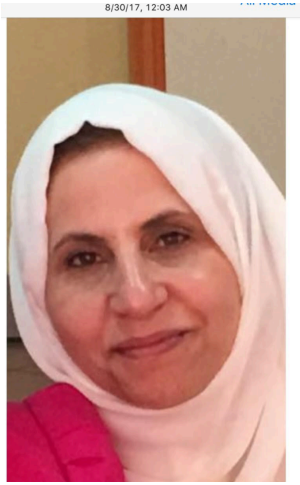
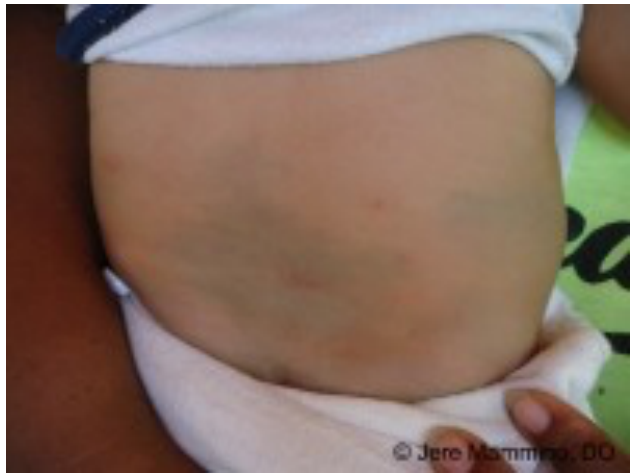


Well newborn care and Common skin manifestation In neonates

Case based study



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Well newborn care
Prof. Eman Badran

- **Learning Objectives**
- Understand the role of the prenatal visit in establishing a medical home
- Describe Abgar Score
- Understand Breast feeding support after birth
- Understand when the baby need to be assessed
- Understand Voiding and stooling Pattern
- Understand the risks for hemorrhagic disease of newborn , and outline anticipatory guidance that may be preventive
- Identify the most common benign newborn problems after birth delineate appropriate guidance
- Identify types of mandatory neonatal screen
- ***Eman Badran Note:***
- This module addresses some common questions that arise during care of the healthy newborn after birth before Hospital discharge

Primary Reference:
Attached in e learning module

- **1.** Benitz WE, Committee on Fetus and Newborn. AAP Policy Statement – Hospital Stay for Healthy Term Newborns. Pediatrics. 2015;135(5): 948-953. http://pediatrics.aappublications.org/content/135/5/948

CASE
Prenatal visit

- During a prenatal visit. A healthy Primi gravida Mom told you that she is planning to breast feed her baby after delivery and she wants you to support her decision
- You were excited since you are doing a training at Baby friendly hospital

Q1. What are the 2 steps applied in the delivery room to support this Mom to Breast Feed her baby?

Prental visit

- Identification of maternal risk factors
- Support breast feeding
  - GIVE parents **parentally** clear and unbiased information should be given to the family
    - regarding the benefits of breastfeeding for both mother and infant
    - Breast feeding management in delivery room and postnatally

Delivery room mangment of well term newborn

First do **skin-to-skin** contact to maintain his or her temperature

Breast feeding initiation

- The infant should be encouraged to breastfeed as soon **as possible and within the first hour of birth**

The Mom and Dad do not want their new born to receive Vitamin K Injection after delivery and prefer to give their baby the Oral form of vitamin K, since they read that it will put their baby at risk of Cancer

Q2. **What information's you need to give the Parents to convince them that Vitamin K injection is needed to be given in the first hour after Birth?**

Vitamin K

- Vitamin K is an important clotting factor synthesized by intestinal bacteria.

- All neonates are born with low levels of vitamin K because of:
  - the absence of gut flora
  - low levels of transplacental passage
  - inability of the fetal liver to store vitamin K.
  - Human milk is a poor source of vitamin K,

- Vitamin K–deficient bleeding (formerly known as hemorrhagic disease of the newborn) can occur:
  - directly after birth
  - or many weeks later,
- PRESENT AS
  - presenting as skin bruising, mucosal bleeding, bleeding at the umbilicus and circumcision site, or even fatal intracranial hemorrhage. Large hematomas at injection sites or on the head after delivery alsomay be presenting signs.

Vitamin K

- Maternal risk factors for the infant's development of vitamin K–deficient bleeding include
  - antiepileptic, antituberculin, and vitamin K antagonist medications.

- Vitamin K given to all babies after delivery in an intramuscular injection has been shown to prevent both early and late forms of bleeding.

Vitamin K

- There is not enough information about the efficacy of oral vitamin K to recommend its routine use,

- although it is certainly better to use oral vitamin K than none at all when parents refuse the intramuscular formulation.

- There is no proven relationship between vitamin K administration and childhood cancer.

The parents are concerned about their baby

when you can reassure them about their baby condition after birth ? .

Q3- When is the initial newborn assessment is done?

The initial newborn assessment

- WHAT IS INITIAL ASSESMENT
  - It Include a thorough examination of the infant for any anomalies and identification of infant and maternal risk factors necessitating further evaluation
- WHEN
  - IMMEDIATELY AFTER DELIVERY
- WHO
    - typically is performed by a labor and delivery nurse or the birth attendant for low-risk deliveries.
    - For higher-risk deliveries, a specialized neonatal resuscitation team may be present at the delivery and perform this assessment.

After normal delivery of her healthy male baby. Mom was in good condition.
She did skin to skin contact to with her baby immediately after birth, and started to breast fed her baby in the first hour of his life

She asked you if her baby can stay with her at her own room in obstetric floor.

You were also excited since the hospital is baby friendly

Q4-How you support breast feeding during her stay?

Support Breast feeding during Stay

- Do Room In policy

- Mothers who are **unable to breastfeed** their infants
  - should have access to high-quality breast pumps and providers skilled in lactation.

- information should be given to the family

- GIVE parents **postnatally** clear and unbiased information
  - regarding the benefits of breastfeeding for both mother and infant
  - Dextrose water and sterile water are to be avoided
  - Do Individuals skilled in education and the assessment and management of breastfeeding problems should be readily available in the hospital and after discharge.

- Q 5. When the pediatric clinician’s examination is completed

Q 5. When the pediatric clinician's examination is completed

- The pediatric clinician's examination is completed in the first 24 hours after birth.
- Nurses often have assessed the infant fully before this examination, and their evaluations should be viewed as complementary.
- The initial examination serves the purpose of:
  - identifying anomalies,
  - reassuring parents about the health of their new infant.
  - Education, sometimes termed "discharge teaching,"
  - identifies and discusses common findings,
    - such as safe sleep positioning, skin and cord care, jaundice,
    - and the voiding patterns common to the newborn.

As ideal, you completed in the first 24 hours after birth a second exam

(first was initial Assessment was after birth)

Now, you are planning to meet this Mom and Dad who have just had their first male baby. They are a friendly young couple who are very excited about their new son.

you well take History as the following:

- You Asked about the main Pointes needed to be in the History that include

- Prenatal History that Include :
  - Maternal Age, method of pregnancy,
  - Maternal disease Diseases before and during pregnancy (UTI, PET , DM etc….)
  - Mother blood group and Hepatitis B Status
  - Maternal screen (first and second. And third)
  - Fetal condition during Obstetric follow up
  - Maternal Medications before and during Pregnancy and during labor
  - Maternal family and Social history
  - Previous pregnancies history and Birth outcome
- Delivery History including:
  - method of delivery and gestation age Birth weight
  - Maternal medication during labour
  - resuscitation history for the baby and any problem -during delivery
  - what happened to mother or the baby

-Abgar score

- You reviewed the bay delivery Notes. His birth weight was 3 Kg, with no maternal Illnesses and his fetal record was normal.

Looking at Abgar score in the newborn medical record you found that it was 7 at one minutes

At 5 minutes of life the description of Abgar score was:

- Pulse rate was 130bpm,
- Breathing is well and has good cry
- Cyanotic Hands and feet
- Good Muscle tone
- and strong grimace

Q5. How you calculate Abgar score?

Q6 . Calculate his Abgar score at 5 min ?

