Queensland Clinical Guidelines

Translating evidence into best clinical practice

Maternity and Neonatal **Clinical Guideline**

Newborn baby assessment (routine)

Queensland Government

Document title:	Newborn baby assessment (routine)
Publication date:	November 2021
Document number:	MN21.4-V7-R26
Document supplement:	The document supplement details development processes and implementation activities, and is integral to and should be read in conjunction with this guideline.
Amendments:	Full version history is supplied in the document supplement.
Amendment date:	February 2025
Replaces document:	MN21.4-V6-R26
Author:	Queensland Clinical Guidelines
Audience:	Health professionals in Queensland public and private maternity and neonatal services
Review date:	November 2026
Endorsed by:	Queensland Clinical Guidelines Steering Committee Statewide Maternity and Neonatal Clinical Network (Queensland)
Contact:	Email: Guidelines@health.qld.gov.au URL: www.health.qld.gov.au/qcg

Acknowledgement

The Department of Health respectfully acknowledges the Traditional Owners and Cultural Custodians of the lands, waters and seas across Queensland. We pay our respects to Elders past and present, while recognising the role of current and future leaders in shaping a better health system.

Disclaimer

This guideline is intended as a guide and provided for information purposes only. The information has been prepared using a multidisciplinary approach with reference to the best information and evidence available at the time of preparation. No assurance is given that the information is entirely complete, current, or accurate in every respect.

The guideline is not a substitute for clinical judgement, knowledge and expertise, or medical advice. Variation from the guideline, taking into account individual circumstances, may be appropriate.

This guideline does not address all elements of standard practice and accepts that individual clinicians are responsible for:

- Providing care within the context of locally available resources, expertise, and scope of practice
- Supporting consumer rights and informed decision making, including the right to decline intervention or ongoing management
- Advising consumers of their choices in an environment that is culturally appropriate and which enables comfortable and confidential discussion. This includes the use of interpreter services where necessary
- Ensuring informed consent is obtained prior to delivering care
- Meeting all legislative requirements and professional standards
- Applying standard precautions, and additional precautions as necessary, when delivering care
- Documenting all care in accordance with mandatory and local requirements

Queensland Health disclaims, to the maximum extent permitted by law, all responsibility and all liability (including without limitation, liability in negligence) for all expenses, losses, damages and costs incurred for any reason associated with the use of this guideline, including the materials within or referred to throughout this document being in any way inaccurate, out of context, incomplete or unavailable.

Recommended citation: Queensland Clinical Guidelines. Newborn baby assessment (routine). Guideline No. MN21.4-V7-R26. Queensland Health. 2025. Available from: http://www.health.qld.gov.au/qcg

Flow Chart: Routine newborn baby assessment

Preparation

Family centred care
- Consider cultural needs
- Discuss with parents: purpose, process, timing and limitations of assessments
- Ask about parental concerns
- Encourage participation

Timing
- Initial exam immediately after birth and any resuscitation
- Full and detailed assessment within 48 hours and always prior to discharge
- Follow-up 5–7 days and 6 weeks
- If unwell/premature–stage as clinically indicated

Review history
- Maternal medical/obstetric/social and family
- Current pregnancy
- Labour and birth
- Sex, gestational age, Apgar scores and resuscitation
- Since birth–medications, observations, feeding

Environment–consider:
- Warmth, lighting
- Correct identification
- Infection control precautions
- Privacy

Equipment–prepare:
- Overhead warmer if required
- Stethoscope
- Ophthalmoscope
- Tongue depressor & glove
- Pencil torch
- Tape measure, infant scales, growth charts
- Pulse oximeter
- Documentation
  - o Infant Personal Health Record
  - o Medical record
  - o Neonatal clinical pathway

Discharge

Review discharge criteria
- Observations, feeding, output
- Vitamin K
- Hepatitis B vaccination

Discuss
- If < 24 hours of age, when to seek urgent medical assistance
- Routine screening (e.g. hearing, NBST, pulse oximetry)
- Childhood immunisation program
- Support agencies
- Newborn care
- Health promotion
- Medications as indicated
- Personal Health Record (red book)
- Referral and follow-up
  - o Routine 5–7 days & 6 weeks

Assessment

General appearance
- Skin colour, integrity, perfusion
- State of alertness
- Activity, range of spontaneous movement
- Posture, muscle tone

Growth status
- Chart head circumference, length, weight on centile charts

Head, face, neck
- Head shape, size
- Scalp, fontanelles, sutures
- Eye size, position structure
- Nose, position, structure
- Ear position, structure
- Mouth, palate, teeth, gums tongue, frenulum
- Jaw size

Shoulders, arms, hands
- Length, proportions, symmetry
- Structure, number of digits

Chest
- Size, shape, symmetry, movement
- Breast tissue, nipples
- Heart sounds, rate, pulses
- Breath sounds, resp rate
- Pulse oximetry

Abdomen
- Size, shape, symmetry
- Palpate liver, spleen, kidneys
- Umbilicus

Genitourinary
- Male–penis, foreskin, testes
- Female–clitoris, labia, hymen
- Anal position, patency
- Passage of urine and stool

Hips, legs, feet
- Ortolani and Barlow's manoeuvres
- Leg length, proportions, symmetry and digits

Back
- Spinal column, skin
- Symmetry of scapulae, buttocks

Neurological
- Behaviour, posture
- Muscle tone, spontaneous movements
- Cry
- Reflexes–Moro, suck, grasp

Discuss Document Refer
- Discuss findings with parents
- Document in health record(s)
- Refer as indicated

Indications for further investigation and/or urgent follow-up are not exhaustive. Use clinical judgement

Further investigation ☑ Urgent

Growth and appearance
- Dysmorphic features
- Excessive weight loss

☑ **Jaundice < 24 hours of age**
☑ **Central cyanosis**
- Petechiae new/unrelated to birth
- Pallor, haemangioma

Head and neck

☑ **Enlarged/bulging/sunken fontanelle**
- Macro/microcephaly

☑ **Subgaleal haemorrhage**
- Caput, cephalhaematoma
- Fused sutures
- Facial palsy/asymmetry on crying
- Hazy, dull cornea; congenital cataract
- Absent red eye reflex
- Pupils unequal/dilated/constricted
- Purulent conjunctivitis/yellow sclera

☑ **Nasal obstruction**
- Dacryocyst; cleft lip/palate
- Unresponsive to noise
- Absent ear canal or microtia
- Ear drainage
- Small receding chin/micrognathia
- Neck masses, swelling, webbing
- Swelling over or fractured clavicle

Upper limbs
- Limb hypotonia, contractures, palsy
- Palmar crease pattern

Chest

☑ **Respiratory distress**
☑ **Apnoeic episodes**
- Abnormal HR, rhythm, regularity
- Heart murmurs

☑ **Weak or absent pulses**
☑ **Positive pulse oximetry**

Abdomen

☑ **Organomegaly**
☑ **Gastrochisis/exomphalos**
☑ **Bilateral undescended testes**
☑ **Bilious vomiting**
- Inguinal hernia
- Signs of umbilical infection

