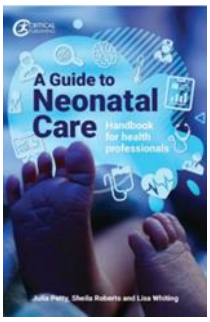
Chapter 10 Assessment and screening within the clinical neonatal setting



A Guide to Neonatal Care - Handbook for Health Professionals
Petty J, Whiting L and Roberts S (2024) Critical Publishing

Supplementary information

The monitoring and measurement of vital signs and clinical assessment are core essential skills for all health care practitioners working with neonates, infants, children and young people. This Royal College of Nursing (2017) guidance applies to professionals who work in acute care settings, as well as those who work in GP surgeries, walk-in clinics, telephone advice and triage services, schools and other community settings - Standards for Assessing, Measuring and Monitoring Vital Signs in Infants, Children and Young People

In terms of clinical assessment, the video clips below show some abnormal signs in neonates.

https://www.what0-18.nhs.uk/resources/clips-abnormal-signs-babies

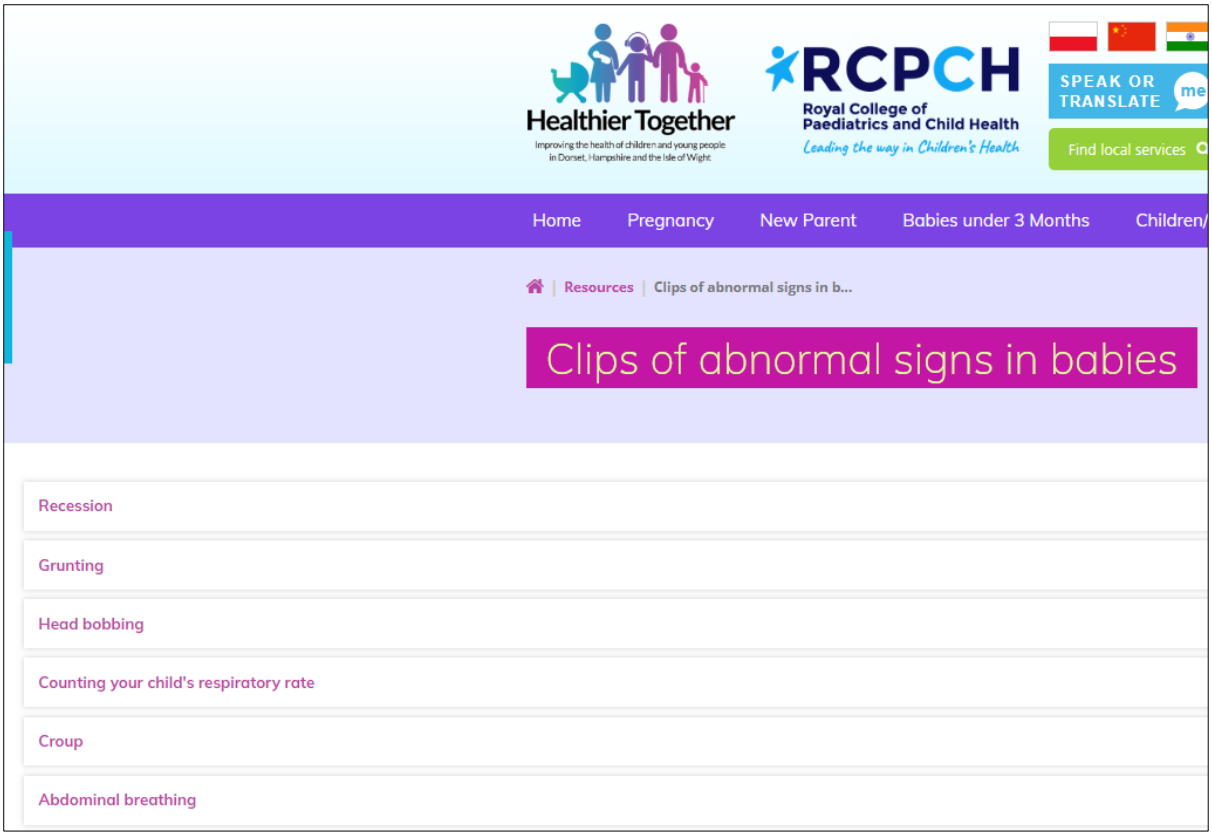


Figure 10.1 - A guide to assessing the Apgar score, cyanosis & jaundice in Black and minority ethnic newborn babies (adapted from NHSRHO, 2023)

Apgar scoring – assessing 'colour'

Stop and think: The terminology "pink" causes confusion particularly the terms "pink all over" or "all pink." Pink and blue on darker skins is not always easy to see. No consideration is often given to how "pink" may be assessed in Black, Asian, and ethnic minority neonates.

ACTION- assess colour by observing the oral mucosa (i.e., around and inside the lips) and look for pink hands and soles of feet.