Table 1. The Apgar Score

The Apgar Score	0	1	2
Heart rate	Absent	<100 beats per min	>100 beats per min
Respiratory effort	Absent	Weak cry; hypoventilation	Good cry
Muscle tone	Flaccid	Some flexion	Active motion/Well flexed
Reflex irritability	No response	Grimace	Cry/Cough/Sneeze
Color	Blue/Pale	Acrocyanotic	Completely pink

Table 1. **The Apgar Score**

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Color	Blue/Pale	Acrocyanotic	Completely pink

- A 5-minute Apgar score of 7 to 10 is considered normal.
- Apgar scores can be helpful in assessing an infant's transition from intrauterine to extrauterine life
- It may reflect neonatal resuscitation efforts
- It t should not guide these resuscitation efforts.
- Apgar scores should not be used to predict neurologic outcomes or development of infants

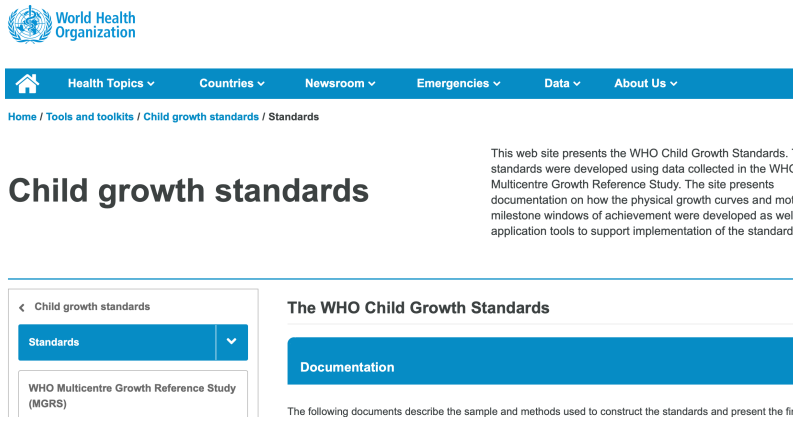
Q7: How you address these parental concerns regarding Growth and gestation Age assessment

Q 7.1 How you Assess Growth and Gestational Age

Q 7.2 : When the newborns should regain this birth weight?

Growth and GA assesment

- Growth Mesurment.
- Intergrowth charts <36 weeks (https://intergrowth21.tghn.org/standards-tools/)
  - Hc, Weiigt t and length
- Plotted on a growth curve according to gestational age
- Know if (for AGA, SGA and LGA)



CDC

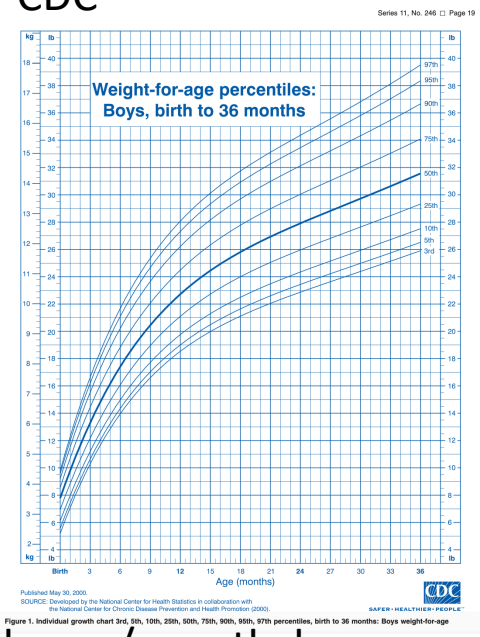
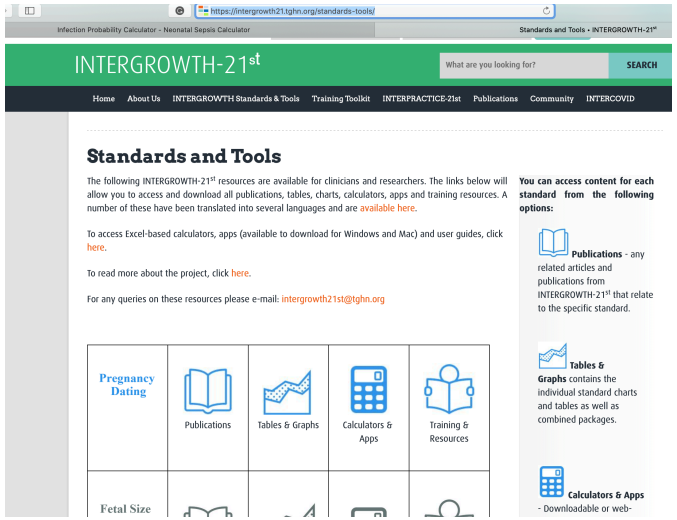


Figure 1. Individual growth chart 3rd, 5th, 10th, 25th, 50th, 75th, 90th, 95th, 97th percentiles, birth to 36 months: Boys weight-for-age

https://www.cdc.gov/growthcharts/cdc_charts.htm

Example



Gestational Weight Gain	Publications	Tables & Graphs	Calculators & Apps	Training & Resources
Newborn Size for Very Preterm Infants	Publications	Tables & Graphs	Calculators & Apps	Training & Resources
Newborn Size	Publications	Tables & Graphs	Calculators & Apps	Training & Resources
Postnatal Growth of Preterm Infants	Publications	Tables & Graphs	Calculators & Apps	Training & Resources

