

PHOTOTHERAPY



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Out lines

- **Definition of Phototherapy .**
- **Prevalence**
- **Mechanism of Phototherapy**
- **Types & causes**
- **Investigations**
- **Nursing Care for Infant Receiving Phototherapy.**
- **Minor Side Effects of Phototherapy**



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Objectives

1. Define phototherapy
2. Explain the prevalence
3. Understand the mechanism of phototherapy.
4. List out types & causes
5. Explain the investigations
6. Apply the nursing care for infant's receiving phototherapy
7. Enumerate the side effects of phototherapy



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Definition of Phototherapy

**Application of
fluorescent light to
the infant's
exposed skin.**



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Prevalence of neonatal jaundice

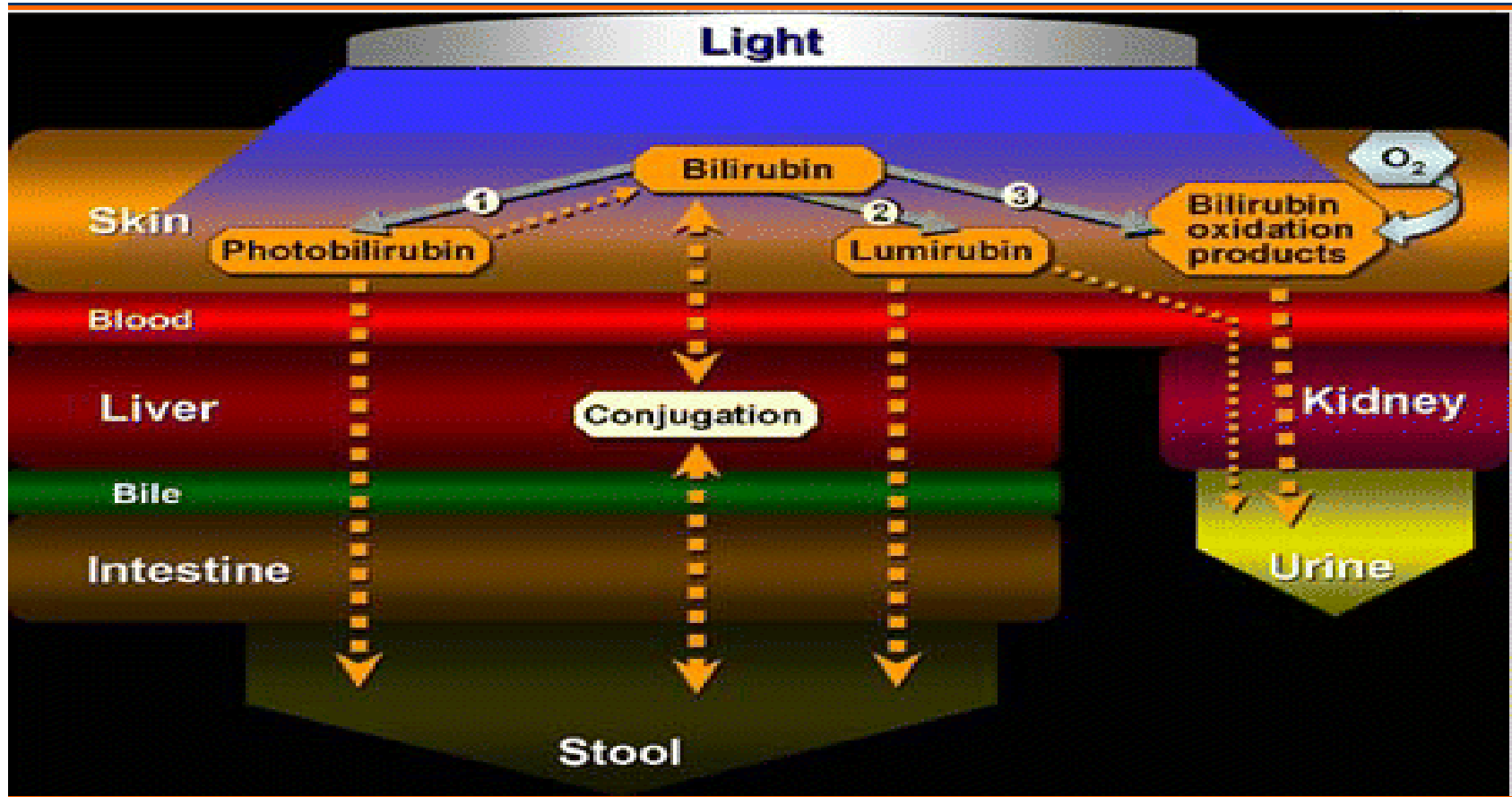
65% of term newborns develop clinical •
jaundice in first week