Cyanosis - assessing oxygenation

Stop and think: Guidelines and training resources suggest observing a neonate for change in colour to identify cyanosis, respiratory distress, or heart abnormalities (but colour change may not be as apparent in infants with darker skin and may remain unobserved by parents and professionals, with the deterioration of Black, Asian, or minority ethnic neonates.

ACTION- Use pulse oximetry assess for oxygenation as this is more reliable than assessing the skin. If pulse oximeter is not available, see above- observe mouth mucosa and lips.

Assessing jaundice

Stop and think: Awareness of differences in babies from diverse ethnic backgrounds is important. The detection of jaundice in neonates is primarily done via visual assessment, which has been recognised to be subjective, particularly in infants with Black or dark skin.

ACTION- Use transcutaneous bilirubinometer if available. If not, do clinical assessment by observing the sclera of the eyes and or mouth and gums.

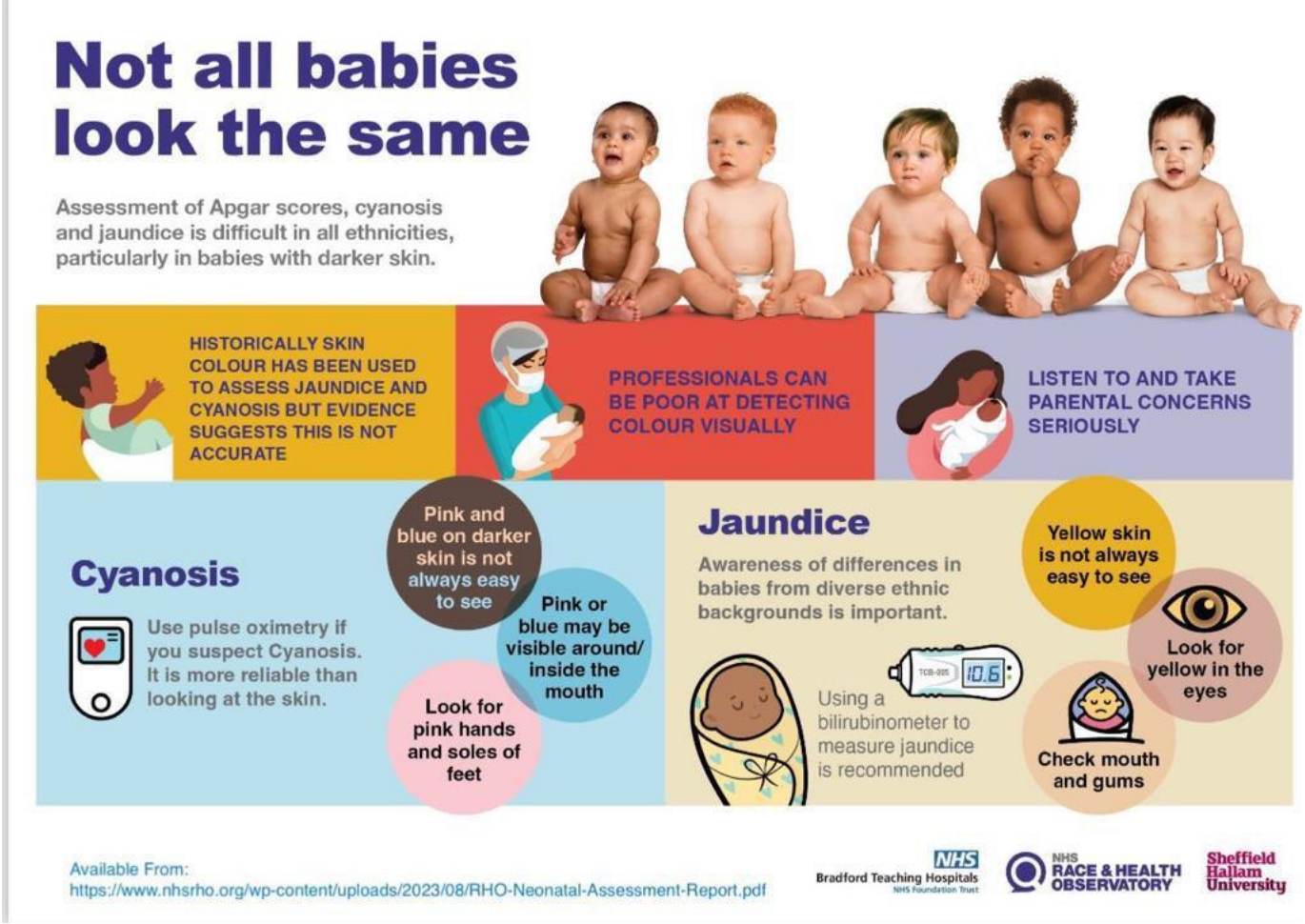
EXTRA READING – Read / or download the full guidance, the Executive summary, or the Lay summary here……. NHS Race and Health Observatory (NHSRHO) (2023)
Neonatal assessment and practice in Black, Asian and minority ethnic newborns: Assessing Apgar score, cyanosis and jaundice