https://intergrowth21.tghn.org/standards-tools/

Tables & Graphs

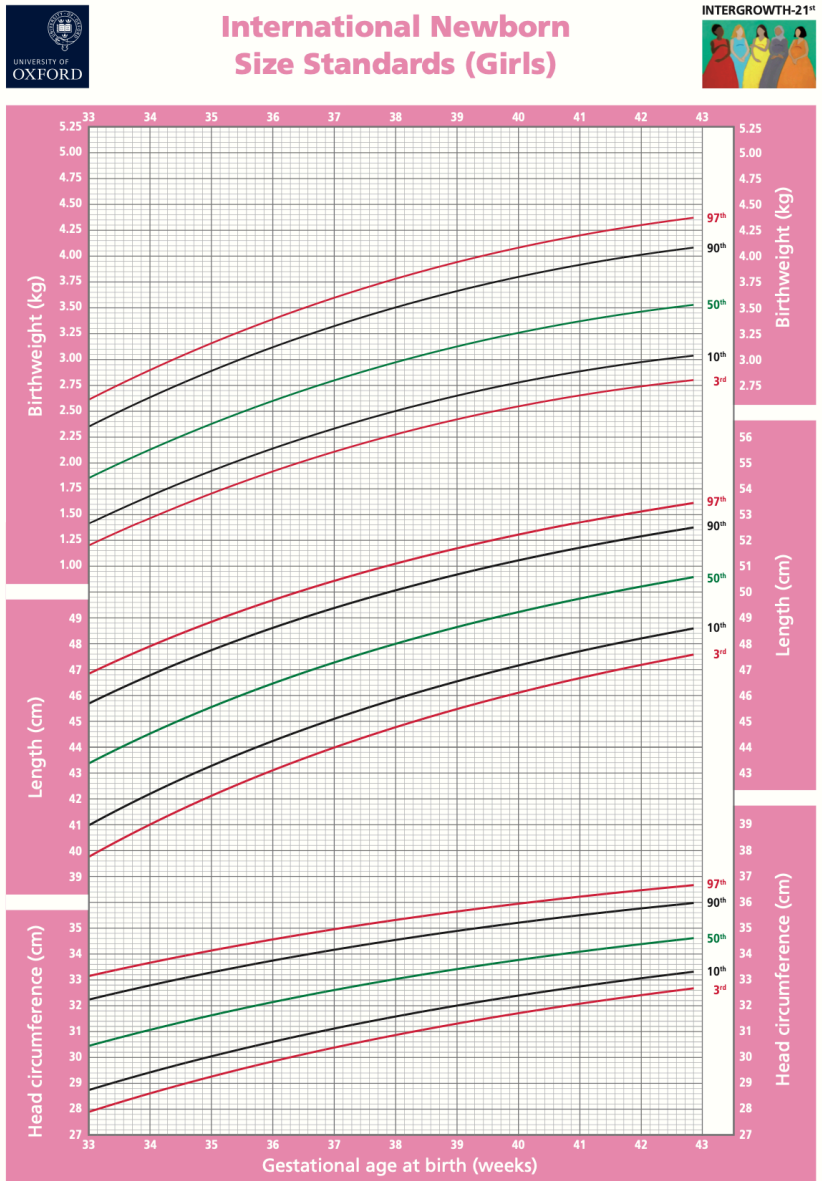
Click here to download entire package

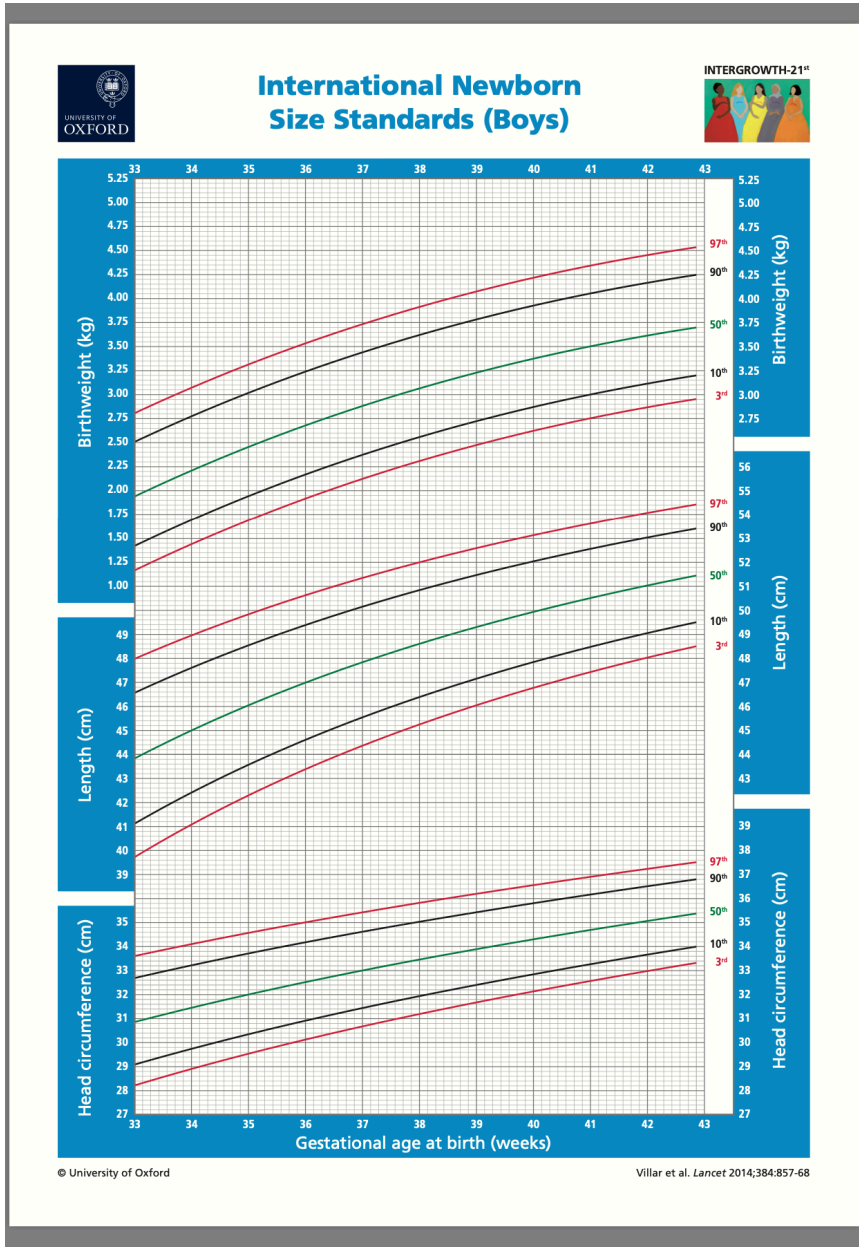
	Boys	Girls
Weight	Table (Centile) Table (Z-Score) Graph (Centile) Graph (Z-Score)	Table (Centile) Table (Z-Score) Graph (Centile) Graph (Z-Score)
Length	Table (Centile) Table (Z-Score) Graph (Centile) Graph (Z-Score)	Table (Centile) Table (Z-Score) Graph (Centile) Graph (Z-Score)
Head Circumference	Table (Centile) Table (Z-Score) Graph (Centile) Graph (Z-Score)	Table (Centile) Table (Z-Score) Graph (Centile) Graph (Z-Score)
	Graph (Centile) Graph (Z-Score)	Graph (Centile) Graph (Z-Score)
Weight-Length Ratio	Table (Centile) Table (Z-Score) Graph (Centile) Graph (Z-Score)	Table (Centile) Table (Z-Score) Graph (Centile) Graph (Z-Score)
WLHC Combined	Graph (Centile) Graph (Z-Score)	Graph (Centile) Graph (Z-Score)

Very Preterm and Newborn combined charts:

Boys	Centiles	Z-Scores
Girls	Centiles	Z-Scores

Data derived from cross-sectional measurements at birth should not be used to monitor postnatal growth (they cannot provide "growth" patterns).


UNIVERSITY OF OXFORD
International Newborn Size Standards (Girls)
INTERGROWTH-21st
Birthweight (kg)
Length (cm)
Head circumference (cm)
97th
90th
50th
10th
3rd
Gestational age at birth (weeks)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90th
50th
10th
3rd
Gestational age at birth (weeks)
© University of Oxford
Villar et al. Lancet 2014;384:857-68

- Gestation Age Assessment
  - Last menstrual period (LMP)
  - first trimester US
  - When the gestational age or due dates are uncertain, a gestational age assessment is completed using the Dubowitz/Ballard examination

Mom and Dad have a big extended family in the area, including both sets of grandparents, and they have been getting child-rearing advice from everyone. They appreciate the advice, but want to make sure what they have been told is correct.

They have many questions for you. Their Son is one day old now, He is Breast fed every 2-3 Hours . You found that

- He passed urine 4-5 times of "**brick dust**" color .
- He did not gain any weight at 24 hour.
- He did not pass stool yet at 24 hour.

You examined the Baby and found that he has normal physical exam and normal vital signs. Mom asked You Is that normal?

- Does he need formula since he did not gain weight today?
- Is he having an Obstruction?”
- Is the urine color cause of concern?
- Does he need to test his blood sugar to know if it is low?
- Can she discharge her baby and observe his stooling pattern at Home ?

How you address these parental concerns (Q8 - Q12)

Q 8 : Does he need formula since he did not gain weight today?

- Weight loss in newborns is observed frequently
- In general, weight loss of >10% to 12% in the first postnatal week is a cause for concern and necessitates a thorough evaluation.
-
- Families should be reassured about this progression and can become preoccupied with a normal process because this is a value commonly measured, reported,and compared in the course of routine newborn care.
- Numerical weight loss of concern in the presence of a progressively improving feeding relationship should not drive supplementation.
- It is typically taught that newborns should regain their birth weight by 2 weeks after the birth, although many newborns reach this value much sooner if feeding is well established.
- Emphasis should return to the feeding relationship between mother and infant and the promotion of breastfeeding.

Q9 Is he having an Obstruction?”

How you address these parental concerns (Q8 - Q12)

What is the stooling and urine pattern in their newborn baby after birth?

Normal Stooling Patterns

Meconium

- The infant typically passes a first meconium stool shortly after birth, often within the first hours and typically before 24 to 48 hours
- These black, tarry, and sticky stools

Transition Stool

- Occure as the mother's human milk production increases.
- typically occurs in a pattern, often from green/brown to a seedy, loose, mustard yellow appearance.

It is not rare for an infant to pass stool with nearly every breastfeeding when the mother's milk is in because of the gastrocolic reflex signaling the colon to empty

Delayed passage of stool

- When the passage of meconium stool is delayed, the provider can carefully recheck the infant's anus for the normal characteristic stellate pattern and continue to observe

- if the infant is feeding well without abdominal concerns.
- Delayed passage of stool beyond 48 hours can indicate serious problems, such as colonic obstruction from imperforate anus with or without fistula, meconium plug syndrome, or Hirschsprung disease.
- Imaging, including barium enema, and rectal suction biopsy as the diagnostic gold standard for Hirschsprung should be considered.

Normal voiding

- When urine should pass
- The infant’s first urination nearly always occurs in the first 24 hours.

- Difficulty in urine detection

  - Urine can be difficult to detect in the presence of frequent meconium stool
  - Urine could not be seen

Difficulty in urine detection

- DDx of decrease or no Urine

1. in Adequate feed
    - Feeding adequacy should be assessed
2. Urination was not detected
    - One can then repeat the physical examination, paying particular attention to the genitalia and abdomen.
    - If these findings are all normal, the infant can continue to be observed
3. Anuria
    - the truly anuric infant is extremely uncommon.
    - The evaluation of the anuric infant should include a reassessment of the pregnancy history, with special attention to decreased amniotic fluid (oligohydramnios) and anomalies of the urinary system on prenatal ultrasound that might indicate urinary obstruction.

.

How to detect Urine

- Review notes
  - Clinical motes should reviewed to determine if the infant voided at delivery or elsewhere and the voiding was not recorded.
- Look at Diaper with strips
  - Commercially available diapers nowcommonly have a stripe that changes color in the presence of urine, which helps identify small amounts of urine
- Use A cotton ball
  - A cotton ball is placed between the labia or a bagmay be applied to collect urine if there is concern that the urine was simply not observed.
- Use Invasive
  - If there are continued concerns for anuria, catheterization, bladder and renal ultrasound with urologic consultation, and evaluation of renal function can be considered.

How you address these parental concerns (Q7 - Q10)

Q 9. How you can explain the urine Brick dust color ?

appearance of newborn urine

- can initially be scant and darkly colored.

- Can be “brick dust”)
  - this is urate crystals (often termed “brick dust”) can be confused with blood in diapers
  - urate crystals tend to sit on the surface of the diaper and are iridescent and completely benign.
- DDX
  - Vaginal discharge can be clear, yellow, or white, and even blood-tinged as the female infant“withdraws” from maternal hormones.

A newborn should not be discharged until the passage of stool and urine can be documented

How you address these parental concerns (Q7 - Q10)

Q 10. Is her baby at risk of Hypoglycemia?

Risk for Hypoglycemia

- Infants born to mothers with diabetes mellitus
- those who are SGA, preterm, or LGA
- Preterm and late. Term
- as well as infants with birth asphyxia, are at risk for hypoglycemia.

Q11. what is the GBS screen results ?

