

Neonatal Jaundice

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Biomedical



Outline

- Definition of jaundice
- epidemiology
- Metabolism of bilirubin
- Types of jaundice
- Causes of neonatal jaundice
- pathophysiology
- Management of neonatal jaundice



Definition of Neonatal jaundice

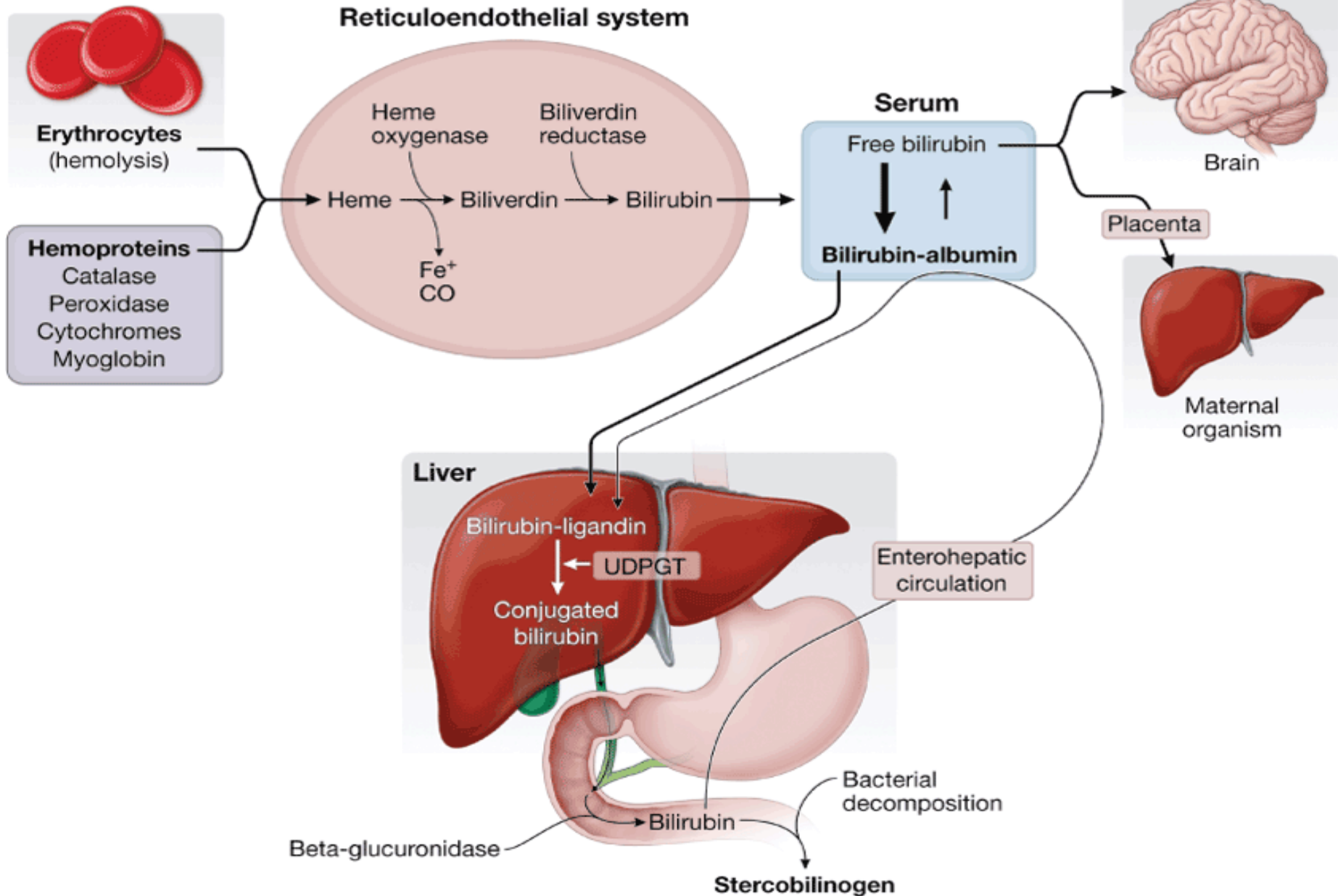
Neonatal jaundice describes a condition in which an infant's skin appears yellow within the first few days of life.