Recommendations from the NHSRO (2023)

Several recommendations have been made for healthcare policy, providers and researchers, including:

- Immediate update of all guidelines that refer to neonatal assessment by skin colour.
- Medical devices should be used to detect jaundice and cyanosis. E.g., wider availability and use of transcutaneous bilirubinometers for jaundice assessment and pulse oximetry for assessing oxygenation.
- Improved education for parents and families to be able to spot the signs of jaundice.
- A bank of open access images of Black, Asian and ethnic minority neonates to be included in health care education and training.
- Education and training for healthcare professionals on clinical assessment on neonates from Black, Asia and minority ethnic backgrounds.
- Further studies into reliability of using Apgar score and how healthcare professionals use this when assessing babies from Black, Asian or minority ethnic backgrounds.

See infographic – 'Not all babies look the same'.



Glossary

Antenatal: the period of time before birth.

Apnoea: The absence of breathing.

Bradycardia: Slow heart rate.

Bradypnoea: Slow breathing rate.

Cardiotocography: A means of recording the foetal heartbeat and the uterine contractions during pregnancy.

Chest percussion: A manual technique using cupped hands to loosen secretions.

Continuous positive airway pressure (CPAP): A constant positive airway pressure either set at one level or two alternating levels, is applied to the airway of a spontaneously breathing neonate to maintain adequate functional residual capacity within the alveoli and prevent atelectasis.

Desaturations: Reduction in blood oxygen concentration.

Fontanelles: Gaps or soft spots on an infant's head where the bony plates that make up the skull have not yet fused together.

Germinal matrix: A highly cellular and vascularised area of the brain from which cells migrate during foetal brain development.
Gestation: The period of time between conception and birth.

Hypercapnia: Higher than normal levels of carbon dioxide in the circulating blood.

Hyperglycaemia: A whole blood glucose concentration of >8 mmol/l.

Hyperoxia: Excess oxygen in the cells and tissues.

Hypertension: Higher than normal range of blood pressure.

Hyperthermia: Body temperature above the normal range**.**
Hypertonia: Increased muscle tone may include muscle spasms or stiffening.

Hypocapnia: Lower than normal levels of carbon dioxide in the circulating blood.

Hypoglycaemia: Low blood sugar level, below 2.6mmol/litre in a neonate

Hypotension: Lower than normal range of blood pressure (Mean blood pressure <40mmHg in term / <30mmHg in a preterm baby).

Hypothermia: Body temperature below 35 degrees Celsius.

Hypotonia: Decreased muscle tone or floppy limbs.

Hypoxia: Deficiency in the amount of oxygen reaching the tissues.

Immunoglobulins: also known as antibodies, necessary to fight infections.

Jaundice: The yellowing of the skin, mucous membranes, and the whites of the eyes that occurs when the body does not process bilirubin as it should resulting in hyperbilirubinaemia

Keratin: Fibrous structural protein of epithelial cells in the stratum corneum of the skin.

Lanugo: Soft, thin hair that is found on the body of a foetus or newborn. It usually appears around sixteen weeks of gestation.
Lung auscultation: Assessment of air flow through the trachea and bronchi.

Pathological jaundice: Due to a disease process appearing with a rapid onset on day 1 of life.

Perinatal: The time immediately before and after birth.

Physiological jaundice: Due to the normal process of red blood cell breakdown appearing after 3 days of life.

Pinna: The external part of the ear.

Plantar creases: Creases on the sole of the foot

Polyuria: Increased production of dilute urine.

Pre-term: Relates to babies who are born alive before 37 weeks gestation.

Retinopathy: An abnormal growth of blood vessels in the eye, occurring only in preterm babies exposed to high oxygen concentrations. It can lead to the formation of scarring that can damage the eye's retina.

Sickle cell: A haemoglobinopathy that affects the normal oxygen carrying capacity of red blood cells due to abnormal, sickle cell shaped haemoglobin.

Surfactant: A substance that reduces the surface tension within the lung alveoli allowing them to expand in normal breathing.

Tachycardia: Rapid heart rate, above the normal expected range.

Tachypnoea: A rapid respiratory rate, above the normal expected range.

Transcutaneous oxygen: A measurement of oxygen diffused from capillaries measured through the epidermis.

EXTRA READING – Read more about

- Lean R E, Smyser C D and Rogers C E (2017) **Assessment: The Newborn**. *Child Adolesc Psychiatr Clin N Am*. 26(3):427-440.

- Royal College of Paediatrics and Child Health (2022) **Screening of retinopathy of prematurity (ROP) - clinical guideline**

- Read or download the guidance on assessing babies with non-Caucasian skin tones from the National Health Service (NHS) Race and Health Observatory (2023). **Review of neonatal assessment and practice in Black, Asian and minority ethnic newborns: Exploring the Apgar score, the detection of cyanosis and jaundice**

- Read or download the **'Mind the Gap' (2020) handbook of clinical signs in black and brown skin** by Mukwende M, Tamonv P and Turner M
