Guidelines for Full Newborn Infant Physical Examination

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The latest approved version of this document is online.
If the review date has passed, please contact the Author for advice.

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Version Control

Version	Summary of Changes/Amendments	Issue Date
1	Initial Issue	June 2009
2	Reviewed and updated	Nov 2013
3	Updates with NIPE national guidance	Nov 2017
4	Updated with NIPE Cymru guidance	Jan 2024

Engagement & Consultation

Key Individuals/Groups Involved in <u>Developing</u> this Document

Role / Designation
Assistant Head of Midwifery/Practice facilitator

Circulated to the following for Consultation

Date	Role / Designation
Aug 2016	Midwives
Aug 2016	Link Tutors Staffordshire university
Sept 2017	Midwifery management team
Nov 2017	Women's and Children's services leads
Feb 2024	Powys Midwives
Feb 2024	NIPE Lecturer Cardiff University
Feb 2024	Midwifery management team
Sept 2024	Powys Midwives including Midwifery management team
Sept 2024	Women & Children's group

Groups Approved at

Date	Group
01/10/24	Maternity guidelines Group
15/10/24	Women and Children's policies and procedures group

23/10/24	Executive Director of Women, Children and Family Health

Evidence Base
The newborn and infant physical examination Cymru (NIPEC) WHC/2023/040) standards **Newborn and infant physical examination Cymru Screening Handbook** https://heiw.nhs.wales/files/nipec-handbook/ **Health and care standards 3- Effective care.** heiw.nhs.wales/files/nipec-annual-learning-framework-guidance-pdf/

Impact Assessments

Equality Impact Assessment Summary					
	No impact	**Adverse**	**Differential**	**Positive**	**Statement** Please remember policy documents are published to both the **intranet** and **internet.** The version on the internet must be translated to Welsh.
Age	X				
Disability	X				
Gender reassignment	X				
Pregnancy and maternity				X	
Race	X				
Religion/ Belief	X				
Sex	X				
Sexual Orientation	X				
Marriage and civil partnership	X				
Welsh Language	X				
Human Rights	X				

Risk Assessment Summary
Have you identified any risks arising from the implementation of this policy / procedure / written control document? No
Have you identified any Information Governance issues arising from the implementation of this policy / procedure / written control document? No
Have you identified any training and / or resource implications as a result of implementing this?

All midwives who complete a NIPE assessment will have completed a recognised NIPE post reg qualification or SPENI module within their BSc Hons Midwifery degree

1 Introduction

The NHS Wales: Newborn and Infant Physical Examination Cymru (NIPEC)
A new set of published guidelines and standards for the newborn and infant physical examinations for implementation by health boards in Wales.

The guidelines and standards have been co-produced with NHS Wales to align with UK national screening standards recommendations, to ensure every baby is offered a physical examination within 72 hours of birth and at 6 weeks of age to screen for early identification of treatable conditions relating to four areas, the eyes, hips, heart, and testes (in boys).

Newborn and infant examination practices are already embedded within each health board. The focus has been to improve the quality and consistency of these examinations across professions and throughout Wales. Expert groups of clinicians across Wales have agreed a clear set of standardised pathways to ensure a consistent, quality assurance process from examination to referral for more detailed assessment and any necessary treatment.

- Accountability and delivery of NIPEC remains fully with individual health boards. These standards will assist meaningful reporting and assurance mechanisms, and ongoing quality improvement work.
- The screening and referral pathways will help clinicians deal safely with any concerns identified and identify when prompt referral is needed for more detailed assessment by the relevant clinical expert.
- Successful early identification and timely referral for treatment in the four screening elements is highly prudent healthcare and improves outcomes for children. Problems avoided include visual loss from congenital cataracts, death or heart failure from congenital cardiac disease, mobility limitations, pain, and surgical intervention from developmental dysplasia of hips, and infertility or cancer risk from undescended testes.
- The NIPEC project standards provide a defined set of measures that health boards must meet to ensure local delivery is safe and high quality. Health boards should make sure there are local systems for collecting and reporting coverage and timeliness dates (such as date of post screen positive referral appointment or review) as key proxies for screening outcomes.
- We expect health boards to ensure processes, including data capture, are developed, and put in place for monitoring and quality assurance.
- These ages are recommended based on best practice and current evidence and should facilitate a prompt referral for early clinical assessment.

