

# Newborn assessment (routine)

Clinical Guideline Presentation v4



45 minutes

Towards CPD Hours

**References:**

Queensland Clinical Guideline: Newborn assessment (routine) is the primary reference for this package.

**Recommended citation:**

Queensland Clinical Guidelines. Newborn assessment (routine) clinical guideline education presentation E21.4-1-V4-R26. Queensland Health. 2021.

**Disclaimer:**

This presentation is an implementation tool and should be used in conjunction with the published guideline. This information does not supersede or replace the guideline. Consult the guideline for further information and references.

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# Objectives

- At the end of this presentation the participant will be able to:
  - Describe timing and preparation for newborn assessment
  - Describe newborn screening tests
  - Outline the assessment process
  - Describe discharge planning considerations

# Abbreviations

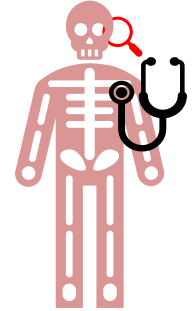
BGL	Blood glucose level	QMPQC	Queensland Maternity and Perinatal Quality Council
BW	Birth weight	RH	Right hand
CCHD	Critical congenital heart disease	SpO <sub>2</sub>	Peripheral capillary oxygen saturation
GP	General practitioner	SUDI	Sudden unexplained death in infancy
LC	Lactation consultant	TPN	Total parenteral nutrition
NBST	Newborn bloodspot screening test		

# Initial examination after birth

- Perform within the first few minutes of life or after any resuscitation (if required)
  - Assess transition to extra-uterine life
  - Confirm baby's sex
  - Identify obvious anomalies

*Flexible timing to maintain skin to skin with mother*

# Full examination



- Within 48 hours after birth
- Prior to discharge from hospital
- If premature or unwell baby, assess in stages as clinically indicated
- Includes screening tests (e.g. pulse oximetry for CCHD, NBST, hearing and jaundice)

# Preparation

- Involve at least one parent
- Explain purpose and limitations of the assessment
- Provide warmth to the baby
- Ensure adequate light



# Equipment



- Clinical equipment for examination e.g.:
  - Room with adequate light
  - Overhead radiant warmer
  - Stethoscope
  - Tongue depressor/glove
  - Scales, tape measure, growth charts
  - Baby's Personal Health Record (red book)





# Review history



- Maternal–medical, social, family, previous obstetric
- Current pregnancy–antenatal events, labour and birth
- Baby’s Apgars and any resuscitation required
- Gestational age
- Baby’s observations since birth including feeding pattern

# Physical examination

- Do not interrupt breastfeeding
- Undress baby down to nappy
- Use a systematic approach
  - Head to toes
  - Front to back
- Use clinical judgement for follow up of abnormal or suspicious findings



# Follow up

- Normal variances occur
- Some follow up suggested (use clinical judgement regarding urgency)—examples given
- ☒ Urgent follow-up:
  - Immediate and/or life threatening health concern
  - Same day (as soon as possible)

# General appearance

- When baby settled assess:
  - Skin colour, warmth, perfusion
  - State of alertness and responsiveness
  - Activity and range of spontaneous movement
  - Posture, muscle tone
- Investigate:
  - Dysmorphic features



# Growth

- Document on percentile charts appropriate age, sex and gestation :
  - Weight
  - Length
  - Head circumference
- Investigate if:
  - $< 10\text{th}$  or  $>90\text{th}$  percentile



# Feeding

- Type
- Weight loss/gain since birth
- Urine output
- Investigate if:
  - Weight loss  $> 10\%$  BW



# Skin

- Colour
  - Investigate:
    - Pallor, petechiae, multiple café-au-lait spots
    - Trauma
    - Congenital or subcutaneous skin lesions
    - Oedema
- ☑ Urgent follow-up:
    - Central cyanosis
    - Jaundice (if less than 24 hours of age)

# Head

- **Assess:**
  - Shape and symmetry
  - Scalp
  - Anterior and posterior fontanelles
  - Sutures
- **Note:**
  - Scalp lesions, bruising, swelling, lacerations



