
<td>Legs straight</td>
</tr>
<tr>
<td>2 years, 4 months</td>
<td>Physiologic genu varum</td>
</tr>
<tr>
<td>4 to 6 years</td>
<td>Legs straight</td>
</tr>
</tbody>
</table>

Physiologic Genu Varum (“Bowlegs”)

- Normal <18-24 mo,
  - Resolves with ambulation and growth
- May occur with internal tibial torsion
  - Normal variant, foot medially deviated
- Distinguish from:
  - Blount’s disease, Rickets
Examination

Workup of “bowed legs”
- Obtain radiographs if:
  - Progressive
  - Persistent > 3 years
  - Unilateral or asymmetric
  - Short stature
  - History of bone or metabolic disease

Positional Deformities of the Feet
- Metatarsus adductus
  - Medial deviation of forefoot
  - 1-2/1000, ↑ in first born, twin, fam hx
  - Foot can be passively returned to normal
  - Usually resolves with massage

Clubfoot
- Talipes equinovarus
  - Plantar flexion of foot, sole facing medial
  - 50% are bilateral
  - Congenital (most common)
    - Isolated, correct with casting (Ponseti method)
  - Syndromic = underlying disorder
  - Positional = not a true clubfoot
Case Continued
- You examine Cardamom’s legs and reassure Saffron that the bowing will improve with ambulation
- Completing your exam, you notice that you have difficulty feeling Cardamom’s left testicle
  - His penis and scrotum appear normal
- You recall that testes were descended bilaterally at his newborn, 2 and 4 month visits

Cryptorchidism: Fast Facts
- Testicle cannot be palpated in the scrotum > 4 months
- Undescended: 2-5% of boys
- 10% bilateral
- Spontaneous descent rare after 6 mo
- Absent: agenesis/intrauterine torsion
- Ectopic (<1%)

Cryptorchidism: Exam
- Examine genitalia and scrotum
  - Hypoplastic/poorly rugilated scrotum
  - Hypospadias or bilateral non-palpable testes — sexual development d/o
  - Consider genetic disorders
    - More common than in those without (2.8%)

Cryptorchidism: Exam
- Maneuvers to find retractile testis
  - Sweep from AIH along inguinal canal
  - Knee-chest/cross-legged position
Cryptorchidism: Management

- Undescended testicle: increased risk of
  - Malignancy (X100)
  - Testicular torsion (X10)
  - Subfertility (25-30%)
- Refer if not descended by 6 mo
  - Fertility ↓ by 1 year
- Consider chromosomal/hormonal evaluation if bilateral non-palpable testes

Case Conclusion

- With manipulation, you are able to move Cardamom’s retractile testicle into the scrotum.
- He’s made it through the first year!
- Congratulations.