The yellowish appearance is a sign of an increased blood pigment called Bilirubin, which then settles in the skin

epidemiology

- An estimated 50% of term and 80% of preterm infants develop jaundice, typically 2-4 days after birth.
- Neonatal hyperbilirubinemia is extremely common because almost every newborn develops an unconjugated serum bilirubin level of more than 30 $\mu\text{mol/L}$ (1.8 mg/dL) during the first week of life.

Reticuloendothelial system



Source: Stevenson DK, Maisels MJ, Watchko JF: *Care of the Jaundiced Neonate*:
www.accesspediatrics.com

Jaundice classification

Prehepatic

Overproduction
Impaired uptake
by the liver

Hepatic

Decrease conjugation

Posthepatic

Decreased excretion
(Intra or extrahepatic obstruction)

Gall bladder

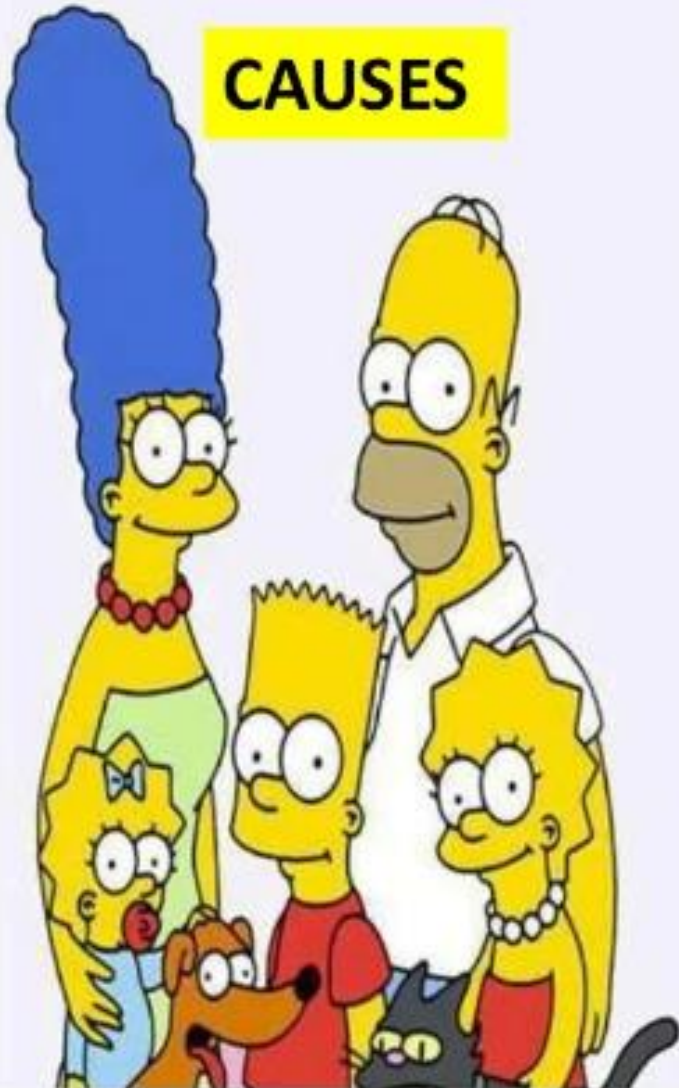
Pancreas

Differential Diagnosis of jaundice

↑ production	↓ conjugation	Impaired excretion	Biliary obstruction
↑ Unconjugate	↑ Unconjugate	↑ Conjugated	↑ Conjugated
Physiological Hemolysis Hematoma Polycythemia Sepsis	Gilbert's Crigler-Najarr Hypothyroidism Prematurity	Rotor's Dubin Johnson Hepatitis Metabolic	Biliary Atresia Hepatitis

Neonatal Jaundice

CAUSES



In 1st 24 Hours :

