



NCCU CLINICAL GUIDELINES

SECTION: 10

METABOLIC MANAGEMENT

Section: 10 Metabolic Management  
Phototherapy  
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## PHOTOTHERAPY

The aim of this treatment is to lower the bilirubin level and to avoid exchange transfusion. In commencing phototherapy one must consider the age of the infant in hours, the diagnosis and the rate of rise of serum bilirubin.

Once phototherapy commences then repeat estimations of the bilirubin are essential, as the skin colour will no longer be a guide to the level. The frequency of blood sampling will depend on the diagnosis, gestational age and postnatal age of the infant.

Early feeding assists the elimination of meconium, reducing the available bilirubin for reabsorption and thus interfering with the enterohepatic circulation. Infants under phototherapy require additional fluid as a result of the increased insensible water losses. Total fluids should therefore be increased by 10-15%.

**There are no generally accepted total serum bilirubin levels at which to treat infants <35 weeks.** In the case of infants < 35 weeks, or infants with haemolysis, sepsis, dehydration or haemodynamic instability discuss each case with the neonatal consultant or senior registrar.

### GUIDELINES FOR PHOTOTHERAPY (PRETERM INFANTS <35WKS)

Age	Wt. < 1500g	Wt. 1500 – 2000g	Wt. > 2000g
< 24 hours	> 70 Bili Level	> 70 Bili Level	> 85 Bili Level
24 – 48 hours	> 85	> 120	>140
49 – 72 hours	> 120	> 155	> 200
> 72 hours	> 140	> 170	> 240

### GUIDELINES FOR PHOTOTHERAPY (INFANTS >35WKS)

The birthweight-based / gestation age graphs and guidelines of the American Association of Pediatrics should be taken as a guide. [Nomogram for phototherapy in infants >35 weeks](#)

**Risk Factors:** isoimmune haemolytic disease, G6PD deficiency, asphyxia, significant Lethargy, temp instability, sepsis, acidosis

### PHOTOTHERAPY UNITS

Phototherapy units available have differing energy outputs. The energy output is influenced by the age and type of the lights and is marked on each individual unit in microwatts per cm<sup>2</sup> (uW/sq cm). The higher the 'uW/sq cm' the more efficient the unit is. The efficacy of phototherapy is based on which light source is used, the distance of the light source from the infant and the area of the infant's skin exposed to the light.

Select a phototherapy unit that is suitable for the task. The higher the SBR the more energy output will be required for successful treatment. Fluorescent tubes degrade with use, and stated values below are nominal and assume new tubes. In general the microlite, medela and biliblanket have significantly more energy output than the standard 6 tube.

Microlite - ~1450 - 1700 uW/sq cm  
Medela (blue/white light) ~1400 uW/sq cm  
Medela blue light ~1300 uW/sq cm (NB. Blue light used alone masks colour changes)  
Medela white light ~ 200 uW/sq cm  
Standard 6 tube white light ~ 250 - 400 uW/sq cm  
Biliblanket. ~ 40 – 50 uW/cm<sup>2</sup>

Once phototherapy commences, monitor SBR levels. The frequency of blood sampling will depend on the diagnosis, gestational age and postnatal age of the infant.

## PROCEDURE

1. Take baseline temperature. Temperature regulation initially may be a problem and therefore needs to be closely monitored until stable. Maintain a NTE that is appropriate for the infant's age and gestation.
2. Remove all of the infants clothing. Unfasten the nappy.
3. Completely cover the eyes with appropriate size eye pad without applying excessive pressure and taking care not to occlude the nares. Remove every 4 hrs to permit evaluation of infant's eyes and leave off whenever phototherapy unit is off, i.e. parents visits, feeding, care times. Replace pads 24hrly or as needed. Eye toilets with N/Saline/sterile cotton wool may be required.
4. Adjust fluids as ordered. Usually fluid volumes >10% -15% to account for increased insensible water loss. Check urine SG, PGL, U&Es etc. as ordered.
5. Check unit height – 40cms away from infant (excluding biliblanket).
6. Document start time and type of unit in use on MR489/491.
7. Supportively position infant utilising positional aids. Reposition / cares as appropriate for gestation.
8. Check repeat SBR levels as ordered. Remember to turn off unit when taking blood.
9. Encourage parenteral contact and involvement. It is rarely necessary to cease suck feeds.
10. If diarrhoea develops maintain skin integrity with good hygiene.

## CEASING PHOTOTHERAPY

Phototherapy is ceased when the following criteria are met:

- SBR is low enough to eliminate the risk of kernicterus
- The infant is old enough to handle the bilirubin load.
- Document the cessation of lights in the relevant notes.