

ASSESSMENT

Phototherapy Light

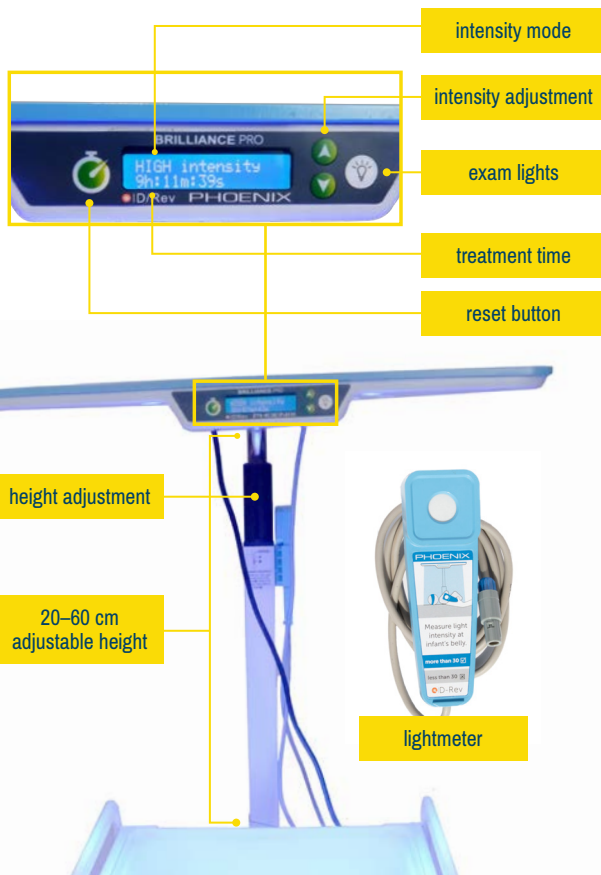
Phototherapy uses blue light transmitted onto the patient's skin to break down unconjugated bilirubin

USE FOR

Neonatal jaundice requiring treatment

STANDARD OF CARE

- Visible jaundice anywhere on the body on day 1 of life
- Jaundice extending below the umbilicus (level 3, see Kramer's Scale)
- Bilirubin level indicating need for treatment



Transcutaneous bilirubin and Kramer's Scale are less precise in determining serum levels after phototherapy has begun

Do not delay treatment while awaiting bilirubin laboratory results


1 ASSESS PATIENT

Assess for jaundice in natural or white light

If jaundiced, determine need for phototherapy based on **serum bilirubin measurement** or **physical exam**


2a BILIRUBIN MEASUREMENT AVAILABLE

Compare value to bilirubin tables (below) or nomograms to determine need for treatment

Treatment	Day of life	Healthy term baby	Premature < 35 wks, LBW or sick baby
Phototherapy Jaundice of these levels is treated with phototherapy	Day 1	Treat any visible jaundice with phototherapy	
	Day 2	15 mg/dL 260 µmol/L	10 mg/dL 170 µmol/L
	Day 3	18 mg/dL 310 µmol/L	15 mg/dL 260 µmol/L
	Day 4 onwards	20 mg/dL 340 µmol/L	17 mg/dL 290 µmol/L
Exchange Transfusion  Jaundice of these levels is dangerous and the baby requires urgent referral for possible exchange transfusion	Day 1	15 mg/dL 260 µmol/L	10 mg/dL 170 µmol/L
	Day 2	25 mg/dL 425 µmol/L	15 mg/dL 260 µmol/L
	Day 3	25 mg/dL 425 µmol/L	20 mg/dL 340 µmol/L
	Day 4 onwards	25 mg/dL 425 µmol/L	20 mg/dL 340 µmol/L

2b BILIRUBIN MEASUREMENT UNAVAILABLE

If **measurement** of serum bilirubin is **not timely or unavailable**, estimate serum bilirubin and determine need for phototherapy using Kramer's Scale (below)

1	4–6 mg/dL	70–100 µmol/L	
2	8–10 mg/dL	130–170 µmol/L	
3	12–14 mg/dL	200–240 µmol/L	
4	15–18 mg/dL	250–310 µmol/L	
5	15–20 mg/dL	250 to >340 µmol/L	
Area 1	Only start phototherapy if day 1 of life		
Areas 1 and 2	If premature, low birth weight or a sick term baby start phototherapy		
Areas 3, 4, or 5	Start phototherapy for all babies, including healthy term babies, especially if palms and soles (area 5) are jaundiced		