GBS screen

- When
  - At 35-37 week
- How
  - Low vaginal and rectal swap
- What means if urine culture GBS
  - Means heave maternal colonization

What to do
folow CDC or AAP 2018 (Do early onset sepsis score)

➢Asymptomatic infants

- born to mothers who **do not receive adequate** prophylaxis for GBS

- should at a minimum Do:
  - have careful clinical o**bservatio**n with consideration of a limited screen (complete blood count with differential,blood culture) in some circumstances and 48 hours of observation.

  - born to mothers who with adequate maternal intrapartum antibiotic prophylaxis (≥4 hours) has been administered,
    - observation of the newborn in a medical setting may be as short as 24 hours.

➢**Symptomatic infants**:

- should have a full evaluation completed to rule out sepsis, including
- at minimum a complete blood count with differential
- Bloodculture
- initiation of intravenous antibiotics.

Reference:
1.The Centers for Disease Control and Prevention updated their recommendations for the prevention of perinatal GBS disease in November 2010. (11)
2. Early onset sepsis reisl calculator: https://neonatalsepsiscalculator.kaiserpermanente.org

Q12. What should you tell parents about bathing their infant , cleaning the genitalia and cord care

Who should bathed immediately

- hepatitis B–positive mothers or Corona or HIV Mothers should be bathed at birth

skin and cord care.

- The newborn infant does not require frequent bathing.
- Cleansers should be mild
- should have sponge baths until the umbilical cord detaches.
  - In the past, antibiotic ointments, dyes, and alcohol have all been applied to the umbilical cord, but this practice is unnecessary.
- Parents should keep the umbilical stump dry and allow it to fall off naturally, generally in 10 to 14 days.
- Long, flexible but sharp fingernails often are a source of concern for the new family. With good lighting and when the child is quiet, the nails can be clipped, cut, filed, or torn.

Care of Genetalia

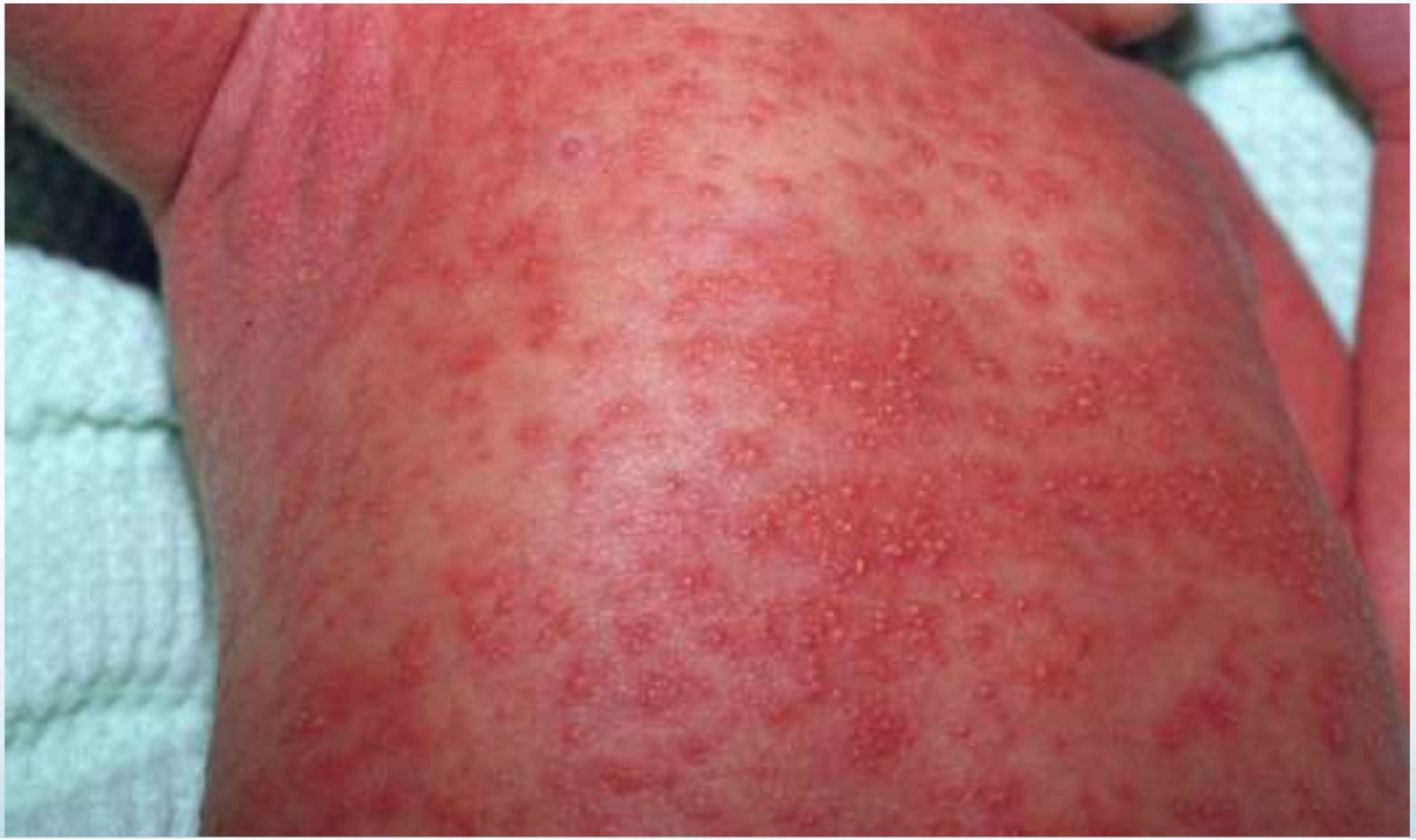
- Care of the uncircumcised penis requires little effort.
  - It can be cleansed externally when regular bathing is established.
  - Retracting the foreskin of an infant is discouraged because it will likely cause pain, bleeding, and even adhesions.

- If circumcised the penis should be kept clean and simple petroleum ointment. applied to keep the newly exposed glans from adhering to adjacent skin or diaper.

During your exam, Mom asks you about the red rash she noticed on her baby's chest and bluish spot on his back. She is worried that he might have an allergy to something

Q12. What are some common benign newborn skin conditions and what should you tell parents about managing them?

Erythema Toxicum Neonatorum (ETN)