Genitourinary

☑ **No urine/meconium in 24 hours**
☑ **Ambiguous genitalia**
☑ **Testicular torsion**
- Hypospadias, penile chordee micropenis, hydrocele

Hips, legs and feet
- Risk factors for hip dysplasia
- Positive/abnormal Barlow's and/or Ortolani manoeuvres
- Contractures/hypotonia
- Talipes
- Developmental hip dysplasia

Back
- Curvature of spine
- Non-intact spine
- Tufts of hair/dimple along intact spine

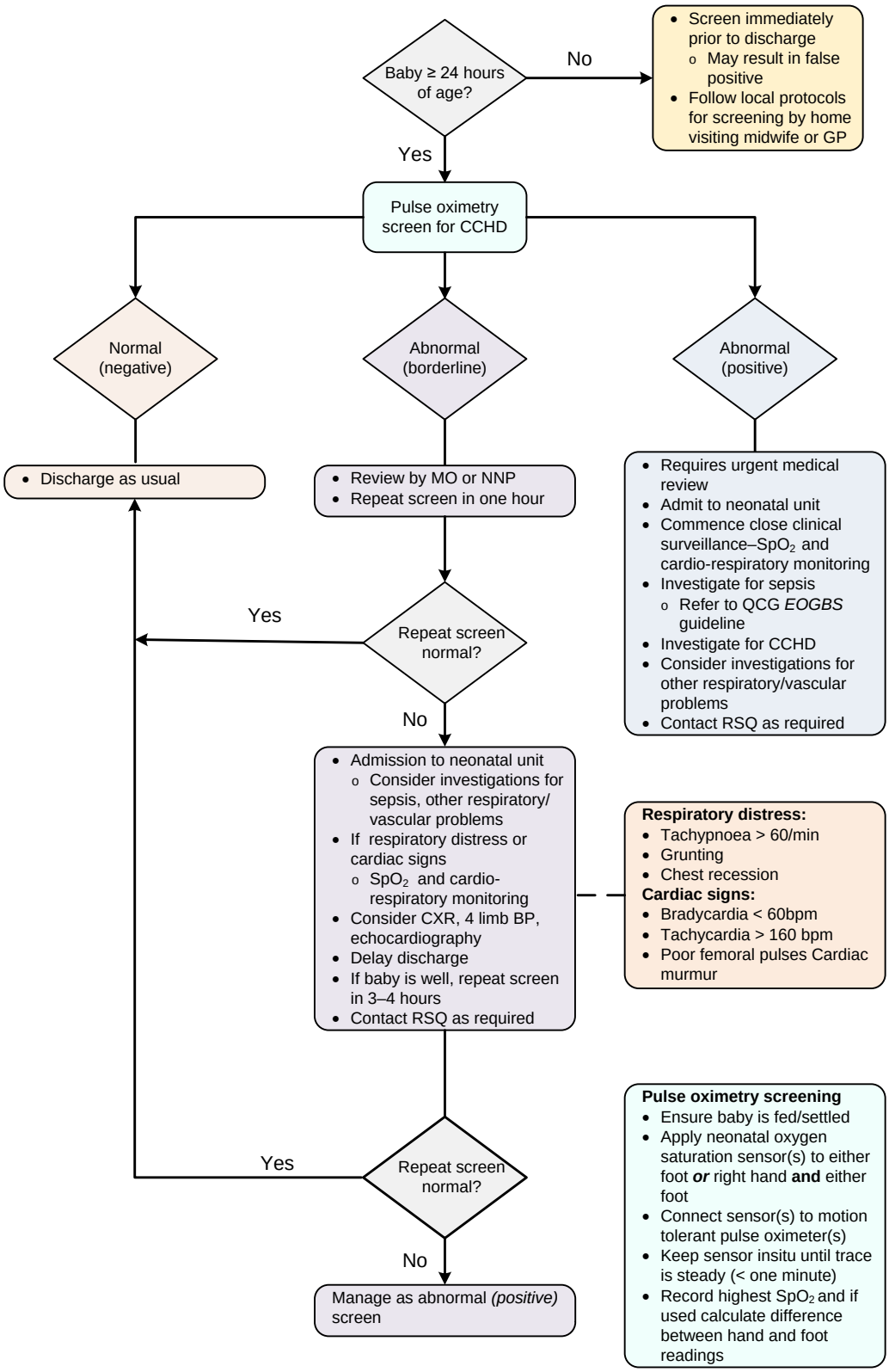
Neurological
- Weak/irritable/absent cry
- Absent/exaggerated reflexes
- No response to consoling

☑ **Seizures**
☑ **Altered state of consciousness**

☑ **Urgent follow-up**; **GP:** general practitioner; **HR**: heart rate, **NBST**: newborn screening test, **SUDI**: sudden unexpected death in infancy, **<:** less than

Flowchart: F21.4-1-V6-R26

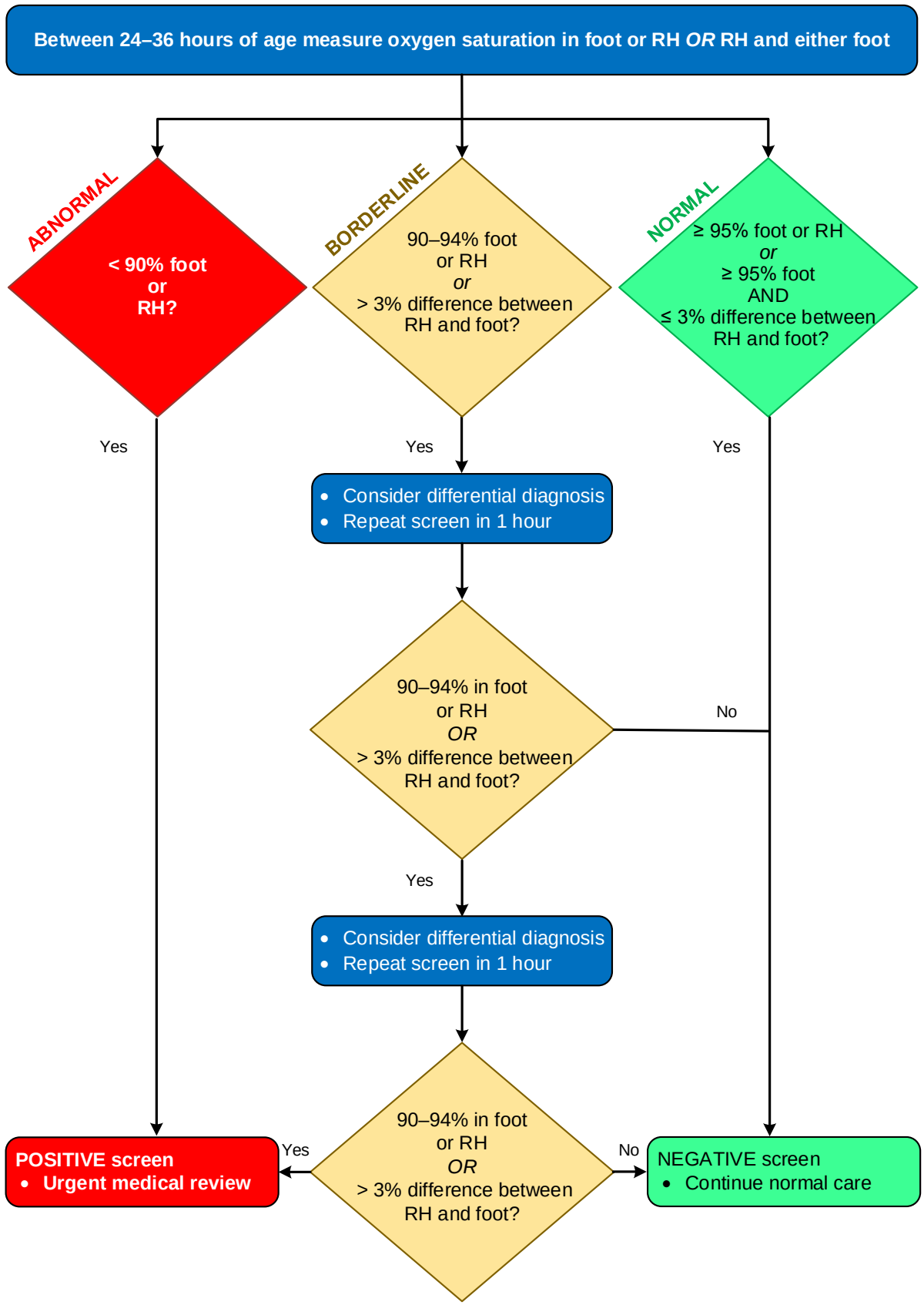
Flow Chart: Management of newborn baby during pulse oximetry screening for CCHD