2 Objective and aims

The overall aim must be to ensure safe and effective care is provided to women, birthing people and their babies. Almost immediately after a baby is born, they should have an initial examination to ensure they have no obvious physical anomalies. This guideline uses the terms 'woman' or 'mother' throughout. These should be taken to include people who do not identify as women but are pregnant or have given birth. Similarly, where the term 'parents' is used, this should be taken to include anyone who has main responsibility for caring for a baby. It is recognised that there are many different family arrangements

Whilst it is anticipated that Powys midwives will primarily examine babies born in Powys to low-risk mothers, there may be occasions when a baby returns to the community from the OLU (Obstetric Led Unit) and requires an examination. The midwife must use her professional judgement to assess risk factors and refer such babies back to the OLU for examination if she feels that she does not have the skills and competence to carry out the examination.

Each baby born in Powys will then receive a detailed NIPEC examination within 72 hours. NIPECs can be performed during the first few hours of life. There is no need to wait 6 hours before completing it. This will ensure that examinations can be completed by the midwife prior to leaving the birth centre or home (Short, 2012).

It is considered safer to undertake the NIPEC examination early with the potential for more false positives rather than risk missing screening altogether. (PHE 2016/7)

Aims

- To confirm normal adaptation to extra-uterine life, including circulation, elimination and feeding
- Identification of common neonatal problems with advice about management or appropriate reassurance if no intervention is indicated
- The examination is a screening procedure, to identify and refer all children born with congenital abnormalities of the eyes, heart, hips and (in males) testes, where these are detectable within 72 hours (about 3 days) of birth. This marks the commencement of ongoing child health surveillance.
- Although not covered in the remit of this document, a second NIPEC is further undertaken by the GP to identify those abnormalities that may become detectable by 6 weeks of age.
- Reduce morbidity and mortality.
- It is an opportunity for health promotion and education on a range of areas relevant to maintaining infant health (jaundice, vitamin K, hearing screening, nutrition, hygiene, breastfeeding, reducing the risk of SIDS, safe transport in cars and maternal depression).

This examination also provides an opportunity to address broader psychosocial issues (mental health, substance abuse, and smoking) as well as spiritual and cultural needs

3 Definitions

- **PTHB** – Powys Teaching Health Board
- **SIDS -** sudden infant death syndrome
- Initial examination at birth involves the first examination of the neonates by the midwife, about one hour after birth.
- **NIPEC -** Newborn and Infant physical examination Cymru undertaken by an Accredited midwife
- **Accredited midwife -** A qualified Midwife who has undertaken additional training, which involves a theoretical and practical assessment.
- **SGA –** small for gestational age
- **OLU –** Obstetric Led Unit

4 Responsibilities

4.1 Head of Midwifery and Sexual Health

The Head of Midwifery and Sexual Health must:

- Ensure all staff read and understand this guideline
- Arrange regular review to monitor compliance with this guideline.

4.2 Assistant Head of Midwifery and Sexual Health

Ensure that all midwives undertaking the NIPEC have a recognised qualification and that these midwives complete CPD and annual updates as specified in the WCH/2023/040 guideline.

4.3 Consultant midwife / Practice Facilitator Midwife

- Support implementation of this document
- Review any new evidence or guidance that is produced that may influence the service.
- Communicating any key changes in advice that might influence service provision to the Midwifery Leadership and Management team for consideration.
- Quarterly reporting on the datasets – timeliness of first examination, referrals and seen within the specified timeframes.