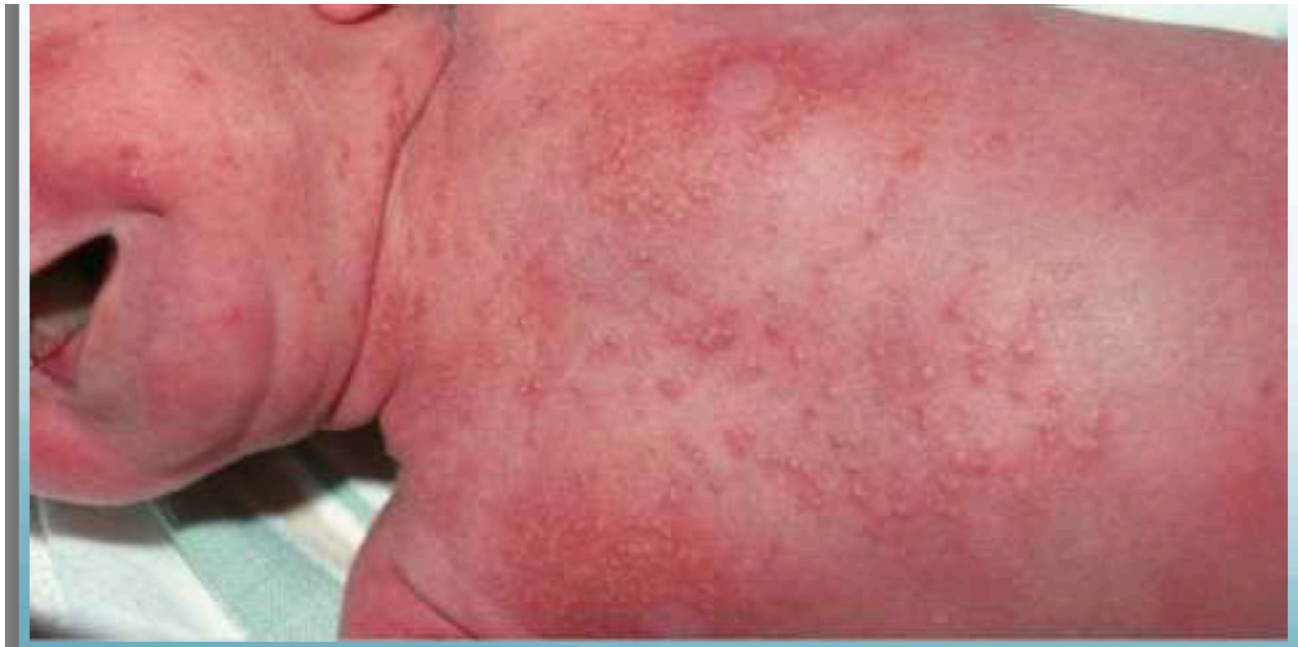


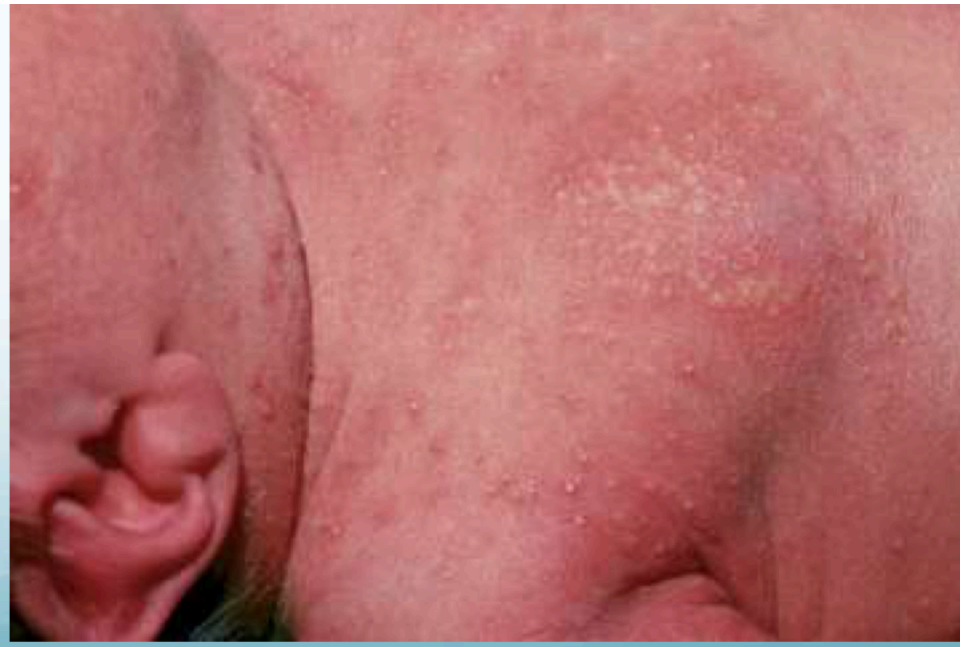
Erythema Toxicum Neonatorum

- Occurs in 50% or more of healthy normal newborns
- 1st-3rd day of life
- Resolves spontaneously ~2 weeks
- Classic eruption:
  - Erythematous blotchy macules, papules or pustules
  - Mainly on trunk, face and proximal limbs

Etiology of ETN

- **Etiology**: Unknown
  - GVH against maternal lymphocytes
  - Immune response to microbial colonization through hair follicles
- **Dx**: Clinical appearance alone
  - Wright/Giemsa stain→sheets of eos w/ few scattered neuts.
  - Skin Bx is rarely needed
- **Tx**: Parental reassurance



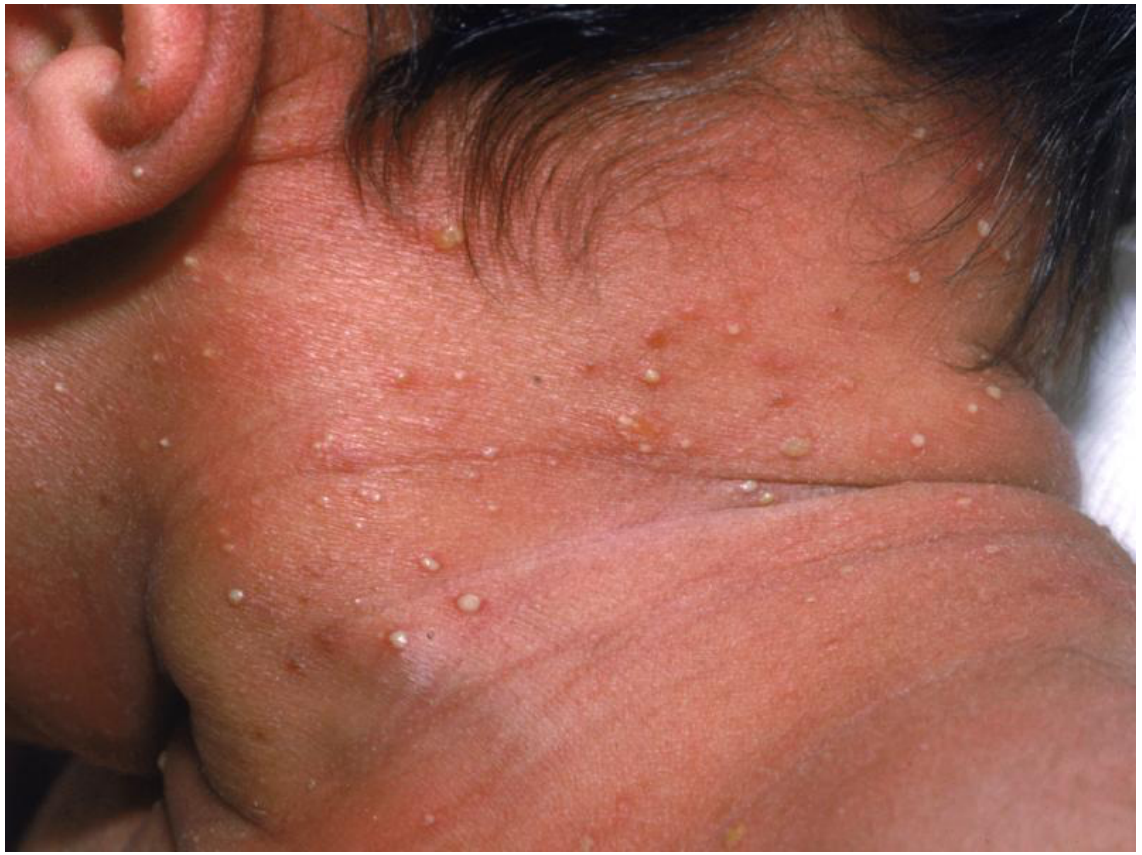


ETN

- Appears 1st on **FACE** → trunk & extremities or anywhere on the body **EXCEPT** palms/soles
- **Histologically**:
  - Subcorneal pustule filled with eosinophils and occasional neutrophils
- 15% peripheral **eosinophilia**

Transient Neonatal Pustular Melanosis

- The etiology is unknown.
- No familial predisposition
- More common in term-gestation infants
- More in African
- present at birth
- benign, asymptomatic

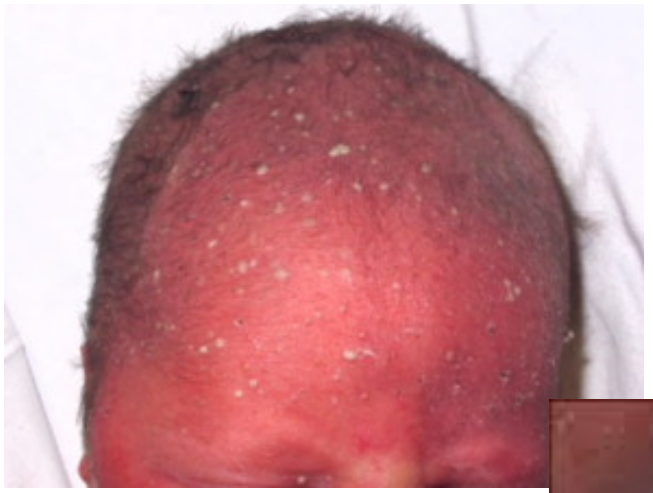


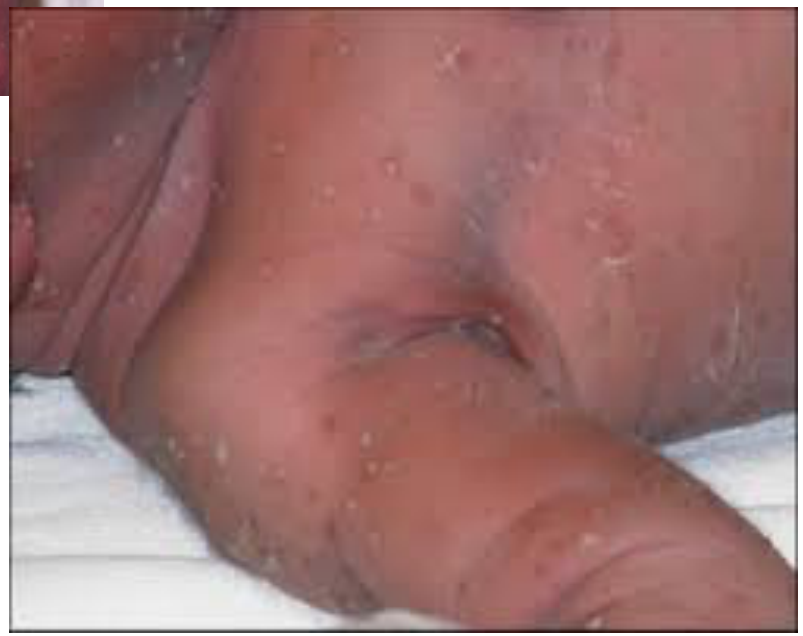
Ref:
https://emedicine.medscape.com/article/1112258-overview#a3