CCHD: critical congenital heart disease; **BP:** blood pressure, **bpm:** beats per minute, **CXR:** chest X-ray, **EOGBS:** early onset Group B Streptococcus, **GP:** general practitioner; **HR:** heart rate, **min:** minute, **MO:** medical officer, **NNP:** neonatal nurse practitioner, **QCG:** Queensland Clinical Guidelines, **RSQ:** Retrieval Services Queensland, **SpO_2:** oxygen saturation, **>:** greater than; **≥:** greater than or equal to; **<:** less than; **≤** less than or equal to

Flowchart: F21.4-2-V1-R26

Flow Chart: Pulse oximetry screening of newborn baby for critical congenital heart disease



RH: right hand, **>:** greater than; **≥:**greater than or equal to; **<:** less than; **≤:** less than or equal to

Table of Contents

List of Tables

Abbreviations

CCHD	Critical congenital heart disease
GP	General practitioner
NBST	Newborn bloodspot screening test
NEWT	Newborn early waring tool
SpO_2	Peripheral oxygen saturation
SUDI	Sudden and unexpected death in infancy

Definitions

Family centred care	Is an approach to the planning, delivery and evaluation of health care that is grounded in mutually beneficial partnerships among health care providers, patients and families; and incorporates the core concepts of respect and dignity, information and sharing, participation and collaboration.[1,2]
Newborn baby	A recently born infant in the first minutes to hours following birth.[3]
Neonatal unit	In this document 'neonatal unit' may be interpreted to mean neonatal observation or stabilisation area, unit or equivalent as per local terminology.
Newborn baby assessment	In this document 'newborn baby assessment' is a broad term referring to the assessment of the newborn occurring at various points in time within the first 6–8 weeks after birth. It includes the brief initial assessment, the full and detailed newborn assessment within 48 hours of birth and the follow-up assessments at 5–7 days and 6 weeks of age.
Urgent follow-up	Immediate and/or life-threatening health concern for the newborn requires urgent (same day) follow-up.
Positive screen	Means the screening test has detected an increased likelihood of having disease, anomaly or condition.

1 Introduction

Every newborn baby requires a brief physical examination within the first few minutes after birth, and then a full and detailed assessment within the next 48 hours and prior to discharge from hospital.[4] A follow up assessment is required after hospital discharge at five to seven days (by a general practitioner (GP) or midwife), and then at 6 weeks of age. The physical examination is the most important screen for major occult congenital anomalies.

1.1 Clinical standards

Table 1. Clinical standards

Aspect	Consideration
Model of care	• Adhere to the principles of family centred care when assessing the newborn baby o Refer to Queensland Clinical Guideline: *Standard care*[5] • Perform the examination with at least one parent present[4] • Provide information to parents in a complete, unbiased and timely manner to support effective participation in their baby's care and any decision making
Clinician	• Develop local protocols regarding clinicians responsible for performing the newborn baby examination[4] • Develop local protocols for clinicians regarding: o Training and skills maintenance in newborn baby assessment[4,6,7] o Recognising and managing variances, seeking guidance as required, and referring appropriately[8]
Documentation	• Complete the baby's Personal Health Record ('red book') o Explain the booklet's purpose to the baby's parents

2 Initial examination and assessment after birth

Complete the initial brief assessment immediately after birth on all babies following any resuscitation (if required). (Refer to Queensland Clinical Guideline: *Neonatal resuscitation*.[6]

Table 2. Initial examination and assessment

Aspect	Consideration
Brief initial exam	• Assess the baby for[4]: o Successful transition to extra-uterine life o Any obvious dysmorphic features or gross anomalies that will require immediate attention or discussion with the family • Confirm baby's sex[4] • Be flexible with the timing of this initial examination and assessment • Do not restrict skin-to-skin contact and allow the healthy baby to spend time with their parents[4]
Hypoxic ischaemic encephalopathy	• If the baby had a perinatal event and/or acidosis assess baby for therapeutic hypothermia criteria and management as indicated • Refer to Queensland Clinical Guideline: *Hypoxic-ischaemic encephalopathy*[9]
Newborn observations	• Commence newborn vigilance observations and document on appropriate newborn early warning (NEWT) tool[10] (dependent on service level of facility as per Clinical Services Capability Framework)[10,11] • Assess, record and (if indicated) action baby's vital signs: o Every 15 minutes for two hours following birth–colour, position (for airway patency), respiration rate and any respiratory distress o Within 1 hour of birth–heart rate, temperature and oxygen saturation o Every eight (after initial 2 hours following birth)–respiratory rate, respiratory distress, temperature, heart rate, colour • If baby has signs of respiratory distress or has any oxygen requirement, monitor and record oxygen saturations • Refer to NEWT[12] and Neonatal clinical pathway[13]
Hypoglycaemia	• If baby has risk factor(s) for hypoglycaemia commence blood glucose monitoring • Refer to Queensland Clinical Guideline: *Hypoglycaemia-newborn*[14]
Sub-galeal	• Risk of sub-galeal haemorrhage (SGH) is increased after an instrumental birth[15] or as clinically indicated • If attempted or actual instrumental birth or as clinically indicated refer to NEWT for scalp examination including: [16] o Inspection and palpation of the scalp and nape of the neck o Head circumference measurements • If ballotable mass or free fluid in the scalp or nape of neck, or ear displacement–escalate care as a medical emergency • If asymmetrical head, caput succedaneum, cephalhaematoma, new or increased bruising or abrasion–urgent follow up