# Head (continued)

- Investigate:

- Microcephaly (< 2nd percentile)
- Macrocephaly (>98th percentile)

- ✓ Urgent follow-up:

- Enlarged, bulging or sunken fontanelle
- Sub-galeal haemorrhage

# Face

- Note size and symmetry of structures, features and movement of:
  - Eyes—red reflex, yellow sclera
  - Nose—nares, septum
  - Mouth—lips, palate, tongue, gums
  - Ears—position, patency of external auditory canal
  - Jaw size and shape



# Face (continued)

- Investigate:
  - Absent red reflex
  - Nasal flaring
  - Cleft lip/palate
  - Small receding chin

- ☑ Urgent follow-up:
  - Nasal obstruction

# Neck, shoulder and arms

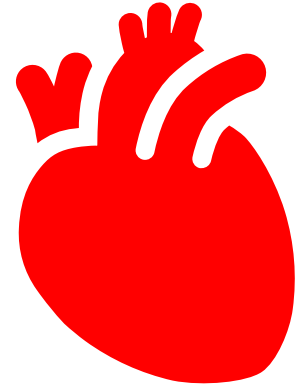
- Structure and symmetry
- Range of movement
- Masses
- Length
- Proportions
- Number of digits
- Investigate:
  - Swelling, palsy, contractures



# Chest

- Size, shape, symmetry
- Breast tissue, number and position of nipples
- Investigate:
  - Small, malformed, or asymmetry
  - Widely spaced nipples (e.g. Turner's syndrome)

# Cardiac

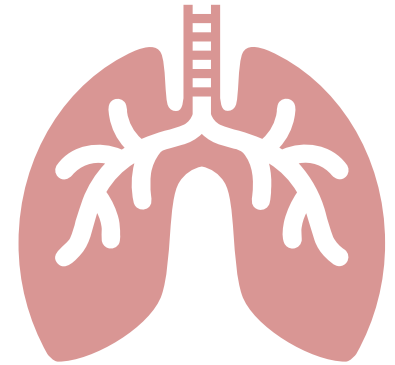


- Pulses—brachial/femoral
- Skin colour/perfusion
- Heart rate, rhythm, sounds
- Pulse oximetry
- Investigate:
  - Rate or rhythm variations; murmurs

## ☑ Urgent follow-up:

- Weak or absent pulses
- Positive pulse oximetry

# Respiratory



- Chest movement and effort with respiration
- Respiratory rate, breath sounds

## ☑: Urgent follow-up

- Signs of respiratory distress
- Apnoeic episodes

# Abdomen



- Abdomen
  - Shape and symmetry; umbilicus
  - Palpate for enlarged liver, spleen, kidneys, bladder
  - Bowel sounds
  - Tenderness
- Investigate:
  - Inguinal hernia
  - Erythema at base of umbilicus

## ☑ Urgent follow-up:

- Organomegaly
- Gastroschisis
- Exomphalos
- Bilious vomiting



# Genito-urinary (male)

- Male genitalia
    - Penis, testes, scrotum—confirm testes bilateral and descended, observe for scrotal discolouration
  - Investigate:
    - Hypospadias; undescended testes
- ☑ Urgent follow-up:
    - No urine passed within 24 hours
    - Ambiguous genitalia
    - Testicular torsion
    - Bilateral undescended testes

# Genito-urinary (female)

- Female genitalia
  - Clitoris, labia, hymen
  - Pseudomenses

## ☑ Urgent follow-up:

- No urine passed within 24 hours
- Ambiguous genitalia

# Anus and stool

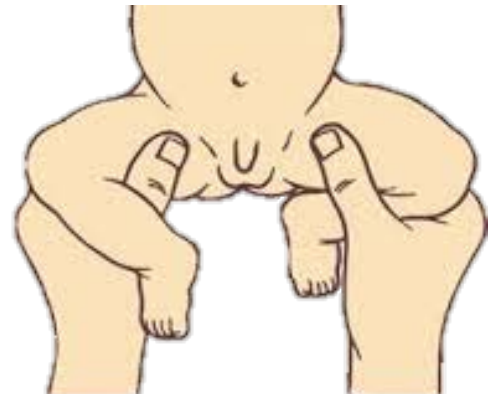
- Anus
  - Position
  - Patency

## ☒ Urgent follow-up:

- No urine passed within 24 hours
- No meconium passed since birth/within 24 hours