80% of preterm infants •



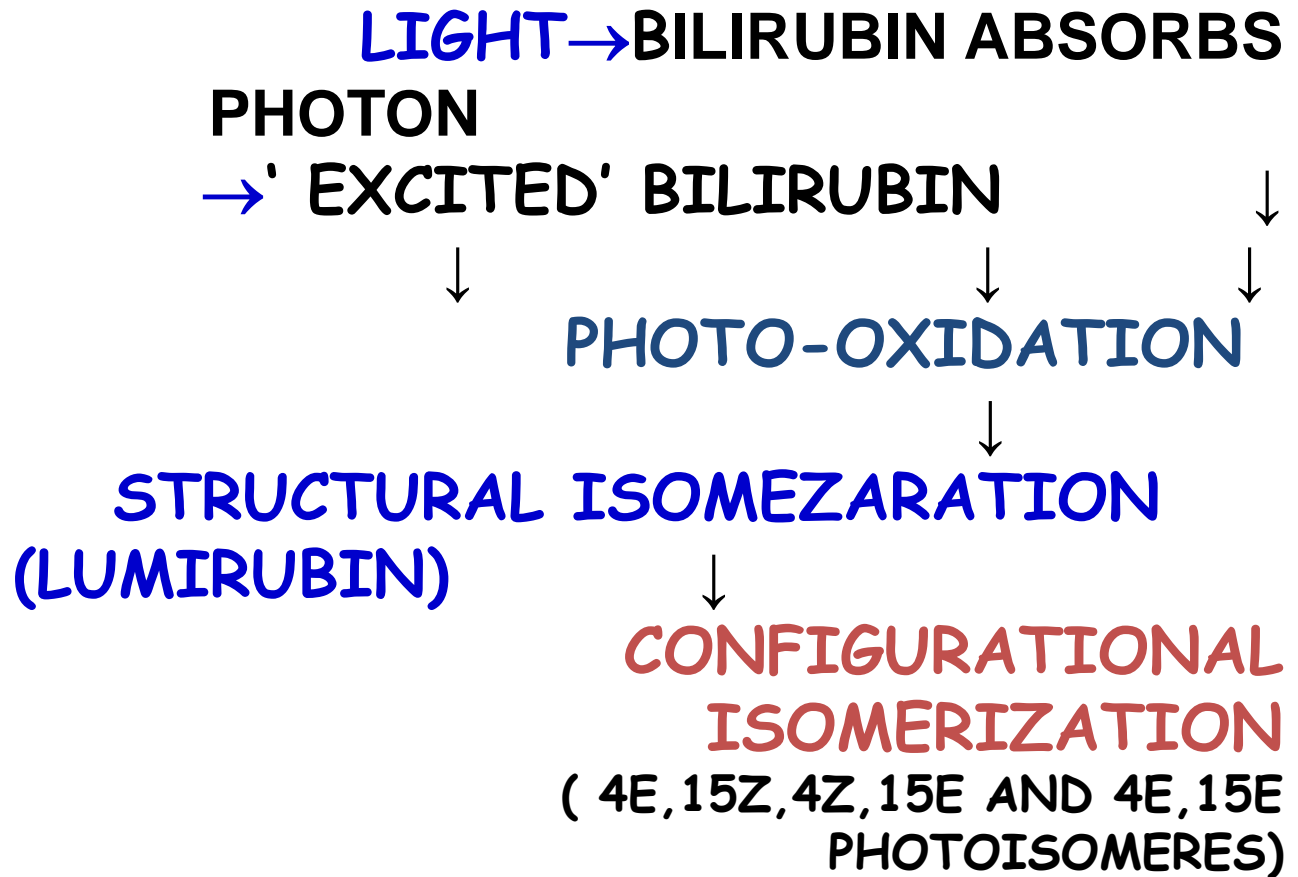
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MECHANISM OF WORKING