3 Full and detailed newborn baby assessment

3.1 Principles of assessment

Table 3. Principles of assessment

Aspect	Consideration
Purpose	• Identify the baby who is acutely unwell and requires urgent treatment • Review any concerns the family have about the baby and attempt to address them • Review any problems arising or suspected from antenatal screening, family history or labour (e.g. mental health issues, substance use, child protection issues, genetic conditions) • Review weight, length and head circumference measurements • Check the baby has passed urine and meconium since birth • Recognise common neonatal problems and give advice to parents about management • Diagnose congenital malformations and arrange appropriate management • Discuss: o Baby care and feeding ▪ Refer to Queensland Clinical Guideline: *Establishing breastfeeding*[17] o Vitamin K o Childhood immunisation schedule including where indicated Bacille Calmette-Guerin (BCG) vaccination ▪ Refer to the National Immunisation Program Schedule[18] o Reducing the risk of sudden unexpected death in infancy (SUDI) o Any other matters relevant to the newborn baby[4] • Explain problems such as jaundice that might not be observable in the baby but may become significant a few days or weeks later o Refer to Queensland Clinical Guideline: *Neonatal jaundice*[19] • Convey information about local networks, services and access to members of a primary health care team o Refer to Section 5 Discharge planning • Inform families how they can request and negotiate additional help, advice, and support as relevant to the circumstances
Timing	• The Royal Australian College of Physicians (RACP) recommends an initial full and detailed assessment is performed within the first 48 hours after birth[4] o If baby is discharged home within the first 8 hours after birth, complete full assessment prior to discharge even though this is not the optimal time to detect all abnormalities • Advise parents that certain conditions may only become evident in the first few days after birth following discharge from hospital o Provide parents with information about local health support services (e.g. Child Health Services) prior to discharge • Recommend a follow-up assessment[4] by general practitioner (GP) or midwife at 5–7 days of age • Recommend a further assessment at around 6 weeks of age[4,20]
Unwell and/or preterm baby	• Stage the assessment as clinically indicated • Recognise the impact of prematurity on the assessment findings • Identify the requirement for additional, condition specific assessments (e.g. ophthalmology review for retinopathy of prematurity)

3.2 Preparation for the full and detailed newborn assessment

3.2.1 History

Table 4. History

Aspect	Clinical assessment
Maternal history[20]	• Review medical, obstetric, social and family history, including: o Maternal age, social background, mental health history, Edinburgh Postnatal Depression Score (EDPS), intimate partner violence, child safety alerts o Chronic maternal disease and associated treatments (e.g. vitamin D deficiency, hypothyroidism) during pregnancy o Substance use including prescription and non-prescription medications, alcohol and/or tobacco ▪ Refer to Queensland Clinical Guideline: *Perinatal substance use: neonatal*[9] and *Perinatal substance use: maternal*[21] o Previous pregnancies including complications and outcomes (e.g. neonatal jaundice, ABO incompatibility, developmental dysplasia of the hips, genetic conditions, baby Group B Streptococcus positive [refer to Queensland Clinical Guideline: *Early onset group B Streptococcal disease*[17])
Current pregnancy[20]	• Results of pregnancy screening tests (e.g. blood group and type, serology, ultrasound scans) • Chorionicity if twin pregnancy • Any other diagnostic procedures (e.g. amniocentesis) • Maternal ill health with any non-specific illnesses • Complications such a gestational diabetes mellitus or hypertension o Refer to Queensland Clinical Guideline: *Gestational diabetes mellitus*[22] and *Hypertension and pregnancy*[23]
Labour and birth[20]	• Progression of labour (e.g. onset, duration, interventions during labour, duration of rupture of membranes, maternal temperature, third stage) • Evidence of abnormal fetal status in labour (e.g. cord blood gases, lactate, meconium liquor) o Refer to Queensland Clinical Guideline: *Intrapartum fetal surveillance*[14] • Maternal drugs in labour (e.g. antibiotics) • Presentation and mode of birth • Apgar scores and resuscitation at birth • Medication since birth (e.g. vitamin K, hepatitis B immunoglobulin/vaccine, antibiotics)
Gestational age[24]	• If discrepancy with known maternal dates perform a formal gestational age assessment[4]
Observations since birth[20]	• Initial observations and NEWT[12] • Axillary temperature • Weight • Urine/meconium • Relevant tool to assess substance withdrawal (if relevant) o Refer to Queensland Clinical Guideline: *Perinatal substance use: neonatal*[9]
Feeding since birth[20]	• Mode of feeding • Suck behaviour • Feeding since birth • Refer to Queensland Clinical Guideline: *Establishing breastfeeding*[17]

3.2.2 Assessment preparation

Table 5. Assessment preparation

Aspect	Clinical assessment
Explanation	• Explain the purpose, procedure and limitations of the assessment • Ask the baby's name and confirm sex • Ask about any concerns and provide opportunity for questions and answers • Discuss feeding choice and progress o Explain normal weight loss after birth (1–2% of body weight per day up to maximum 10% weight loss at day 5) o Provide further information as required
Environment[25]	• Provide: o Adequate warmth and lighting o Privacy for discussion about sensitive family/health issues[26]
Equipment[25]	• Overhead warmer if required • Stethoscope • Ophthalmoscope • Pencil torch • Tongue depressor and glove • Tape measure • Infant scales and growth charts • If indicated, bilirubinometer and jaundice nomograms • Refer to Queensland Clinical Guideline: *Neonatal jaundice*[19] • Baby's Personal Health Record ('red book')

3.3 Physical examination

Use a systematic approach to examine the baby where possible. A recommended systematic approach is 'head to toe' and 'front to back'. Undress the baby down to the nappy as it is not possible to fully examine a dressed baby for all abnormalities. Assess the baby when they are quiet and settled, and do not interrupt breastfeeding.[20]

Table 6 includes aspects of the clinical assessment and possible indications for further investigation or follow up. Indications for urgent follow-up are identified but the list is not exhaustive. Use clinical judgement when determining the need and the urgency of follow-up for all abnormal or suspicious findings. [Refer to Table 7. Suggested follow-up actions].