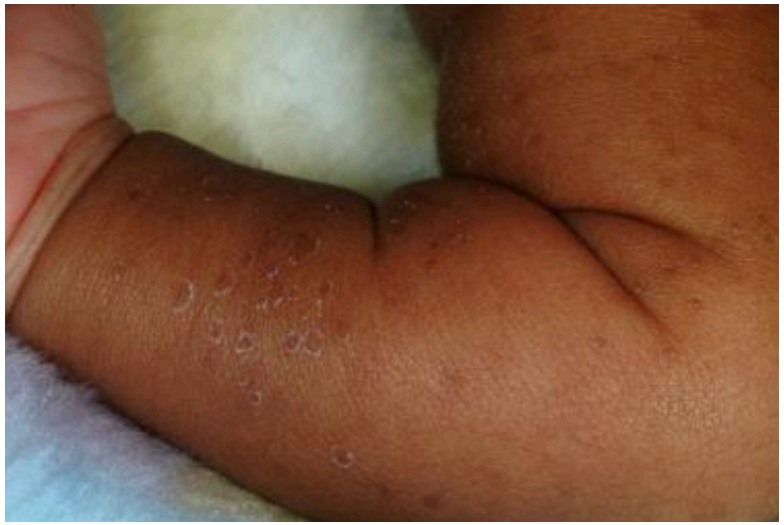
Transient Neonatal Pustular Melanosis

The vesicles and pustules usually resolve within 48 hours

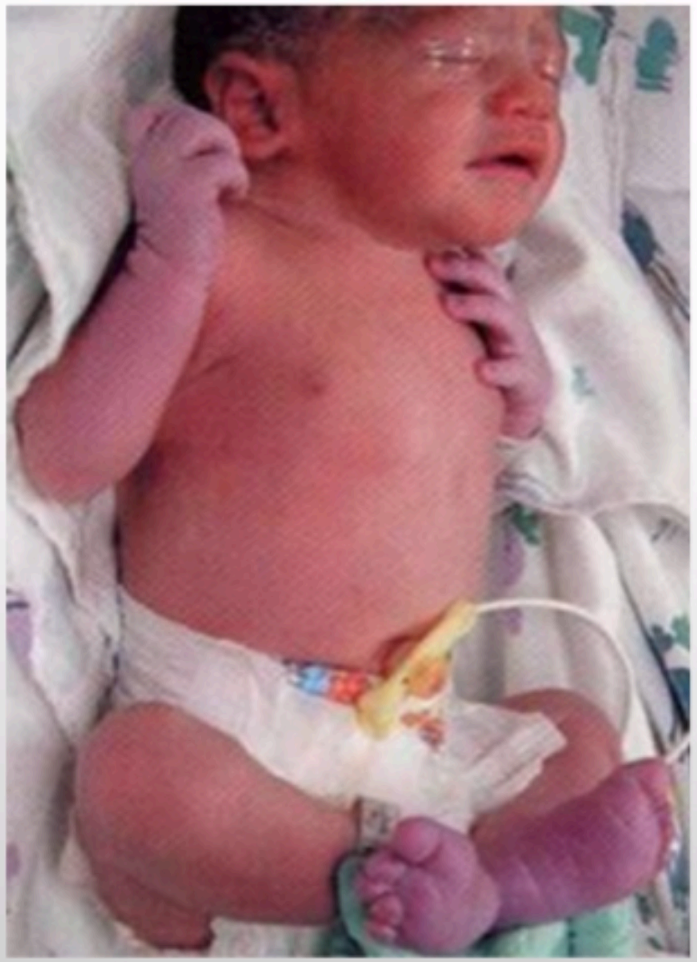
brown macules usually fade over 3-4 weeks but may persist for several months





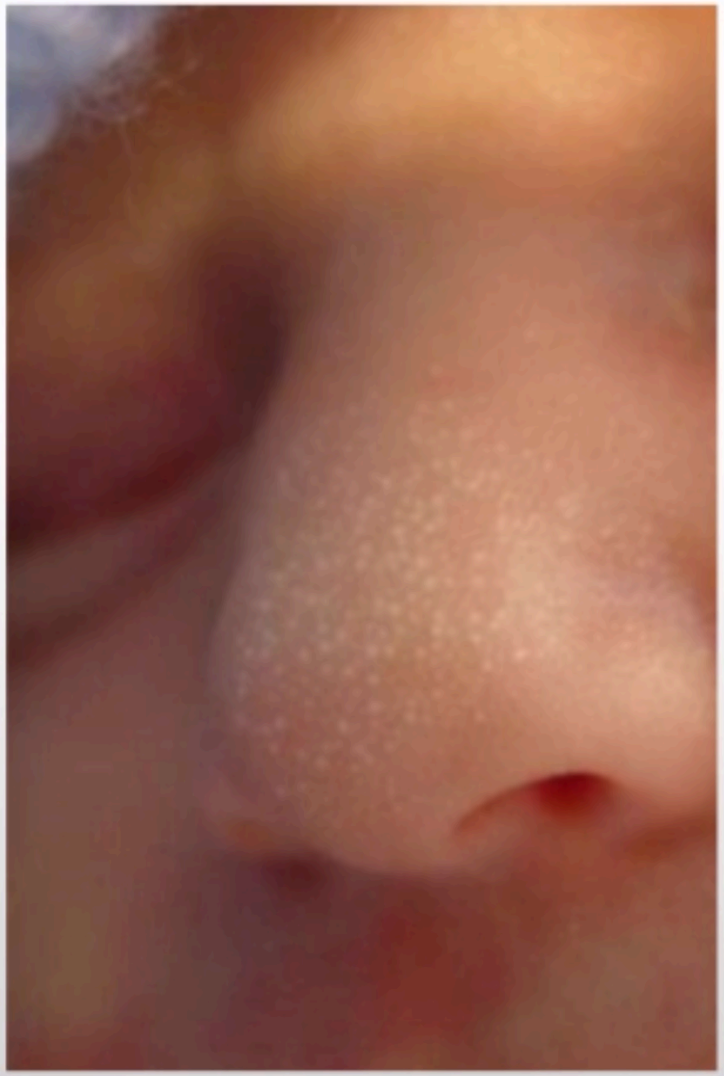


ACROCYANOSIS (PERIPHERAL CYANOSIS)



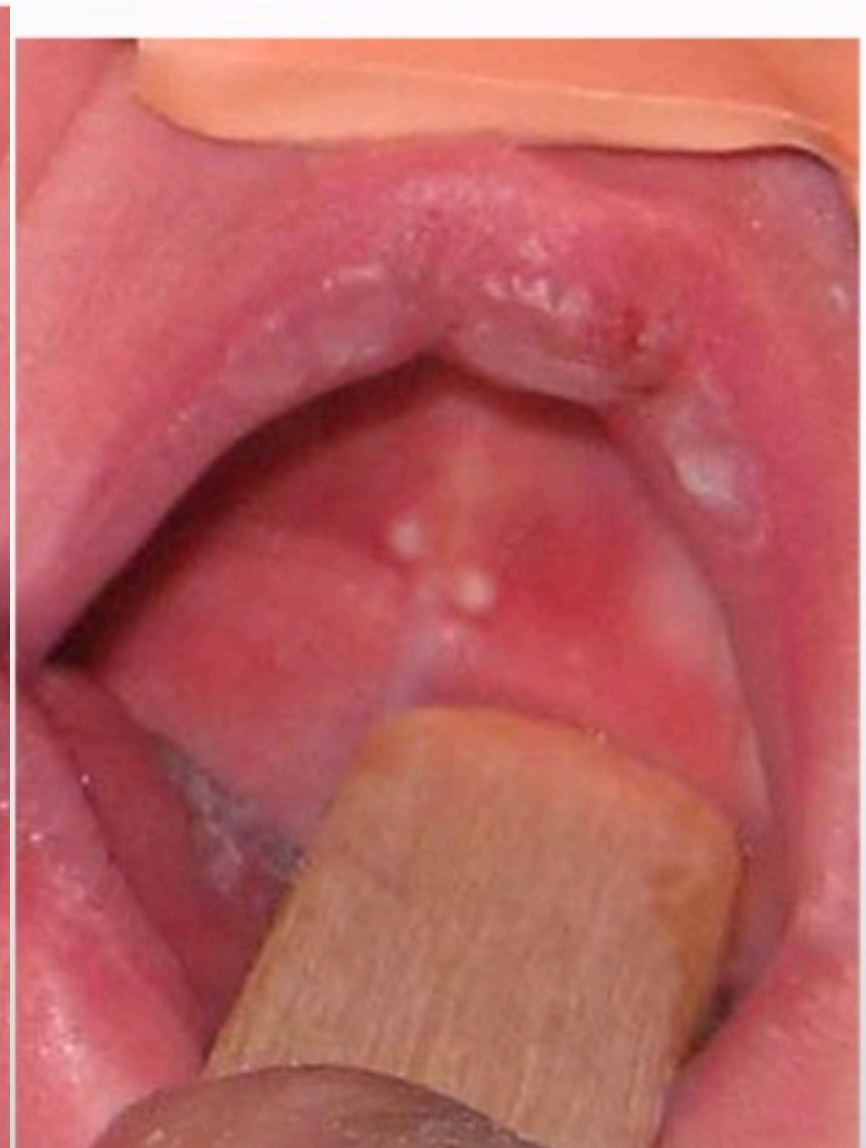
- Functional peripheral vascular disorder characterized by bluish discoloration of skin
- Caused by vasospasm of the small vessels of the skin in response to cold
- Usually particularly marked on the palms, soles and around the mouth
- Absence of cyanosis of warm central parts
- Resolves with warming of the skin
- Recurrence unusual after 1 month of age