4.4 Governance

The Women and Children's Risk and Governance Lead has responsibility for:

- Monitoring review of incidents in relation to the content of this document

4.5 Band 7 Midwifery Team Leads

The Band 7 Team lead has responsibility for

- Ensuring Compliance with this document by the teams that they manage
- Be a point of contact for assessment and supervision of midwives undertaking the NIPEC course and assessment and final sign off for newly qualified midwives coming into practice that have completed the theoretical component but need to complete the practical aspect to complete the qualification.
- Ensure that all midwives have access to any CPD days that are facilitated by other Health Boards.

4.5 Midwives

The Midwife is responsible and accountable for maintaining and updating newborn examination skills (NMC, 2015). And completed their training as written in **5.1**
All Midwives working within Powys hold a recognised midwifery qualification.
Ensure that they complete the relevant CPD update on the Y *Ty* Dysgu website and maintain their competency, completing the tool as stipulated below

5 Training and Continual Professional Development

5.1 Recognised NIPE examination qualification

In addition, midwives carrying out full newborn examination must have either completed the appropriate course, 'Newborn and Infant physical Examination' or completed the SPENI (Systematic physical examination of the newborn) modules within their BSc Hons in Midwifery and completed the necessary 30 NIPE examinations. (From 2024 onwards, all newly qualified midwives will qualify with this qualification) Once qualified they will need to complete five examinations with a mentor for full sign off.

5.2 Continuing Professional Development

The recommendations from the Annual Learning Framework are: - https://heiw.nhs.wales/files/nipec-annual-learning-framework-guidance-pdf/

- NIPEC e-learning module (http://heiw.nhs.wales/our-work/the-newborn-and-infant-physical-examination-cymru-nipec)
- Discussion of national standards, clinical pathways, training, and education resources
- Attendance at a local or national NIPEC update session

Complete the NHS Wales Newborn and Infant Physical Examination Cymru annual learning framework https://heiw.nhs.wales/files/nipec-annual-learning-framework-pdf/

5.3 Peer Review Framework Guidance

The NHS Wales NIPEC peer review framework has been developed to support NIPEC practitioners to record and maintain the practical skills required to perform the NIPEC newborn examination, it can also be used in primary care for the 6-week examination.
NIPEC practitioners can use the peer review framework to:

- Demonstrate evidence of good clinical screening practice in line with current guidance (https://heiw.nhs.wales/our-work/the-newborn-and-infant-physical-examination-cymru-nipec)
- Demonstrate evidence of lifelong learning and CPD
- Enable local providers to demonstrate quality assurance of the NIPEC examination.
- Promote consistency in practice across all disciplines (medical, midwifery and nursing).

The peer review framework is intended to be used by fully qualified NIPEC practitioners as defined in section 12 of the handbook, and a peer reviewer. This can include medical, midwifery and nursing staff. Due to the clinical nature

	of the peer observation and review, the nominated peer reviewer must also be NIPEC qualified. For access to the Peer Review Framework and the Annual Learning framework please access these here and download. https://heiw.nhs.wales/files/nipec-peer-review-framework-guidance-pdf/ https://heiw.nhs.wales/files/nipec-peer-review-framework-pdf/

6 Safeguarding

If any safeguarding concerns or significant risk factors are identified for a child or young person/vulnerable adult (*delete as appropriate), practitioners must follow Wales Safeguarding Procedures (2019) and SGP036 Safeguarding Policy Policies & Written Control Documents - SGP 036 Safeguarding Policy.pdf (sharepoint.com) . Advice and support concerning any safeguarding issue can be sought from PTHB Safeguarding Team via the Safeguarding Hub on 01686 252806 or email PowysTHB.Safeguarding@wales.nhs.uk (Monday-Friday 09:00-17:00, excluding Bank Holidays). Outside of office hours, Local Authority can be contacted on 0345 0544 847 or contact Silver on Call.

All registered practitioners should access appropriate safeguarding supervision and training as per guidance. Safeguarding Supervision (sharepoint.com).