Table 6. Newborn baby examination

Aspect	Clinical assessment	Indications for further investigation ☑ **Urgent follow-up**
General appearance[20,24,27]	• While the baby is quiet, alert, not hungry or crying observe: o Skin colour/warmth/perfusion o Alert/responsive state o Activity o Range of spontaneous movement o Posture o Muscle tone	• Dysmorphic features
Growth status and feeding[20,24,28]	• Document on the age and sex appropriate percentile charts: o Weight o Length o Head circumference	• Less than 10th percentile or greater than 90th percentile • Excessive weight loss (more than 10 % of birth weight)
Skin[20,27,28]	• Colour • Trauma • Congenital or subcutaneous skin lesions • Oedema	☑ **Any jaundice at less than 24 hours of age** ☑ **Central cyanosis** • Petechiae not fitting with mode of birth, or newly appearing or associated with purpura • Pallor • More than 3 café-au-lait spots in a Caucasian, more than 5 in a black African newborn baby • Multiple haemangioma • Haemangioma on nose or forehead (in distribution of ophthalmic division of trigeminal nerve) • Haemangioma or other midline skin defect over spine • Oedema of feet (consider Turner syndrome)
Head[20,24]	• Shape and symmetry • Scalp • Anterior and posterior fontanelle • Sutures • Scalp lesions/swelling/bruising/ lacerations	☑ **Enlarged, bulging or sunken fontanelle** • Microcephaly (less than 2nd percentile)/macrocephaly (greater than 98th percentile) ☑ **Sub-galeal haemorrhage** • Caput/cephalhaematoma (consider potential for developing jaundice) • Fused sutures

Table 7. Newborn baby examination continued

Aspect	Clinical assessment	Indications for further investigation ☑ **Urgent follow-up**
Face[20,24]	• Symmetry of structure, features and movement	• Asymmetry on crying
	• Eyes o Size and structure o Position in relation to the nasal bridge o Red reflex	• Hazy, dull cornea • Absent red reflex • Unequal, dilated or constricted pupils • Purulent conjunctivitis • Yellow sclera • Congenital cataracts
	• Nose o Position and symmetry of the nares and septum	• Nasal flaring ☑ **Nasal obstruction especially if bilateral** • Dacryocyst
	• Mouth o Size, symmetry and movement o Shape and structure ▪ Gums and teeth (if present) ▪ Lips ▪ Palate (hard and soft) ▪ Tongue and frenulum	• Cleft lip and/or palate • Mouth drooping
	• Ears o Position o Structure including patency of the external auditory meatus o Well-formed cartilage	• Unresponsive to noise • Absent external auditory canal or microtia • Drainage from ear
	• Jaw size and shape	• Small receding chin or micrognathia (e.g. Pierre Robin syndrome)
Neck[20,24,28]	• Structure and symmetry • Range of movement • Thyroid gland or other masses	• Masses/swelling • Neck webbing
Shoulders, arms and hands	• Length • Proportions • Symmetry • Structure and number of digits	• Swelling over clavicle/fractured clavicle • Hypotonia • Palsy (e.g. Erb's palsy, Klumpke's paralysis) • Contractures • Palmar crease pattern
Chest, cardio-respiratory[20,24,27,28]	• Chest o Chest size, shape and symmetry o Breast tissue o Number and position of nipples • Respiratory o Chest movement and effort with respiration o Respiratory rate o Breath sounds • Cardiac o Pulses–brachial and femoral o Skin colour/perfusion o Heart rate o Heart rhythm o Heart sounds o Pulse oximetry	• Small, malformed or asymmetry • Widely spaced nipples (e.g. Turner's syndrome) ☑ **Signs of respiratory distress** ☑ **Apnoeic episodes** • Variations in rate, rhythm or regularity • Murmurs • Central cyanosis/mottling ☑ **Weak or absent pulses** ☑ **Positive pulse oximetry screen**

Table 7. Newborn baby examination continued

Aspect	Clinical assessment	Indications for further investigation ☑ **Urgent follow-up**
Abdomen[20,27,28]	• Shape and symmetry • Palpate for enlargement of liver, spleen, kidneys and bladder • Bowel sounds • Umbilicus including number of arteries • Tenderness	☑ **Organomegaly** ☑ **Gastroschisis/exomphalos** ☑ **Bilious vomiting** • Inguinal hernia • Erythema or swelling at base of umbilicus onto anterior abdominal wall
Genitourinary[20,27,28]	• Urine passed including colour and amount • Male genitalia o Penis including foreskin o Testes (confirm present bilaterally and position of testes) including any discolouration o Scrotal size and colour o Other masses such as hydrocele • Female genitalia (discuss pseudomenses) o Clitoris o Labia o Hymen	☑ **No urine passed within 24 hours** ☑ **Ambiguous genitalia** ☑ **Bilateral undescended testes** ☑ **Testicular torsion** • Hypospadias, penile chordee • Penile torsion greater than 60% • Micropenis (stretched length less than 2.5 cm) • Unequal scrotal size or scrotal discolouration • Testes palpable in inguinal canal
Anus[20,27,28]	• Meconium passed • Anal position • Anal patency	☑ **No meconium passed within 24 hours**
Hips, legs and feet[20,27,28]	• Use Barlow and Ortolani manoeuvres to examine hips • A firm surface is necessary • Assess legs and feet for o Length o Proportions o Symmetry o Structure and number of digits	• Risk factors for hip dysplasia: breech presentation, fixed talipes, fixed flexion deformity, asymmetrical buttock creases, severe oligohydramnios, first degree relative with developmental hip dysplasia • Positive Barlow and/or Ortolani test • Hypotonia/contractures • Positional talipes
Back[20,27,28]	• Spinal column • Scapulae and buttocks for symmetry • Skin	• Curvature of spine • Non-intact spine • Tufts of hair or dimple along intact spine • Sacral pit without visible intact base
Neurologic[20,27,28]	• Observe throughout: o Behaviour o Posture o Muscle tone o Movements o Cry • Examine reflexes o Moro o Suck o Grasp	• Weak, irritable, high pitched cry • No cry • Does not respond to consoling • Absent/exaggerated reflexes ☑ **Seizures** ☑ **Altered state of consciousness**

3.4 Isolated abnormalities

The following anomalies are usually of no concern when isolated (3 or more such abnormalities are of concern)

- Folded-over ears
- Hyperextensibility of thumbs
- Syndactyly of second and third toes
- Single palmar crease on one hand
- Polydactyly, especially if familial
- Single umbilical artery
- Hydrocele
- Fifth finger clinodactyly
- Simple sacral dimple just above the natal cleft (less than 2.5 cm from anus and less than 5 mm wide)
- Single café-au-lait spot
- Slate grey naevi/congenital dermal melanocytosis (Mongolian spot)
- Single ash leaf macule
- Third fontanelle
- Capillary haemangioma apart from those described in table above
- Accessory nipples

4 Consultation and follow-up

Use clinical judgement to determine the appropriate urgency of follow-up in the context of abnormal or suspicious findings arising from a newborn baby assessment. If there is uncertainty about the urgency of follow-up seek advice from a more senior clinician.