SEBACEOUS GLAND HYPERPLASIA



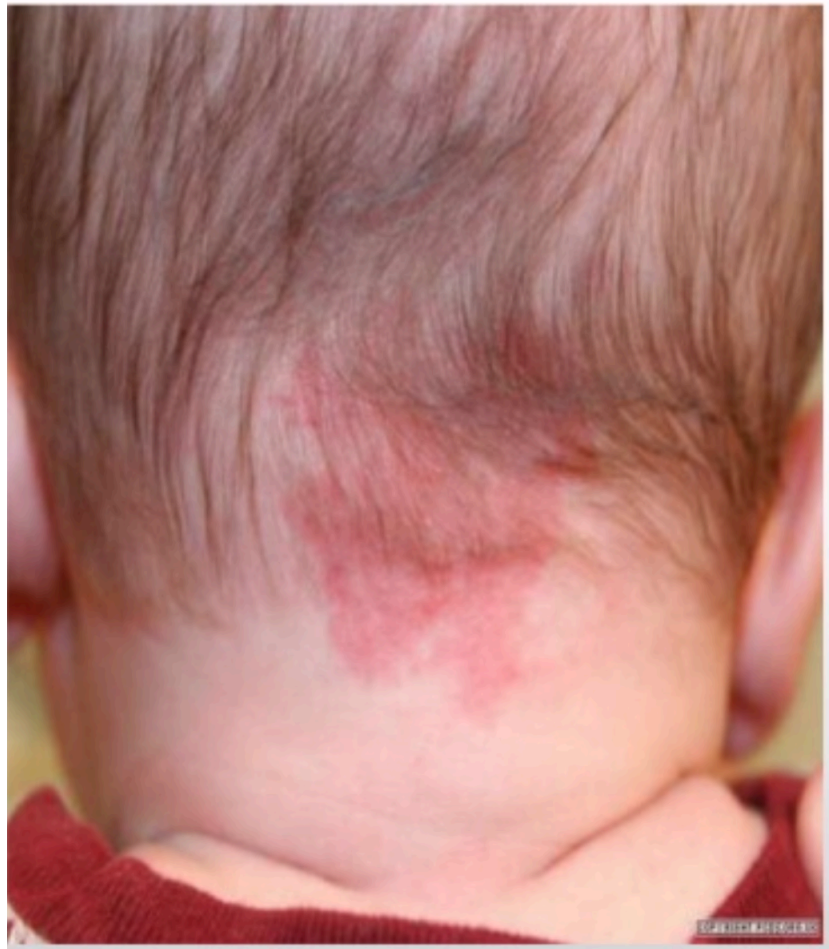
- Common benign proliferation of the sebaceous glands seen during the first weeks of life
- Result from maternal androgenic stimulation of sebaceous gland
- Multiple, uniform, pinpoint, yellowish papules 1–3 mm in diameter most prominent on the nose, cheeks, upper lip and forehead
- **Treatment** - Resolves within few weeks

EPSTEIN PEARLS



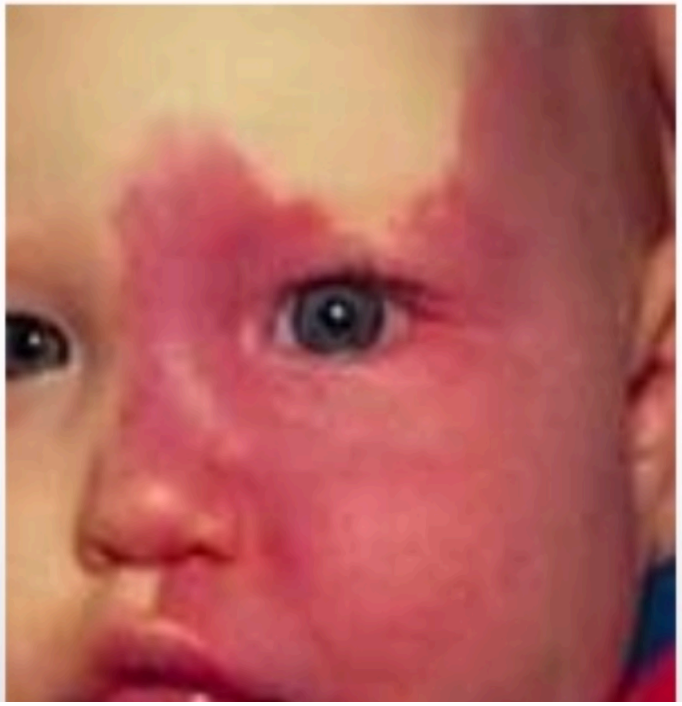
- Yellowish white, keratinous cysts, 1–2 mm diameter,
- Seen in up to 85% of all neonates
- Site - Along the alveolar ridges and/or in the midline at the junction of the hard and soft palate
- **Treatment** - Generally disappear without treatment within a few weeks

SALMON PATCH (NEVUS SIMPLEX)



- Most common vascular birthmark of infancy. Seen in 40% of all newborns
- Cause: Area of superficially dilated capillaries
- Appears as irregular dull, pinkish – red macules with poorly defined borders
- Site - On the face (angel kiss), nape of neck (stork bite)
- Become more intense in colour when child is crying
- Most of these lesions spontaneously disappear

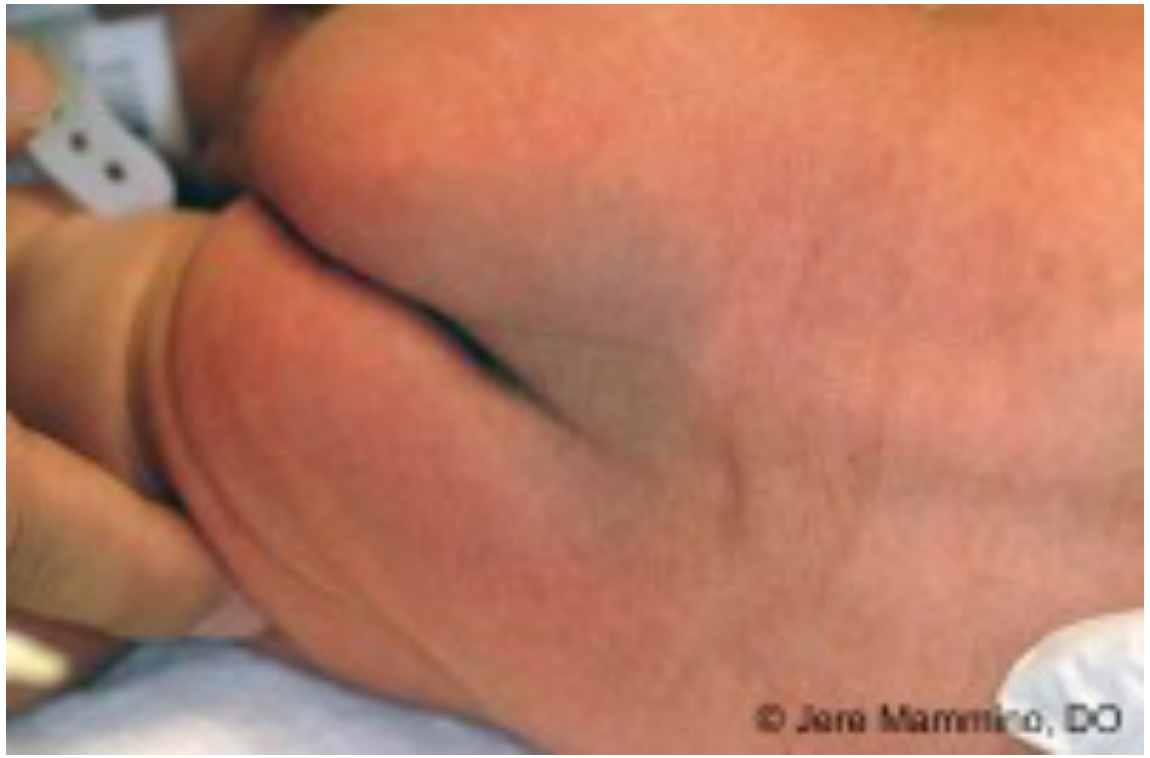
PORT WINE STAIN (NAEVUS FLAMMEUS)