7 Full Newborn examination

7.1 Consent and preparation

The assessment of the infant should be performed with the mother/parent(s) consent and all aspects of the assessment should be clearly explained. If the mother cannot be present, other family members should be involved and made aware of the findings as soon as possible. If consent is not given by the parent(s) to examination, this should be documented and notified to GP and Health Visitor for information. The setting should ensure comfort and safety for mother and baby, with measures taken to prevent cross infection. The environment should also provide privacy during and after the examination when confidential information may be discussed.

It is ideal to perform the examination when the baby is relaxed and not hungry, in a well-lit, draught-free environment.

Before the examination, the examiner should familiarise themselves with the maternal records and have a thorough discussion with the mother and, if appropriate, her partner.

7.2 History taking

A review of the medical history, including: - family history, mother's social history, maternal, antenatal, and perinatal history, infant, fetal and neonatal history and previously plotted birth weight and head circumference

- A review of parental concerns.
- Identify drugs the mother may have taken during the pregnancy or received in labour.
- Identify the mother's blood group and the presence of any antibodies.
- Identify if any resuscitation was required and Apgar scores.
- Check mother's decision re: administration of vitamin K.
- Method of Feeding
- Give relevant information to parents before the examination and an opportunity to discuss the forthcoming screening tests as part of it.
- Consent by mother to perform the examination.

7.3 The Physical Examination Should Include the Following:

- A check of whether the baby has passed meconium and urine (enquiring about the nature of urine stream in a boy)
- Observation of the baby's general condition including colour, breathing, behaviour, activity, and posture
- Examination of the exposed parts of the baby first: scalp, head (including fontanelles), face, nose, mouth including soft and hard palate and tongue, ears, neck, and general symmetry of head and facial features
- Consideration of any specific known risks in the baby's home, and alerting appropriate professionals to parents who may have problems in caring for their baby
- Confirm findings with parents and allow time for discussion
- Ensuring that parents know how to assess their baby's general condition and to contact a midwife, health visitor, doctor or emergency services if required, (NICE, 2021).

Undress Baby to Complete the Examination

- Observations of the baby's abdomen – colour, shape and palpate to identify any organomegaly, and include examination of the condition of the umbilical cord.
- Observation of the baby's anus, to check completeness and patency. The presence of meconium does not indicate normal anal position or patency. It is important therefore to remove all visible meconium prior to examination.
- Inspection and palpation of the bony structures of the spine and the integrity of skin with the baby prone, noting the colour and texture of the skin as well as any birthmarks or rashes.
- Observation of the tone, behaviour, movements, and posture to complete the assessment of the central nervous system (CNS)

- If concerned, undertake more detailed neurological examination e.g., eliciting newborn reflexes.
- Note the sound of the baby's cry.
- If exposed, examination of the baby's neck and clavicles, limbs, hands, feet, and digits, assessing proportions and symmetry.

7.4 Examination of the baby's eyes

See **Appendix A** for risk factors. The primary aim of the NIPEC eye examination is the detection of congenital cataracts. In addition, it is considered good practice to include assessment of the:

- Eyelids, to exclude malformation and skin abnormality, ability to fully open the eyelids.
- Presence of eyes – both the same size and colour
- Symmetry and clarity of the cornea, the roundness and symmetry of the pupils
- For presence of fundal reflex (red) to exclude congenital cataracts, see **Appendix B** for detail and examples of different colour fundal reflex in different ethnicity of baby.
- **Abnormality suspected** – refer for appointment with consultant ophthalmologist by **2 weeks of age**

7.5 Examination of the heart:

- Any significant family history in first degree relatives of CHD (Incidence and Risk Factors for Cardiac heart disease – **Appendix C**)
- Mother's medical and recent obstetric history, including any medication
- Baby's immediate postnatal health
- If their baby ever gets breathless or colour change at rest or while feeding
- Is not feeding well or ever too tired to feed, quiet, lethargic or has poor muscle tone.