Table 7. Suggested follow-up actions

Category	Follow-up action
☑ **Urgent** Immediate and/or life-threatening health concern for the newborn baby	• Arrange same day (as soon as possible) medical review • If baby is already discharged from hospital arrange review by either: o Hospital emergency department o GP o Paediatrician o Neonatologist • Advise parents/family of clinical concerns and the importance of immediate review o Provide verbal/written information as appropriate o Consider parental support needs (e.g. social work involvement, transport requirements)
Follow-up Existing and/or potential health concern for the newborn baby	• Determine the urgency of the follow-up required • Consider the need for: o Consultation with senior practitioners (e.g. review of baby, telephone consultation about findings, telehealth consultation) o Additional immediate investigation(s) (e.g. blood test) o Referral for specialist review (e.g. cardiology) o Re-assessment or recheck at 6 week assessment (or sooner as indicated) o Distribution of written summary information (e.g. GP, referring hospital) • Advise parents/family of clinical concerns and the importance of review and follow-up arrangements o Provide verbal/written information as appropriate o Consider parental support needs (e.g. social work involvement, transport requirements)

5 Discharge planning

Evaluate each mother-baby dyad individually and involve the family when determining optimal time of discharge. Criteria for newborn baby discharge include physiological stability, family preparedness to provide care for the baby at home, availability of social support, and access to the health care system and community resources.[29]

5.1 Screening newborn baby

Table 8. Screening newborn baby

Aspect	Consideration
Context	• Explain to baby's parents the importance, and how to access screening of the newborn baby • If possible complete all screening before discharge • Organise repeat screening and/or follow up as required
Hearing[30]	• Healthy hearing screening is performed in the birthing hospital prior to discharge • May be provided as outpatient up to 3 months of age[30] o Refer to local protocols
Jaundice	• Consider checking TcB (transcutaneous bilirubin) prior to discharge • Follow local protocols • Refer to Queensland Clinical Guideline: *Neonatal jaundice*[19]
CCHD	• Refer to Table 9. Pulse oximetry screening
Newborn bloodspot screening test (NBST)	• Conditions screened are added as screening technology and treatments develop, and in line with national recommendations to maintain interjurisdictional consistency • Screens for o Galactosaemia o Phenylketonuria o Primary hypothyroidism o Congenital adrenal hyperplasia o Cystic fibrosis o Spinal muscular atrophy (SMA) o Severe combined immune deficiency (SCID) o A range of rare disorders of amino acid, organic acid and fatty acid metabolism • Refer to Queensland Clinical Guideline: *Newborn bloodspot screening*[31]

5.2 Pulse oximetry screening

The Queensland Maternal and Perinatal Quality Council recommends all newborn babies are offered pulse oximetry screening for critical congenital heart disease (CCHD).[32] Optimal detection of CCHD occurs when pulse oximetry screening is used in conjunction with an antenatal ultrasound and a physical examination of the baby.[33]

Table 9. Pulse oximetry screening

Aspect	Consideration
Context	• Congenital heart disease (CHD) occurs in nearly 1% of live births, approximately one quarter of these will be CCHD[34] • If CCHD is undetected newborn babies are at risk for death in the first few days or weeks of life[34] • Pulse oximetry: o Non-invasive screening technology to assist in detecting hypoxemia, a clinical sign of critical congenital heart disease (CCHD)[20,29] o Can detect some CCHD that would otherwise be missed on routine examination or antenatal ultrasound o Can also identify non-cardiac problems such as sepsis and respiratory problems, and these are common causes of a positive screen o Cochrane Review[35] found pulse oximetry: ▪ Overall sensitivity 76.3% (95% CI 69.5–82.0) ▪ Specificity 99.9% (95% CI 99.7–99.9) ▪ No significant differences in sensitivity or specificity for foot only versus both foot and right hand measurement
Target population	• All healthy term and late preterm newborn babies[33]
Equipment	• Motion tolerant pulse oximeter • Neonatal oxygen saturation sensor
Timing	• Screen between 24 and 36 hours of age as[33]: o Prior to 24 hours of age is likely to result in increased false positive result[34] *or* o After 48 hours delays early intervention if required • If baby is less than 24 hours of age at time of discharge, screen immediately prior o Consider screening by home visiting midwife[36]
Protocol	• Baby has been fed and is settled • Site the sensor and then connect to motion-tolerant monitor(s)[37]: • Site either: o On either foot[34,35] (postductal) *or* o Right hand (pre-ductal) and either foot (postductal) • Keep sensor(s) insitu until a steady trace is obtained[37] then remove (usually less than one minute) • Document–highest oxygen saturation result during the screen *and if used* difference between sites

5.2.1 Pulse oximetry results

Table 10. Pulse oximetry results

Aspect	Consideration
Saturation greater than or equal to 95% (normal)	• *Negative pulse oximetry screen–maximum oxygen saturation*: o Greater than or equal to 95% on either foot[24,37] ***or*** o Greater than or equal to 95% on either foot or right hand, **and** a difference between right hand and either foot less than or equal to 3%[33] • Baby suitable for discharge (in accordance with other discharge criteria)
Saturation 90–94%	• *Borderline pulse oximetry screen–maximum oxygen saturation:* o 90–94% on either foot[37] ***or*** o 90–94% right hand **and/or** a difference between right hand and either foot greater than 3%[33] • Medical review indicated[24,37] • Consider investigation of other causes including respiratory/vascular problems (e.g. sepsis, respiratory distress syndrome, lung malformations, persistent pulmonary hypertension of the newborn)–monitor as indicated • Repeat screen in one hour[37] o Consider using different oximeter) • If oxygen saturations remain borderline repeat the screen in in one hour o Consider right hand and either foot simultaneously • If repeat screen abnormal, specialist medical review indicated: o Delay discharge and admit to neonatal unit o Consider chest X-ray and four limb blood pressure o Consider referral for echocardiography[24] • Contact RSQ for advice from a neonatologist or paediatric cardiologist
Saturation less than 90% (abnormal)	• *Positive pulse oximetry screen:* maximum oxygen saturation during recording is less than 90%[37] on either foot or right hand[33] • Admit to neonatal unit–requires urgent specialist medical review • Consider chest X-ray and four limb blood pressure • Commence close clinical surveillance (e.g. continuous monitoring including oximetry) • Investigate for neonatal sepsis o Refer to Queensland Clinical Guideline: *Early onset Group B Streptococcal disease*[38] • Consider investigations for CCHD including an echocardiogram[34,37] Consider investigation of other causes including respiratory/vascular problems (e.g. respiratory distress syndrome, lung malformations, persistent pulmonary hypertension of the newborn)[34,39] • Contact RSQ for advice from a neonatologist or paediatric cardiologist