# Hips, legs and feet

- Ortolani and Barlow's manoeuvres for hip dysplasia
- Assess legs and feet for:
  - Length, proportions, symmetry; structure and number of digits
- Investigate:
  - Risk factors for hip dysplasia; talipes; hypotonia; contractures



# Back

- Spinal column
- Scapulae and buttocks for symmetry
- Skin
- Investigate:
  - Curvature of spine
  - Non-intact spine
  - Tufts of hair or dimple along intact spine
  - Sacral pit without visible intact base

# Neurologic

- Observe throughout assessment:
  - Behaviour, posture, cry, muscle tone, movements
- Examine reflexes—Moro, suck, grasp
- Investigate (e.g.):
  - Weak, irritable cry; abnormal reflexes

## Urgent follow-up:

- Seizures
- Altered state of consciousness

# Isolated anomalies of no concern

- Folded-over ears
- Hyperextensibility of thumbs
- Syndactyly of second and third toes
- Single palmar crease
- Polydactyly, especially if familial
- Fifth finger clinodactyly
- Hydrocele
- Single umbilical artery
- Simple sacral dimple
- Slate grey naevi/congenital dermal melanocytosis
- Single café-au-lait spot
- Single ash leaf macule
- Third fontanelle
- Capillary haemangioma apart from those described in table above
- Accessory nipples

# Pulse oximetry

- A non-invasive technology to detect hypoxemia, a clinical sign of CCHD
- Can also identify non-cardiac problems (e.g. sepsis and respiratory problems)
- Recommended by QMPQC for all babies born in Queensland
- Best performed between 24 and 36 hours of age



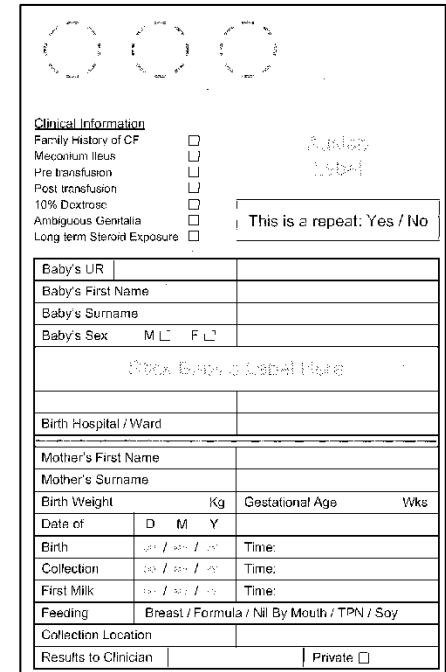


# Pulse oximetry results

Result	SpO <sub>2</sub>		Action
	RH or either foot	RH and either foot	
Negative screen	≥ 95%	≤ 3% difference	<ul style="list-style-type: none"> <li>• Normal</li> <li>• Discharge is appropriate</li> </ul>
Repeat screen	90–94%	> 3% difference	<ul style="list-style-type: none"> <li>• Repeat screening</li> <li>• Consider investigations</li> </ul>
Positive screen	< 90%		<ul style="list-style-type: none"> <li>• Medical review</li> <li>• Investigate</li> <li>• Discharge not appropriate</li> </ul>

# Newborn bloodspot screening test (NBST)

- Screens for:
  - Galactosaemia
  - Phenylketonuria
  - Primary hypothyroidism
  - Cystic fibrosis
  - Congenital adrenal hyperplasia
  - Amino acid, organic acid and fatty acid metabolism disorders



The form is titled 'Newborn Bloodspot Screening Test (NBST)' and includes a section for 'Clinical Information' with checkboxes for various conditions. It also has a section for 'Baby's Information' with fields for name, sex, and date of birth. A 'This is a repeat: Yes / No' checkbox is present. The bottom section contains fields for 'Mother's Information' and 'Birth Information'.