Observation

- General tone
- Central and peripheral colour: observing internal mouth mucosa to ensure good perfusion and accuracy in babies of all ethnicity – (tongue when checking the palate)
- Pre - and post-ductal oxygen saturations
- Size and shape of chest
- Respiratory rate
- Symmetry of chest movement, use of diaphragm and abdominal muscles
- Signs of respiratory distress (recession/grunting)

Palpation

- Femoral and brachial pulses for strength rhythm and volume, compare character and strength to right brachial pulse

- Assess perfusion through capillary fill time (should not be >2 seconds)
- Position of cardiac apex (to exclude dextrocardia)
- Palpation of liver to exclude hepatomegaly – (>2 cm below right costal margin) may be present in congestive heart failure
- Feel for precordial thrill (vibrations under palm or fingers) or heave (strongly palpable/forceful cardiac contraction with palm or fingers).

Auscultation

Auscultation includes identification of a murmur, either systolic or diastolic or loudness. It also included the assessment of the quality of heart sounds at 5 areas:

- Upper left sternal edge (2nd intercostal space) pulmonary area
- Upper right sternal edge (2nd intercostal space) aortic area.
- Lower left sternal edge (4th intercostal space) tricuspid area.
- Apex - mitral area.
- Midscapulae – especially coarctation.

Listen for murmur and regularity of heart sounds (no missed or skipped heart sounds) If murmur present, describe:

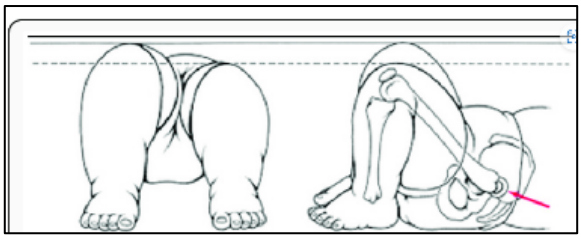
- Whether systolic or diastolic murmur or continuous (audible both in systole and diastole)
- Grade loudness of murmur – soft, loud, or associated with thrill/heave
- Which area the murmur was heard the loudest
- Radiation of the murmur.

Oxygen saturation measurement

Ensure that peripheries are warm, and well perfused before readings are taken. Measuring both the pre- and post-ductal saturations. See **Appendix D** for diagrams

- Apply the saturation probe to the infant's right hand and record the pre-ductal saturations
- Apply the saturation probe to the infant's right foot to measure the post-ductal saturation.
- Ensure the probe is applied adequately and wait until the monitor has obtained a good signal and has reached the highest level it will go, before recording the saturation reading. <u>This could take up to 90 seconds (about 1 and a half minutes) to obtain an accurate reading.</u>
- If the pre- and post-ductal measurements are 95% or greater and there is less than or equal to 3% difference between them then no further measurement is necessary. Abnormality not suspected.

Abnormality suspected = heart murmur or abnormal pulse oximetry in the community or significant family history of congenital heart disease identified at newborn examination

	See **Appendix E** Pathway for cardiovascular examination for Community.
	7.6 Examination of the hips – **see Appendix F for additional risk factors.** The examination should take place in a warm environment and on a firm, flat surface with the baby undressed and settled. ➢ **Observation**. • Symmetry of leg length • Galeazzi test: Performed by placing the flexed knees and hips together to observe the symmetry of leg lengths. This helps in detecting a unilateral dislocation.  • Symmetry of skin folds in the buttocks and posterior thighs when baby is in ventral suspension ➢ **Manipulation** • Undertake both the Ortolani and Barlow manoeuvre on each hip separately. • Ortolani manoeuvre is used to screen for a dislocated hip • Barlow manoeuvre is used to screen for dislocatable hip • If legs can be fully abducted to 90 degrees, it can sometimes be the most sensitive sign of a dislocated hip. https://heiw.nhs.wales/files/48946-nipec-hips-final-web-pdf/ for full details of examination See **appendix F** Clinical Risk factors for developmental dysplasia of the hip ➢ **Abnormality suspected** following examination with clinical abnormalities: Should be referred urgently for a neonatal hip ultrasound **by 2 weeks of age.** ➢ **Abnormality suspected** because of an **identified risk factor** should be referred urgently for a neonatal hip ultrasound and scanned by **6 – 8 weeks (about 2 months) of age.**
	7.7 Examination of the Testes • Be aware of any first-degree family history of undescended testes (baby's father or sibling, low birth weight, SGA, or preterm birth • Observation – scrotum for symmetry, size (hypoplastic/underdeveloped) and colour • Palpation • Carry out an inguinoscrotal examination (bimanual soap test) along anatomical line of testicular descent from each deep ring, along the inguinal canal, distally to the scrotum.