5.3 Discharge preparation

Table 11. Discharge preparation

Aspect	Considerations
Discharge criteria	• Review the baby's status prior to discharge including[13]: o Feeding–suck feeding adequately o Newborn baby observations–temperature maintenance, respiratory rate, BGL (if measured), weight o Urine and stool passage o Completion of newborn baby assessment o Vitamin K status–if required give script and education for further oral vitamin K o Hepatitis B vaccination (and if indicated, hepatitis B immunoglobulin) administered–advise parents about next dose due
Discharge at less than 24 hours of age	• If discharged at less than 24 hours of age, advise parents to seek urgent medical assistance if baby: o Has not passed meconium within 24 hours of birth o Appears jaundiced within first 24 hours after birth o Has elevated temperature o Vomiting o Difficulty feeding o Lethargic o Has decreased urine output or stools o Respiratory signs o Rash • Provide relevant Queensland Clinical Guidelines consumer information sheets (e.g. breastfeeding, jaundice)
Referral and follow-up	• Advise parents about the importance of follow-up assessments at: o Five to seven days of age o Six weeks of age • Arrange referral for a newborn baby and/or family with identified problems • Document arrangements and inform family • If required provide scripts or medication (e.g. vitamin D) for use after discharge • Provide discharge information to the GP
Documentation	• Plot anthropometric parameters on growth charts • Complete the baby's Personal Health Record booklet o Relevant sections complete before discharge o Explain parental use and completion after discharge • Document completion of the newborn assessment and associated discussions, findings and follow-up requirements in the medical record
Support agencies	• Provide information on the role of and how to access relevant support agencies (including but not limited to): o Child health service o GP o Child/community Health/health worker o Midwife (e.g. home visiting, drop-in clinics, group practice, eligible or private) o Lactation consultant o Australian Breastfeeding Association o 13HEALTH (13 43 25 84) telephone help line • Psychological support agencies (e.g. perinatal mental health services; PANDA; groups for fathers)

5.4 Health promotion

Discuss relevant parenting and health education topics with parents/carers prior to discharge,[8,29] and provide relevant Queensland Clinical Guidelines parent information sheets.

Table 12. Health promotion

Newborn baby care	• Hygiene o Bathing o Eye and mouth care o Umbilical cord care • Nappy changing including skin care • Feeding o Feeding cues and behaviour o Promote and support breastfeeding o Refer to Queensland Clinical Guideline: *Establishing breastfeeding*[17] • Growth and weight gain • Sleep patterns • Normal bowel and urine patterns • Detection and management of jaundice o Refer to Queensland Clinical Guideline: *Neonatal jaundice*[19] • Sun protection[40] • Prevention of hypothermia and hyperthermia
Warning signs of illness[41]	• Discuss and advise when to seek medical help, e.g.: o Raised temperature o Poor feeding o Vomiting o Irritability, lethargy o Decreased urine or stools o Jaundice o Respiratory signs o Rash
SUDI[42]	• Provide written information about safe infant care to reduce the risk of sudden unexpected death in pregnancy (SUDI) • Discuss safe positioning of baby during breastfeeding • Discuss safer infant sleeping: o Positioning and settling o Swaddling o Sharing sleep surfaces o Appropriate clothing • Risks from smoking–provide advice about smoking cessation • Refer to Queensland Clinical Guideline: *Safer infant sleep*[42]
Injury prevention	• Car capsule to transport baby • Pram safety • Reducing home hazards • Hip healthy swaddling and use of slings[43]
Immunisation schedule	• Provide information about childhood immunisation program • Refer parents to baby's Personal Health Record ('red book')

References

1. Institute for Patient- and Family-Centered Care. Advancing the practice of patient-and family-centered care in hospitals [Internet]. 2017 [cited 2021 March 23]. Available from: https://www.ipfcc.org.
2. Shields L, Zhou H, Pratt J, Taylor M, Hunter J, Pascoe E. Family-centred care for hospitalised children aged 0-12 years. Cochrane Database of Systematic Reviews. [Internet]. 2012, [cited 2025 February 28]. Issue 10. Art No.: CD004811. doi:10.1002/14651858.CD004811.pub3.
3. Australian Resuscitation Council. ANZCOR Guideline 13.1 Introduction to resuscitation of the newborn infant [Internet]. 2021 [cited 2025 February 28]. Available from: https://resus.org.au.
4. The Royal Australasian College of Physicians (RACP): Paediatrics and Child Health Division. Examination of the newborn [Internet]. 2009 [cited. Available from: https://www.racp.edu.au.
5. Queensland Clinical Guidelines. Standard care. Guideline No. MN22.50-V2-R27. [Internet]. Queensland Health. 2022. [cited 2025 February 28]. Available from: https://www.health.qld.gov.au/qcg.
6. Nursing and Midwifery Board of Australia. Registered nurse standards for practice [Internet]. 2016 [cited 2021 March 25]. Available from: https://www.nursingmidwiferyboard.gov.au.
7. Nursing and Midwifery Board of Australia. Midwife standards for practice [Internet]. 2018 [cited 2021 March 25]. Available from: https://www.nursingmidwiferyboard.gov.au/codes-guidelines-statements/professional-standards.aspx.
8. Australian College of Midwives. National midwifery guidelines for consultation and referral 4th edition [Internet]. 2021 [cited 2021 November 24]. Available from: https://www.midwives.org.au.
9. Queensland Clinical Guidelines. Hypoxic ischaemic encepathalopathy. Guideline No. MN21.11-V12-R26. [Internet]. Queensland Health. 2021. [cited 2025 February 28]. Available from: https://www.health.qld.gov.au/qcg.
10. Queensland Health. Neonate early warning tool and newborn feeding chart trial report [Internet]. 2018 [cited 2021 August 17].
11. Queensland Health. Clinical Services Capability Framework for Public and Licensed Private health Facilities v3.2 [Internet]. 2015 [cited 2025 February 28]. Available from: www.health.qld.gov.au
12. Queensland Health. Neonatal Early Warning Tool [Internet]. 2023 [cited 2025 February 28]. Available from: https://qheps.health.qld.gov.au.
13. Queensland Health. Neonatal Clinical Pathway [Internet]. 2015 [cited 2025 February 28]. Available from: https://qheps.health.qld.gov.au.
14. Queensland Clinical Guidelines. Hypoglycaemia-newborn. Guideline No. MN23.8-V13-R28. [Internet]. Queensland Health. 2023. [cited 2025 February 28]. Available from: https://www.health.qld.gov.au/qcg.
15. The Royal Australian College of Obstetrics and Gynaecology. Prevention, detection, and management of subgaleal haemorrhage in the newborn [Internet]. 2021 [cited 2025 February 28]. Available from: https://ranzcog.edu.au.
16. Queensland Health. Neonatal early warning tool-user guide [Internet]. 2018 [cited 2025 February 2025].
17. Queensland Clinical Guidelines. Early onset Group B Streptococcal disease. Guideline No. MN22.20-V6-R27. [Internet]. Queensland Health. 2022. [cited 2025 February 28]. Available from: https://www.health.qld.gov.au/qcg.
18. Australian Government. National Immunisation Program Schedule [Internet]. 2024 [cited 2025 February 28]. Available from: https://www.health.gov.au.
19. Queensland Clinical Guidelines. Neonatal jaundice. Guideline No. MN22.7-V9-R27. [Internet]. Queensland Health. 2022. [cited 2025 February 28]. Available from: https://www.health.qld.gov.au/qcg.
20. Sinha S, Miall L, Jardine L. Examination of the newborn. In: Essential Neonatal Medicine. 6th ed. Oxford UK: John Wiley & Sons; 2018. p. 25-34.
21. Queensland Clinical Guidelines. Perinatal substance use: maternal Guideline No. MN21.38-V3-R21. [Internet]. Queensland Health. 2021. [cited 2025 February 28]. Available from: https://www.health.qld.gov.au/qcg.
22. Queensland Clinical Guidelines. Gestational diabetes mellitus. Guideline No. MN21.33-V7-R26. [Internet]. Queensland Health. 2021. [cited 2025 February 28]. Available from: https://www.health.qld.gov.au/qcg.
23. Queensland Clinical Guidelines. Hypertension and pregnancy. Guideline No. MN21.13-V9-R26. [Internet]. Queensland Health. 2021. [cited 2025 February 28]. Available from: https://www.health.qld.gov.au/qcg.
24. Lewis M. A comprehensive newborn examination (part I): general, head and neck, cardiopulmonary. American Family Physician 2014;90(5):289-96.
25. Parish E, Tailor R, Gandhi R. How to conduct a newborn examination. Student British Medical Journal 2018;25. doi:http://dx.doi.org/10.1136/sbmj.j5726.
26. Potter L. Newborn assessment guide (NIPE) OSCE guide [Internet]. 2021 [cited 2021 March 23]. Available from: https://geekymedics.com.
27. Lewis M. A comprehensive newborn examination (part II): skin, trunk, extremities, neurologic. American Family Physician 2014;90(5):297-302.
28. McKee-Garrett T. Assessment of the newborn infant [Internet]. 2020 [cited 2021 March 3]. Available from: https://www.uptodate.com.
29. American Academy of Pediatrics: Commitee on Fetus and Newborn. Policy Statement. Hospital stay for healthy term newborns. Pediatrics 2010;125(2):405-9.
30. Children's Health Queensland. Healthy hearing screening program [Internet]. 2024 [cited 2025 February 28]. Available from: https://www.childrens.health.qld.gov.au.
31. Queensland Clinical Guidelines. Newborn bloodspot screening. Guideline No. MN25.53-V1-R30. [Internet]. Queensland Health. 2025. [cited 2025 February 28]. Available from: https://www.health.qld.gov.au/qcg.