**Clinical Information**

Family History of CF ☐ **Family**  
 Meconium Ileus ☐ **Local**  
 Pre transfusion ☐  
 Post transfusion ☐  
 10% Dextrose ☐  
 Ambiguous Genitalia ☐  
 Long term Steroid Exposure ☐

**This is a repeat: Yes / No**

**Baby's Information**

Baby's UR   
 Baby's First Name   
 Baby's Surname   
 Baby's Sex ☐ M ☐ F ☐ L

**Birth Information**

Birth Hospital / Ward

**Mother's Information**

Mother's First Name   
 Mother's Surname

**Birth Information**

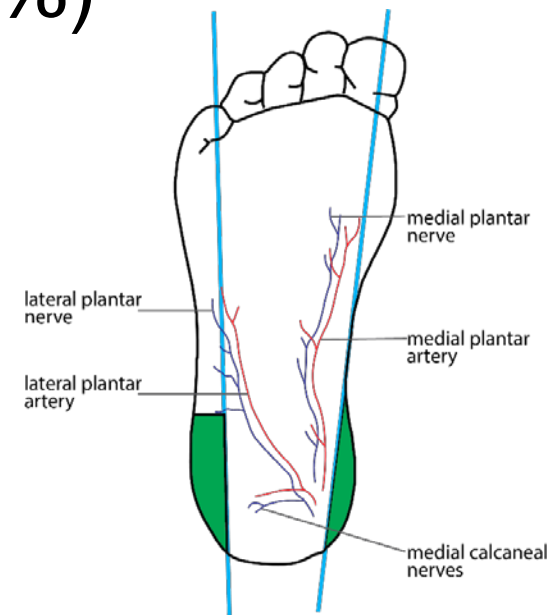
Birth Weight  Kg Gestational Age  Wks  
 Date of Birth  D  M  Y  
 Birth  Time:   
 Collection  Time:   
 First Milk  Time:   
 Feeding  Breast / Formula / Nil By Mouth / TPN / Soy  
 Collection Location   
 Results to Clinician ☐ Private ☐

# NBST initial and repeat test

- Collect at 48–72 hours of age
- Repeat required if:
  - Poor sample
  - Baby not 48 hours of age/TPN
  - Not milk feeding
  - 10% glucose infusion > 6 hours
  - Same sex twin (monochorionic)
  - < 1500 g BW (second repeat for < 1000g BW)
  - Blood transfusion (also sample prior)
  - Perinatal steroids

# NBST sampling technique

- Medial or lateral aspect of plantar surface of heel
- Pain management (e.g. breastfeeding, skin to skin, swaddling, sucrose 24%)
- Completely fill circles
  - Use 'no touch' technique (foot and card), to avoid repeating test



# Discharge planning

- Feeding—suck feeding adequately
- Newborn baby observations—temperature maintenance, respiratory rate, BGL (if measured), weight
- Urine and stool passage
- Completion of newborn baby assessment
- Vitamin K status—if required give script and education for further oral vitamin K
- Hepatitis B vaccination (if indicated, hepatitis B immunoglobulin) administered—advise parents about next dose due

# Baby less than 24 hours of age

- Advise parents to seek urgent medical advice/assistance if:
  - No meconium within 24 hours of birth or decreased urine or stools
  - Jaundiced within first 24 hours after birth
  - Febrile
  - Vomiting/difficulty feeding
  - Lethargic
  - Respiratory signs
  - Rash

# Health promotion



- Discuss
  - Support agencies (e.g. GP, 13Health, Child Health, Midwife, LC)
  - Normal newborn care
  - Warning signs of illness
  - Sudden Unexpected Deaths in Infancy (SUDI)
  - Immunisation schedule
  - Injury prevention