	• Undertake examination of ectopic locations if testis not palpable along anatomical line of descent. • Where testes are felt bilaterally but barely in the scrotum/emergent from inguinal canals, this should be managed as **abnormality suspected.** **Abnormality suspected:** • Bilateral undescended testes – to be reviewed by a senior paediatrician within **24 hours of the examination** to identify or exclude metabolic and/or disorder of sexual development/differentiation (DSD) • Unilateral undescended testis – **review at 6 – 8 week examination**
	7.8 Documentation • A comprehensive account of the examination should be documented using **Appendix G**, a copy of which must be sent to the client GP. This is an electronic excel sheet, which can then be printed and added to the maternal notes. • The Child Health Record must also be completed and signed by the examining midwife. • On discharge the midwife must insert the details into Welsh Patient Administration System (WPAS the All-Wales electronic record system) on the neonatal discharge examination section. • There will be an app to complete sections of the examination (currently under development)

10 Referrals

If any abnormalities are detected, they should be communicated to the parents and referred to the appropriate professional with the relevant district general hospital.

Parents of babies who are referred should be given a full explanation of the reason for and timescale for referral.

- Abnormalities of the eyes – referral completed by two weeks of age
- Abnormality of heart examination or pulse oximetry – see appendix D
- Abnormality of the hips suspected at examination – referral by two weeks of age
- Abnormality of the hips is suspected because of an identified risk factor – referral to be seen by six – eight weeks of age.
- Abnormalities of the testes – bilateral undescended – within 24hrs
  Unilateral undescended – review at 6 – 8 week examination.

9 Monitoring Compliance, Audit & Review

Currently, the completion of a NIPEC is monitored by using the Power BI pathway, set up for NIPE. This shows compliance. It only has one relevant section, about hip examination.

At notes audit and document reviews, the presence of a NIPE form is documented.

An app is in a draft stage which will have the ability to complete all abnormalities found and the appropriate time referrals. This will also pull in data from external Health Boards and Trusts where the infant has been seen.

This document will be reviewed every three years or earlier should audit results or changes to legislation / practice within PTHB indicate otherwise.

10 References / Bibliography

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NMC (2015) *The Code: Standards of conduct, performance and ethics for nurses and midwives.* London, NMC

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NICE (2023) Intrapartum care: Care of Health Women and Babies during Childbirth. NICE. London

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NIPEC Examination of the Eyes – https://heiw.nhs.wales/files/48946-nipec-eyes-final-web-pdf/

NIPEC Examination of the Hips – https://heiw.nhs.wales/files/48946-nipec-hips-final-web-pdf/

NIPEC Examination of the Heart – https://heiw.nhs.wales/files/48946-heart-english-final-web-pdf/

NIPEC Examination of the Testes – https://heiw.nhs.wales/files/48946-nipec-testes-final-web-pdf/

Appendix A

Risk Factors for Eye or visual problems including congenital cataracts

Before the NIPEC eye examinations, practitioners should:

- Discuss the test and gain consent from the parents to undertake the examination
- Establish the mother's recent obstetric history
- Establish if there are any clinical risks for eye disorders (see below)

Risk Factors for congenital cataracts

Babies with a family history of bilateral congenital or hereditary cataracts in a first-degree relative are at risk of developing early cataracts. Even if the NIPEC examination is normal, these babies may be considered for referral for early specialist opinion, via locally agreed pathways.

