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:

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.

Feedback and contact details:

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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

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>BGL</td>
<td>Blood glucose level</td>
<td>QMPQC</td>
<td>Queensland Maternity and Perinatal Quality Council</td>
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<tr>
<td>BW</td>
<td>Birth weight</td>
<td>RH</td>
<td>Right hand</td>
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<tr>
<td>CCHD</td>
<td>Critical congenital heart disease</td>
<td>SpO₂</td>
<td>Peripheral capillary oxygen saturation</td>
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<tr>
<td>GP</td>
<td>General practitioner</td>
<td>SUDI</td>
<td>Sudden unexplained death in infancy</td>
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<tr>
<td>LC</td>
<td>Lactation consultant</td>
<td>TPN</td>
<td>Total parenteral nutrition</td>
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<tr>
<td>NBST</td>
<td>Newborn bloodspot screening test</td>
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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:
  ◦ < 10th or >90th 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

<table>
<thead>
<tr>
<th>Result</th>
<th>SpO₂</th>
<th>Action</th>
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<tbody>
<tr>
<td></td>
<td>RH or either foot</td>
<td>RH and either foot</td>
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<tr>
<td>Negative screen</td>
<td>≥ 95%</td>
<td>≤ 3% difference</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Repeat screen</td>
<td>90–94%</td>
<td>&gt; 3% difference</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Positive screen</td>
<td>&lt; 90%</td>
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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
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