32. Queensland Health. Queensland mothers and babies 2016 and 2017: report of the Queensland Maternal and Perinatal Quality Council [Internet]. 2020 [cited 2021 March 23]. Available from: https://www.health.qld.gov.au.
33. Narvey M, Wong K, Fournier A, Fetus and Newborn Committee (Canadain Paediatric Society). Pulse oximetry screening in newborns to enhance detection of critical congenital heart disease. Paediatriccs and Child Health 2017;22(8):494-8.
34. Mahle WT, Newburger JW, Matherne GP, Smith FC, Hoke TR, Koppel R, et al. Role of pulse oximetry in examining newborns for congenital heart disease: a scientific statement from the AHA and AAP. Pediatrics 2009;124(2):823-36. doi:10.1542/peds.2009-1397.
35. Plana MN, Zamora J, Suresh G, Fernandez-Pineda L, Thangaratinam S, Ewer AK. Pulse oximetry screening for critical congenital heart defects (review). Cochrane Database of Systematic Reviews. [Internet]. 2018, Issue 3. Art No.: CD011912. doi:10.1002/14651858.CD011912.pub2.
36. Narayen IC, Blom NA, Bourgonje MS, Haak MC, Smit M, Posthumus F, et al. Pulse Oximetry Screening for Critical Congenital Heart Disease after Home Birth and Early Discharge. The Journal of Pediatrics 2016;170:188-92.e1. doi:https://doi.org/10.1016/j.jpeds.2015.12.004.
37. Kemper AR, Mahle WT, Martin GR, Cooley WC, Kumar P, Morrow WR, et al. Strategies for implementing screening for critical congenital heart disease. Pediatrics 2011;128(5):e1259. doi:10.1542/peds.2011-1317.
38. UK National Screening Committee. Pulse oximetry in the newborn [Internet]. 2016 [cited 2021 March 23]. Available from: https://legacyscreening.phe.org.uk/screening-recommendations.php.
39. Hamilçıkan Ş, Can E. Critical congenital heart disease screening with a pulse oximetry in neonates. Journal of Perinatal Medicine 2018;46(2):203-7. doi:doi:10.1515/jpm-2017-0006.
40. Queensland Health. How to keep your baby safe from the sun [Internet]. 2024 [cited 2025 February 28]. Available from: https://www.health.qld.gov.au.
41. Queensland Health. When your child is sick [Internet]. 2017 [cited 2021 June 23]. Available from: http://conditions.health.qld.gov.au.
42. Queensland Clinical Guidelines. Safer infant sleeping. Guideline No. MN22.71-V1-R27. [Internet]. Queensland Health. 2022. [cited 2025 February 28]. Available from: https://www.health.qld.gov.au/qcg.
43. International Hip Dysplasia Institute. IHDI educational statement [Internet]. 2021 [cited 2021 August 16]. Available from: https://hipdysplasia.org.

Acknowledgements

Queensland Clinical Guidelines gratefully acknowledge the contribution of Queensland clinicians and other stakeholders who participated throughout the guideline development process particularly:

Working Party Clinical Lead

Dr Peter Schmidt, Director of Neonatology, Gold Coast University Hospital
Ms Rhonda Taylor, Clinical Midwifery Consultant, Townsville University Hospital

QCG Program Officer

Ms Stephanie Sutherns

Peer Review Panel

Ms Seija Argyros, Neonatal Nurse Practitioner, Royal Brisbane and Women's Hospital
Ms Maxine Ballinger, Clinical Nurse Consultant, Rockhampton Hospital
Ms Anne Bousfield, Clinical Midwifery Consultant, South West Hospital and Health Service
Ms Lynne Buetow, Nurse Educator, Royal Brisbane and Women's Hospital
Ms Carole Dodd, Midwifery Educator, Caboolture Hospital
Dr Timothy Donovan, Neonatologist, Royal Brisbane and Women's Hospital
Dr Christopher Edwards, Paediatrician. Bundaberg Hospital
Dr Shivanand Hebbandi Paediatrician, Redlands Hospital
Dr Bruce Maybloom, General Practitioner, Brisbane
Dr Benjamin Reeves, Paediatric Cardiologist, Cairns Hospital
Ms Alecia Staines, Consumer Representative, Maternity Consumer Network
Ms Elizabeth Taylor, A/Midwifery Educator, Townsville University Hospital

Queensland Clinical Guidelines Team

Professor Rebecca Kimble, Director
Ms Jacinta Lee, Manager
Ms Stephanie Sutherns, Clinical Nurse Consultant
Ms Cara Cox, Clinical Nurse Consultant
Ms Emily Holmes, Clinical Nurse Consultant
Ms Janene Rattray, Clinical Nurse Consultant
Steering Committee

Funding

This clinical guideline was funded by Healthcare Improvement Unit, Queensland Health