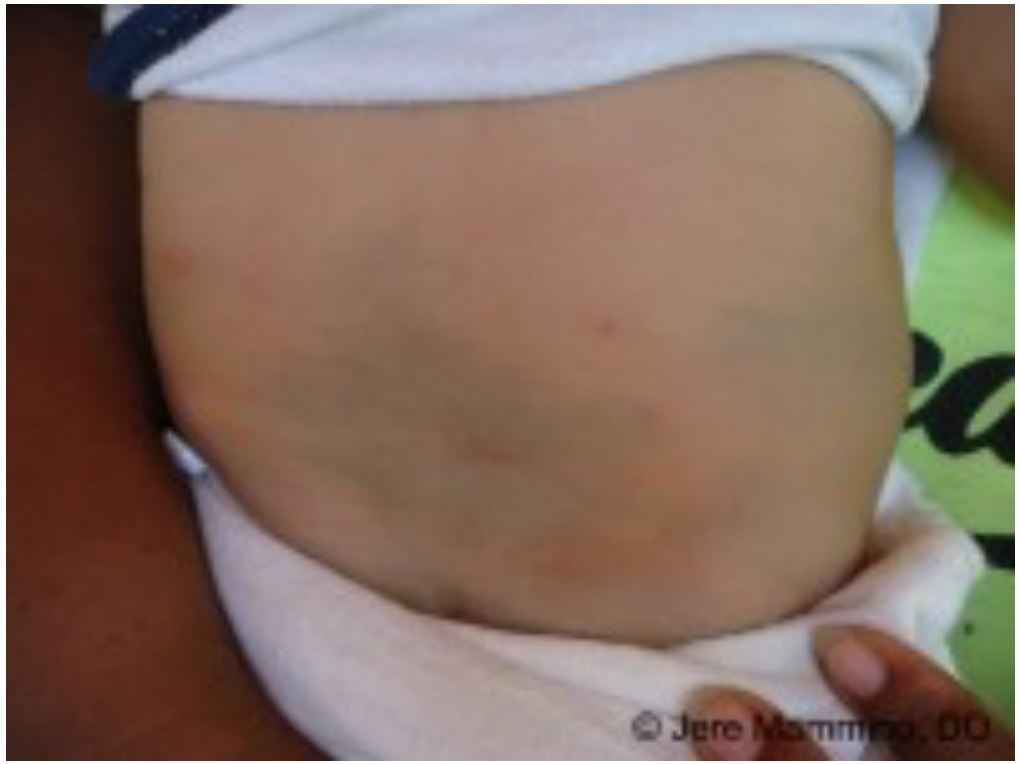


- Vascular birthmark, about 0.3% of newborns
- Large, irregular, deep red or purple macule with wel defined borders
- Usually unilateral, often on the face.
- Represents a vascular malformation involving matur capillaries.
- Lesions do not enlarge but persist throughout life

Abnormal neonatal skin disorder

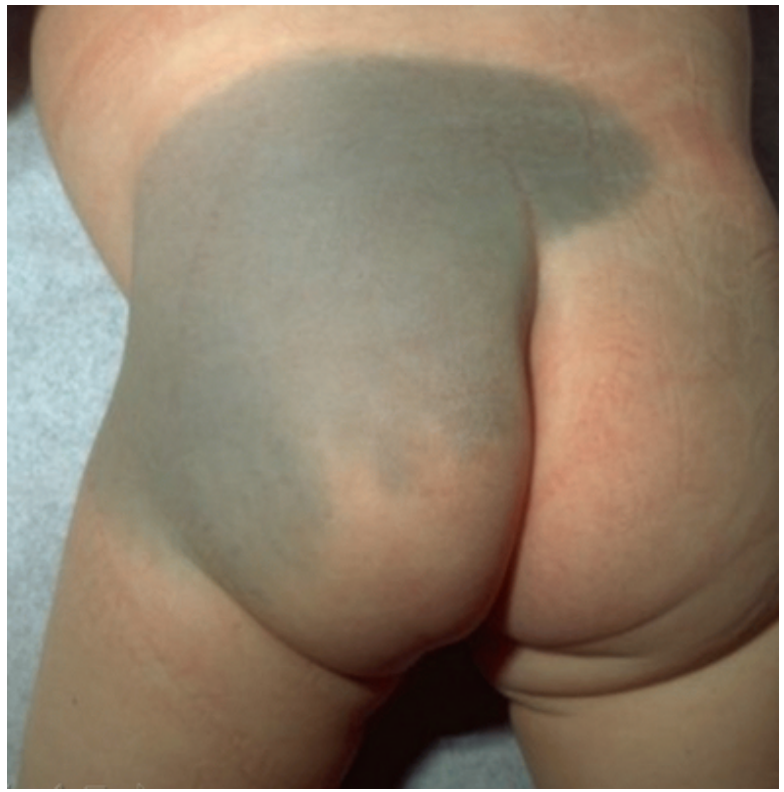
Mongolian spot



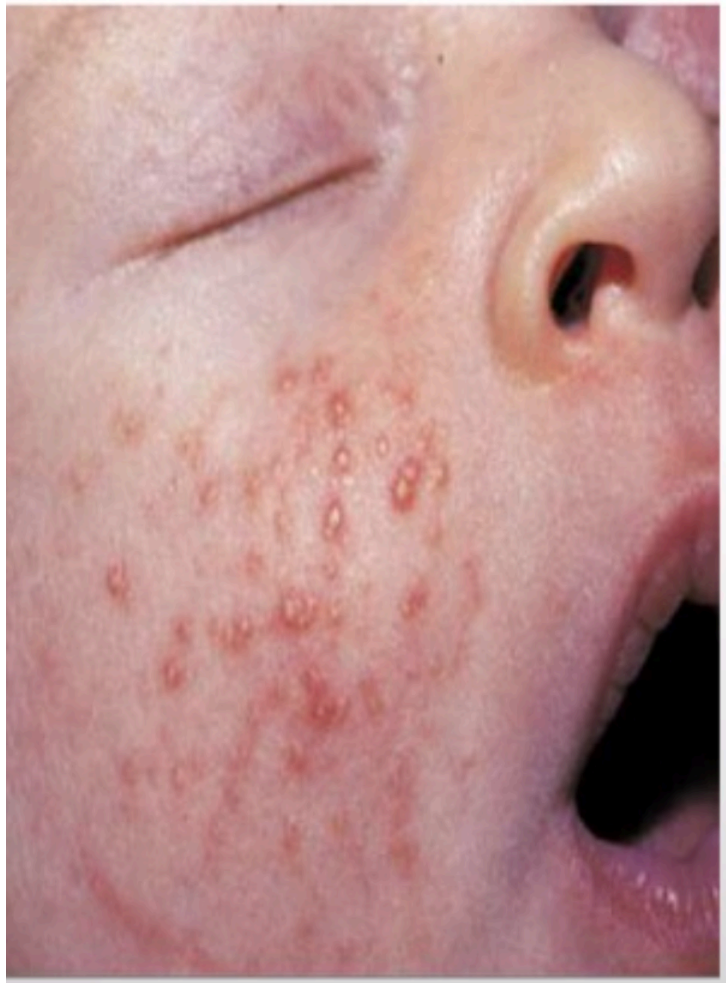


MONGOLIAN SPOTS

- Blue-gray, poorly circumscribed, single or multiple, macular lesion of various sizes
- Entrapment of melanocytes in dermis of developing embryo, the cells fail to reach their proper location in the epidermis
- Usually present at birth or appears within the first weeks of life
- Most commonly over lumbosacral region
- Common in asian, black and hispanic infants
- Most fade during first two years of life



NEONATAL ACNE



- Prepubertal acne can be divided into five subgroups: neonatal, infantile, midchildhood, preadolescent and adolescent
- Thought to be due to androgens (maternal & infant)
- May affect up to 20% of neonates, more common in boys
- Presents at or shortly after birth with erythematous papulopustular lesions, *and comedones*
- Site - commonly on cheeks, chin and forehead

The parents and some of the extended family member who is heavy smoker asked you to give some information on

- Any type of needed screening tests
- Sleeping and smoking instructions for their Baby.

For example:

can they do bad sharing with their baby?
Can the baby be exposed to smoker person ?
Can the baby sleeps in a different room?
What is the sleeping position?

Q13. What sort of anticipatory guidance can you give these new parents regarding avoidance of Sudden infant death

Anticipatory guidance for safe sleep positioning

To reduce the risk of sudden infant death syndrome

- The infant is always placed on his or her back
- On a firm surface free of quilts, sleep positioners, or other soft objects, such as stuffed animals.
- Breastfeeding
- Avoid exposure to tobacco
- same Room but not bed sharing
- a pacifier can be offered once breastfeeding is established.