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PHOTOCHEMICAL REACTIONS



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PHOTO-OXIDATION

**SINCE CREMER'S REPORT(1958), IT HAS •
BEEN ASSUMED THAT PHOTO-
OXIDATION IS THE MECHANISM FOR ↑
BILIRUBIN EXCRETION**

**1984, ISOMERE FORMATION FOUND TO •
BE THE MAJOR MECHNISM**



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RATE OF FORMATION & ELIMINATION OF BILIRUBIN

**RATE OF FORMATION: 4Z, 15E ISOMERES > •
LUMIRUBIN > PHOTO-OXIDATION PRODUCTS**

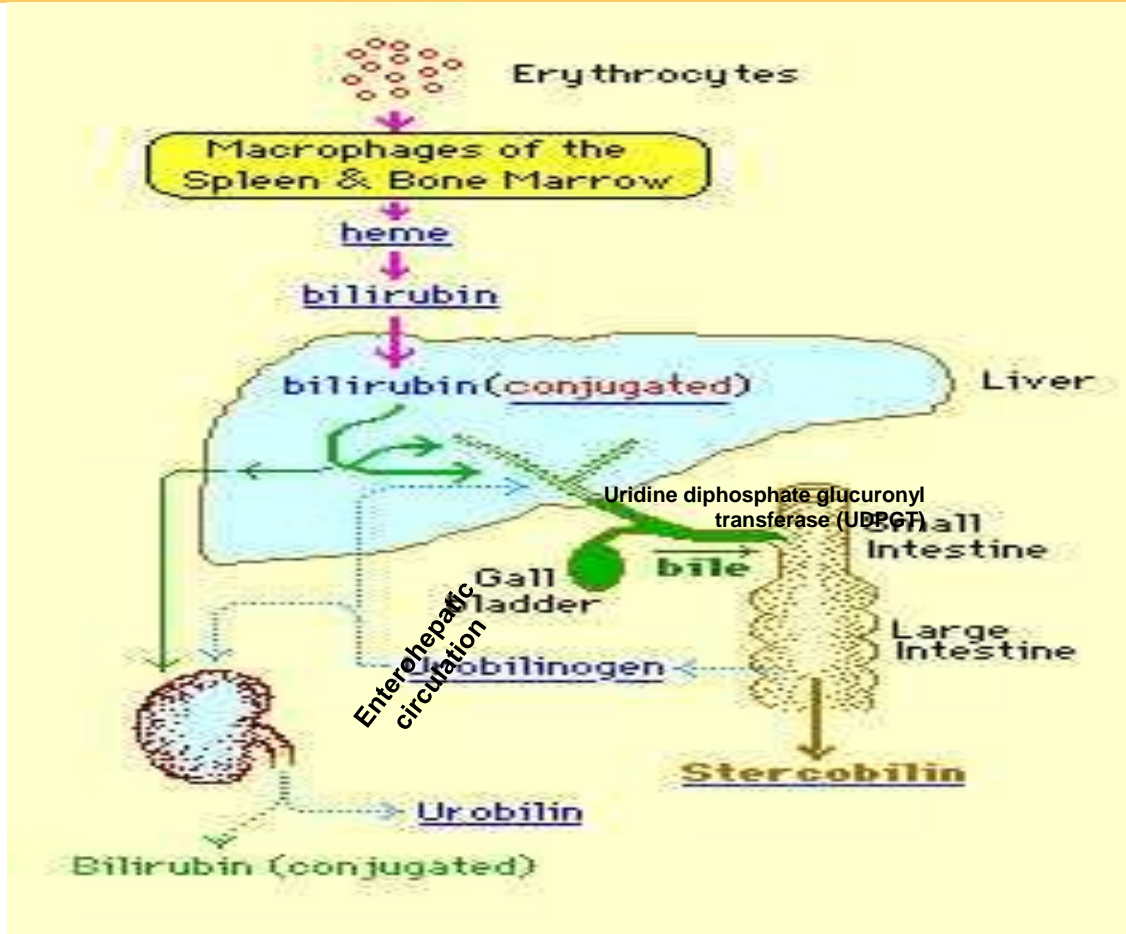
**RATE OF EXCRETION: LUMIRUBIN > •
4Z, 15E > PHOTOOXIDATION PRODUCTS**

**LUMIRUBIN APPEARS TO BE •
THE MAJOR FORM OF ELIMINATION**



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Bilirubin metabolism



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Types of neonatal jaundice

Bilirubin exists in two main forms in serum

Unconjugated bilirubin reversibly bound to .1
albumin

Conjugated bilirubin readily excretable via the .2
renal and biliary systems



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Causes of neonatal jaundice

Best classified by age of onset and duration:

Early: within 24 hrs of life **.1**

Intermediate: 2 days to 2 weeks **.2**

Late: persists for >2 weeks **.3**



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Causes of neonatal jaundice

Early	Intermediate	Late/prolonged
<ul style="list-style-type: none"> • Haemolytic causes: <ul style="list-style-type: none"> – Rh isoimmunisation – ABO incompatibility – G6PD deficiency • Congenital infection 	<ul style="list-style-type: none"> • Physiological jaundice • Breast milk jaundice (inadequate intake) • Sepsis • Haemolysis • Crigler-Najjar syndrome (glucuronyl transferase absent/reduced) • Polycythaemia, bruising 	<ul style="list-style-type: none"> • Conjugated (dark urine, pale stools): <ul style="list-style-type: none"> – Bile duct obstruction – Biliary atresia – Neonatal hepatitis • Unconjugated: <ul style="list-style-type: none"> – Physiological – Breast milk jaundice – Infection – Hypothyroidism