- 1-Hemolytic disorders (G6PD – Spherocytosis)
- 2-TORCH (congenital infection)

2nd day – 3rd week :

- 1-Physiological (disappear after the 1st week)
- 2-Breast milk
- 3-Sepsis
- 4-Polycythemia
- 5-Cephalhematoma
- 6-Crigler-Najjar Syndrome
- 7-Hemolytic disorders

Appearance or Persistence after 3rd week :

- 1-Breast milk
- 2-Hypothyroidism
- 3-Pyloric stenosis
- 4-Cholestasis

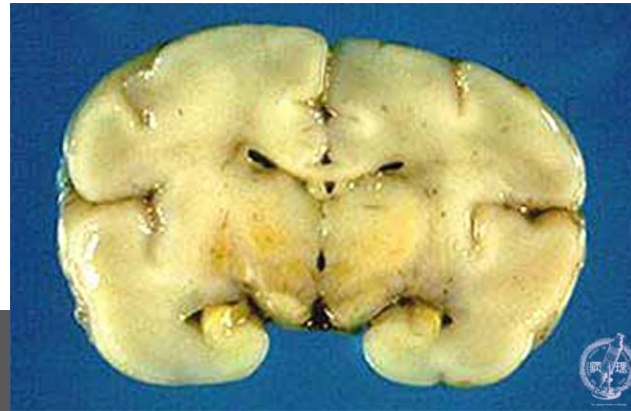


Types of bilirubin

Unconjugated bilirubin (Indirect)	Conjugated bilirubin (Direct)
<ul style="list-style-type: none">• Bind to albumen• Fat soluble• Can <u>cross</u> blood brain barrier• <u>Toxic</u> in high level to brain	<ul style="list-style-type: none">• Conjugated with glucuronic acid• Water soluble• Excreted in urine and stool• Not toxic

Signs of kernicterus

- Acute sequelae:
 - Poor suck, lethargy, hypotonia, seizure
 - Then hypertonia (opisthotonus, retrocollis), fever, high-pitched cry
- Chronic sequelae:
 - Choreoathetoid CP, gaze paresis, sensorineural hearing loss, mental retardation



Physiological Jaundice

- Appears after 24 hours
- Total bilirubin rises by less than 5 mg/dl per day
- Maximum intensity by 4th-5th day in term & 7th day in preterm
- Serum level less than 15 mg / dl
- Clinically not detectable after 14 days

