

10 CARE OF NEONATE

10.5 COMPLICATIONS OF THE NEONATE

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10.5.2 Neonatal Jaundice
Section B
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10.5.2 NEONATAL JAUNDICE

This guideline has been formulated with additional information available from KEMH Neonatology Clinical Guideline, Section 10 Metabolic management:

- [Jaundice](#)
- [Phototherapy](#)

AIM

- To recognise risk factors for causing neonatal jaundice.
- To monitor neonatal jaundice and provide interventions to prevent hyperbilirubinemia which results in kernicterus and neurological sequelae.
- To minimise the risk of unintended harm such as increased maternal anxiety, decreased breastfeeding or unnecessary treatment.

BACKGROUND INFORMATION

Up to 60% of normal neonates will become clinically jaundiced in the first week of life.¹ Neonatal bilirubin levels at birth are quite high due to circulating erythrocytes which have a shortened lifespan in neonates.²

Bilirubin is produced from the breakdown of haemoglobin, and is normally cleared from the body by liver conjugation with glucuronic acid to become water soluble, is then eliminated in bile and excreted in faeces or urine. A liver enzyme responsible for bilirubin conjugation becomes slowly effective after birth, and the liver takes several days to become efficient at coping with high turnover of haemoglobin. A rise of unconjugated bilirubin in the blood and deposition in the skin leads to visible jaundice in a third or more of term neonates, and is termed 'physiological jaundice'.³

If the rate of bilirubin production exceeds the rate of elimination, it causes a rise of total serum bilirubin concentration, resulting in unconjugated hyperbilirubinemia or jaundice. However, if conjugated bilirubin remains in the body because of the inability of the body's to remove it, the resulting jaundice can be seen to be caused by a defect or insufficiency of bile secretion or biliary flow.⁴

KEY POINTS

1. Neonates less than 38 weeks gestation, particularly those who are breastfed, are at higher risk for developing hyperbilirubinemia.⁵
2. Breastfeeding mothers should be advised to breastfeed the neonate 8 – 12 times a day for several days to decrease risk of hyperbilirubinemia.⁵
3. The neonate should be observed at least every 8-12 hours for signs of jaundice.⁵

4. All neonates with jaundice should have the area/site documented and be assessed by either transcutaneous bilirubinometry (JM 103 Jaundice Meter preferred method) or the Kramer rule (only to be used if the Jaundice meter is unavailable) and be referred for paediatric review.
5. Neonates who are jaundiced within 24 hours of births should have SBR levels measured.⁵
6. Transcutaneous bilirubinometry should be performed if the jaundice appears excessive for the neonate's age, or if there is any doubt about the degree of jaundice.⁵
7. The JM-103 Jaundice Meter shall only be used by clinicians who have received instruction in its use.
8. If the clinician has any concerns regarding the values being presented by the JM 103 for bilirubin concentration, contact the paediatrician immediately for a determination as to whether supportive laboratory blood serum analysis is required or infant retest is appropriate.
9. SBR levels will depend on the zone in which the level falls, the age of the infant, and the course of the hyperbilirubinemia.⁵ (see table below).
10. Visual estimation of jaundice may lead to errors, especially in dark pigmented skin.⁵
11. All bilirubin levels should be plotted and interpreted on a graph according to the neonate's age in hours.⁵
12. Neonates who are receiving phototherapy or in whom the SBR level is rapidly rising and is not explained by the medical history or physical examination should be further investigated for possible causes.⁵
13. Sunlight exposure is not recommended as a reliable therapeutic tool for jaundice treatment.⁵

CAUSES OF NEONATAL JAUNDICE

See [Neonatal Clinical Guidelines Section 10 Jaundice](#).

ASSESSMENT OF THE JAUNDICED INFANT

- All neonates over 35 weeks gestation should be assessed every 8 to 12 hourly for jaundice and the findings documented on the MR 425.10 Care of the well neonate form.⁵
- Document jaundice on the MR 425.10 Care of the well neonate form, and the MR 420 Neonatal inpatient progress sheet. Arrange paediatric review.
- Jaundice can be detected in the neonate when the serum level is 80-90umols/l.
- Assessment can be performed by transcutaneous bilirubinometry (JM 103 Jaundice Meter) (preferred method) or using the Kramer rule (only to be used if the Jaundice meter is unavailable).

SCREENING FOR HYPERBILRUBINAEMIA IN INFANTS USING THE JM-103 JAUNDICE METER (TCB MEASUREMENT)

TcB measurements are used to screen the well term infant **who is greater than 24 hours of age** to determine the need for a formal SBR. In addition to the TcB reading it is essential to consider the presence of any risk factors associated with moderate to severe jaundice in the term infant.

- Jaundice < 24 hours of age: **Do an SBR**. See NCCU guidelines 'Jaundice' for additional investigations.
- Jaundice > 24 hours of age plus risk factors (maternal antibodies; history of G6PD): **Do an SBR** – see NCCU guideline 'Jaundice' for additional investigations.
- Jaundice 24-48 hours of age in the well infant / no risk factors: If **TcB > 140µmol / L Do an SBR**

- Jaundice 48-72 hours of age in the well infant / no risk factors: **If TcB > 200µmol /L: Do an SBR**
- Jaundice > 72 hours of age in the well infant / no risk factors: **If TcB > 260µmol / L: Do an SBR**

KRAMER'S RULE

Kramer's rule may be used to assess level of jaundice



KRAMER'S RULE		
Zone	Jaundice	Serum Indirect Bilirubin (μMol^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 knees	250
5	Hands, feet	>250

The technique depends on blanching of the neonate's skin with the examiner's finger at the different zones and observing the colour of the blanched area.⁶

Visual estimation regarding the degree of jaundice can lead to errors, particularly in darkly pigmented skin.⁵ Arrange paediatric review if there is any doubt.

Note: The age of the neonate must be calculated from date and time of birth, not the hospital days from birth.⁵

MANAGEMENT OF JAUNDICE

1. Arrange review by a paediatrician if a neonate is jaundiced.
2. Medical history and physical examination will determine diagnosis and ongoing management.
3. [See Clinical Guidelines, Section B 10.5.2.1 Phototherapy](#) if jaundice requires phototherapy treatment.

REFERENCES

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