PREPARATION & TREATMENT

Phototherapy Light

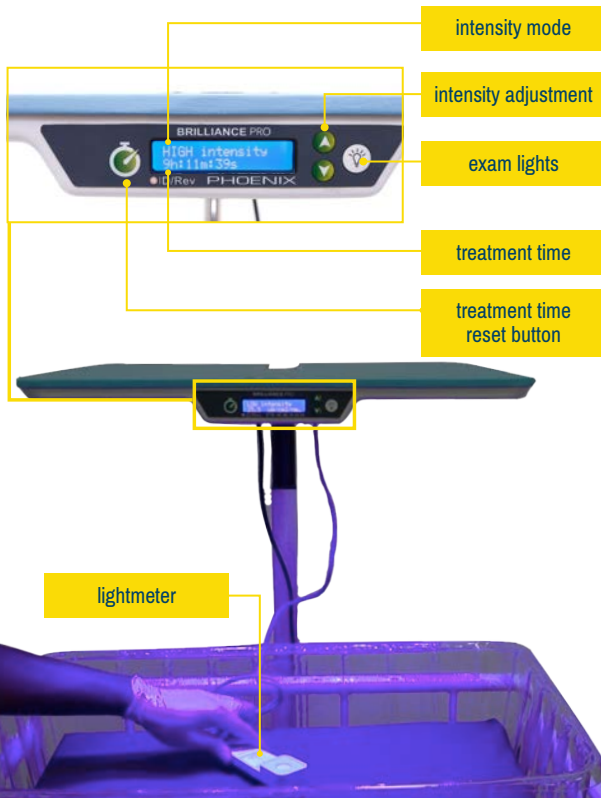
Blue light within the wavelengths of 425–475 nm² breaks down unconjugated bilirubin to a water soluble, non-toxic form that can be easily excreted

USE FOR

Patient with jaundice on physical exam or a bilirubin level requiring phototherapy

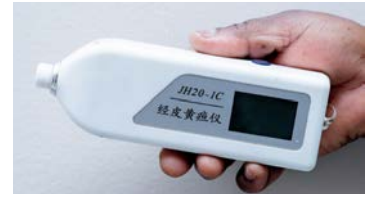
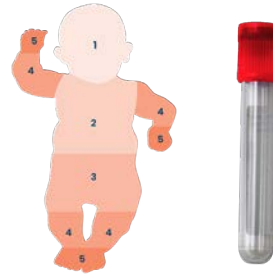
STANDARD OF CARE

- **Regular** phototherapy irradiance: **25–30 $\mu\text{W}/\text{cm}^2$**
- **Intensive** phototherapy irradiance: **30–35 $\mu\text{W}/\text{cm}^2$**



1 ASSESS PATIENT

Measure bilirubin to determine if phototherapy is indicated
Estimate bilirubin with **Kramer's Scale** if testing not available

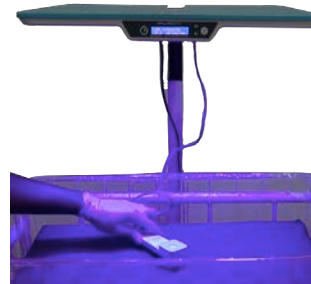


2 PREPARE DEVICE

Turn on the phototherapy light
Set irradiance to **regular** or **intensive**

Turn on lightmeter and hold near patient's mattress

Lower light to increase irradiance
OR raise to decrease as appropriate for clinical condition



3 PREPARE PATIENT

Follow hand washing protocol

Remove baby's clothes except for diaper

Place eye mask on patient so it fully covers the eyes

Place patient directly under the light



4 MONITOR PATIENT

During treatment:

- **begin thermal management with a radiant warmer if needed**
- **check daily bilirubin levels (if available)**
- **turn patient and check eye pad every 4 hours**
- **check for signs of dehydration, hypothermia, kernicterus or eye infection**

Minimise interruptions to treatment with the exception of feeding



5 REMOVE PATIENT FROM DEVICE

If bilirubin can be measured stop phototherapy when:

- **bilirubin 50 mmol/dL or 3 mg/dL below the level requiring treatment**
OR
- **jaundice is limited to area 1 in premature infants and areas 1 & 2 in term infants**



? COMPLICATIONS

- Dehydration
- Eye infections
- Hypothermia
- Bronze baby syndrome
- Retinal damage
- Kernicterus

! If jaundice persists despite 7 days of phototherapy conduct investigations for pathologic causes of jaundice

! DISINFECTION & INFECTION PREVENTION

- **Clean hands with soap and water or alcohol before and after handling phototherapy materials that will be used on patients**
- Disinfect phototherapy, lightmeter housing, and LCD controls using 70% alcohol
- Ideally use one phototherapy unit for a single patient

i Refer to the General Infection Prevention Module

REPAIR & MAINTENANCE

Phototherapy Light

Phototherapy devices are usually rolling units with brakeable caster wheels. Devices may be rolled from patient bed to patient bed as needed.



⚙️ DAILY MAINTENANCE

Always wipe the phototherapy unit with 70% alcohol using gauze or a cotton swab before first use and between patients

⚙️ PREVENTIVE MAINTENANCE

Test the phototherapy light weekly to ensure it is still providing a therapeutic range of 25–35 $\mu\text{W}/\text{cm}^2$ at 40 cm

If the light is **not turning on**

- Check that the power cable is securely attached to the phototherapy device
- Check that the switch and power outlet are turned on



If the light turns on but **only some bulbs are working**

- Check that phototherapy light is set on therapeutic rather than examination lights



examination lights



examination lights & phototherapy lights



phototherapy lights

- If you have confirmed that phototherapy lights are on and lights that do not show are treatment lights, contact your maintenance department to ask for replacement bulbs



CONTACT A TECHNICIAN OR MAINTENANCE DEPARTMENT IF DEVICE CONTINUES TO NOT WORK PROPERLY AFTER ADDRESSING THE COMMON ISSUES