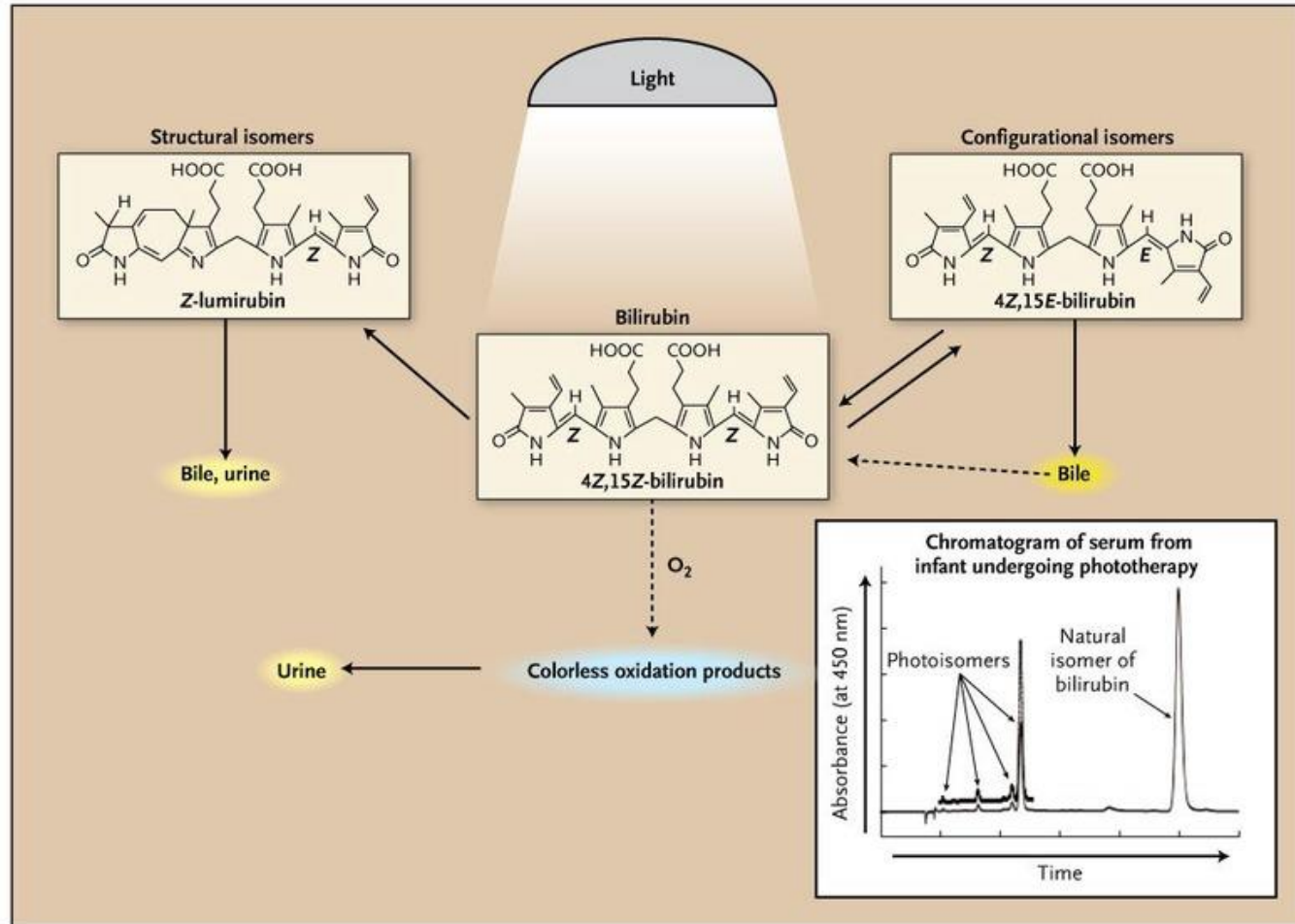
Unconjugated bilirubin

Pathological jaundice

- Appears age Appears within 24 hours of age
- Increase of bilirubin > 5 mg / dl / day
- Serum bilirubin > 15 mg / dl
- Jaundice days Jaundice persisting after 14 days
- Stool clay / white colored and urine staining yellow staining clothes
- Direct bilirubin > 2 mg / dl