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Investigations for early jaundice

- Serum bilirubin level
- FBC and film
- Blood group
- Maternal blood group
- Direct coombs test
- Consider G6PD level



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When to start phototherapy?



Kramer's rule

Zone	Jaundice	Serum indirect bilirubin ($\mu\text{mol l}^{-1}$) Average
1	Limited to head and neck	100
2	Over upper trunk	150
3	Over lower trunk, thighs	200
4	Over arms, legs, below knee	250
5	Hands, feet	>250



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Phototherapy

Biliblanket



Phototherapy
lights



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Nursing Care for Infant Receiving Phototherapy.

- 1- Assure effective of phototherapy
- 2- provide eye protection .



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Nursing Care for Infant Receiving Phototherapy Cont'

3. Proper covering and shielding of gonad .
4. Assess skin exposure .
5. Proper position .



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Nursing Care for Infant Receiving Phototherapy Cont'

6. Assess and adjust thermoregulation device .
7. Promoting elimination and skin integrity .
8. Hydration.



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Nursing Care for Infant Receiving Phototherapy Cont'

9. Promoting infant parent interaction.
10. Monitoring bilirubin level.



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Minor side effect of phototherapy

1. Bronze – baby syndrome.
2. Loss , greenish stool .
3. Transient skin rashes.
4. Hyperthermia .
5. Increasing metabolic rate.
6. Dehydration .
7. Electrolyte disturbance .



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SUMMARY

**PHOTOTHERAPY- EFFECTIVE TREATMENT •
FOR NEONATAL JAUNDICE**

MECHNISM-IS WELL DEFINED •

**ACUTE EFFECTS ARE KNOWN AND •
MANAGEBLE**

**NO SIGNIFICANT ADVERSE OUTCOMES IN •
TERM INFANTS**

**SOME LINGERING CONCERNS IN LBW •
INFANTS-NEED FURTHER INVESTIGATION**



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Shhhhhhhhhhh
.. I want sleep

THANK YOU
FOR YOUR
ATTENSIION



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