conjugated bilirubin

Phototherapy



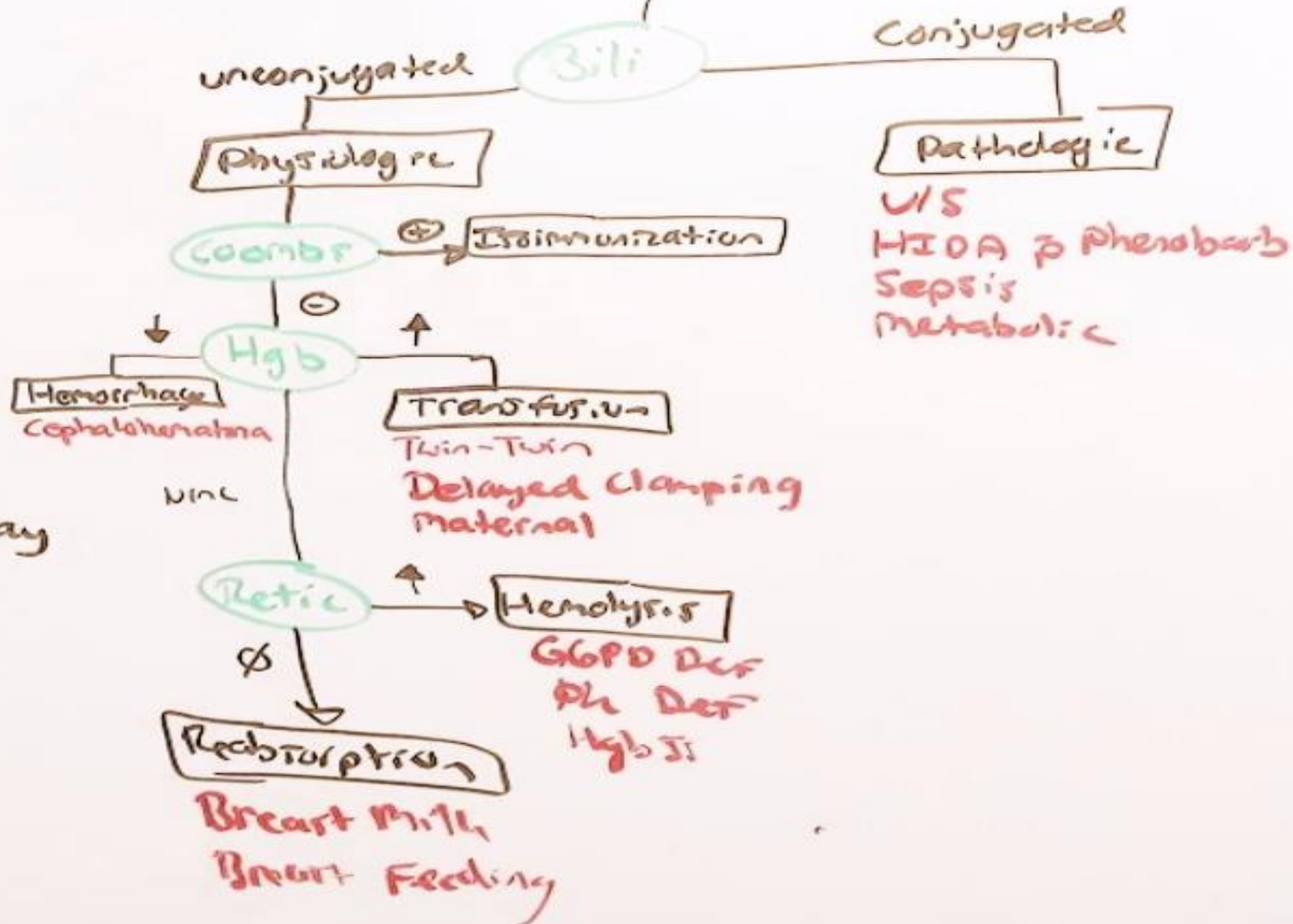
Exchange transfusion

- Mechanism: removes bilirubin and antibodies from circulation
- Most beneficial to infants with haemolysis
- Generally never used until after intensive phototherapy attempted.



BM

Yellow
Daisy



ay

Breastfeeding failure jaundice vs breast milk jaundice

Diagnosis	Timing	Pathophysiology	Clinical features
Breastfeeding failure jaundice	First week of life	Lactation failure resulting in: <ul style="list-style-type: none">• Decreased bilirubin elimination• Increased enterohepatic circulation	<ul style="list-style-type: none">• Suboptimal breastfeeding• Signs of dehydration
Breast milk jaundice	Starts at age 3-5 days; peaks at 2 weeks	High levels of β -glucuronidase in breast milk deconjugate intestinal bilirubin & increase enterohepatic circulation	<ul style="list-style-type: none">• Adequate breastfeeding• Normal examination

Take Home

- Jaundice is the most common condition that requires medical attention and hospital readmission in newborns.
- The yellow coloration of the skin and sclera in newborns with jaundice is the result of accumulation of bilirubin.
- In most infants, unconjugated hyperbilirubinemia reflects a normal transitional phenomenon.
- However, in some infants, serum bilirubin levels may rise excessively, which can be cause for concern because unconjugated bilirubin is neurotoxic and can cause death in newborns and lifelong neurologic sequelae in infants who survive kernicterus



**Thanks,
Gracias, Merci!**

reference

- Medscape
- Online-med