Risk Factors for other eye or visual problems

Risk factors include:

- A family history of bilateral congenital or hereditary cataracts affecting a first-degree relative
- A first-degree relative with an ocular condition which was congenital or developed in early childhood, for example aniridia (absent iris), coloboma (malformation of the eye) or retinoblastomas (malignant retinal tumour) childhood.
- Small size for gestational age or preterm birth – babies born before 31 weeks' gestation or under 1500gm are screen for retinopathy of prematurity. There is a higher incidence of refractive errors (needing glasses), strabismus (turn in eye) and vision problems reported in premature babies
- Genetic syndromes, such as trisomy 21, associated with eye and vision disorders
- Port wine stain involving the eyelids, which can cause glaucoma
- Maternal exposure to viruses during pregnancy, including rubella and cytomegalovirus
- Maternal exposure to certain drugs (e.g. opiates) can result in delayed visual maturation
- Neurodevelopmental conditions or sensorineural hearing loss (deafness caused by abnormal nerve function in the inner ear).

Appendix B

The fundal reflex examination

The fundal reflex should be assessed. This is the normal reflection of white light from the back of the eye on ophthalmoscopy which varies in colour depending on the baby's ethnicity.

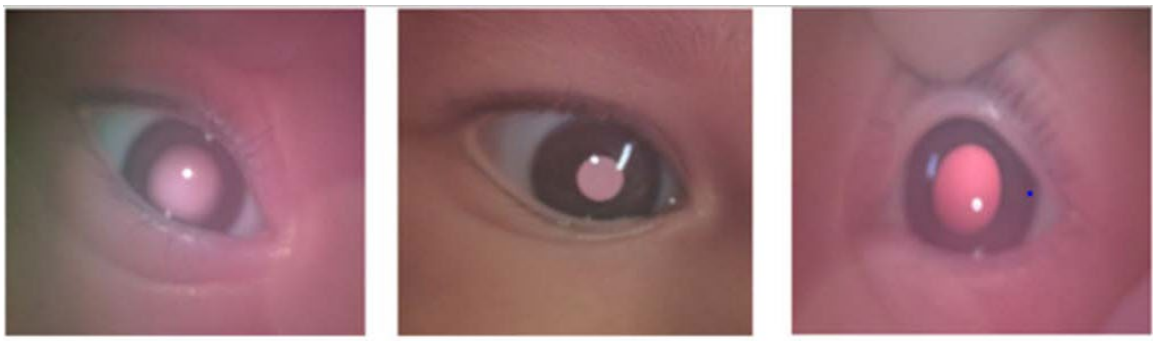
Please note: The reflex for this screening is referred to as 'fundal reflex.' Fundal reflex can also be referred to as red or fundus in other NHS resources.

To undertake the examination, the practitioner should:

- **dim the overhead lights and make sure that the baby is settled**
- **hold the eyepiece of the ophthalmoscope up to his or her eye, at arm's length from the baby's face**
- **direct the circle of light from the ophthalmoscope towards the baby's eye while gently parting the baby's eyelids, if necessary**
- **view the fundal reflex through the ophthalmoscope eyepiece – the fundal reflex should be the same in both eyes for colour, brightness, and the presence of any shadows.**

The examination can be repeated by an experienced practitioner if the examination is equivocal. This should ideally be within the 72-hour guideline period of the NIPEC newborn examination.

The normal fundal reflex varies in hue depending on the baby's ethnicity. White babies have an orange-red reflex. The reflex can be less bright and appear magnolia in colour in black, Asian or minority ethnic babies. If the assessment is difficult, it can help to assess the baby's parents' fundal reflexes to determine the expected reflex colour.
Examples of normal fundal reflex by ethnicity of baby (from left to right: black, Asian, white).

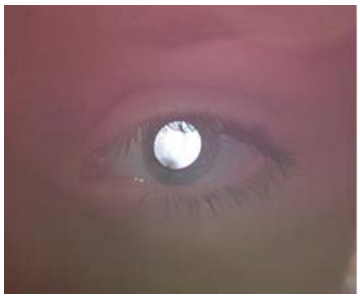


Appendix B continued.

Congenital Cataracts

Congenital cataracts cause a central shadow, completely obscure the fundal reflex, or may make the reflex in one eye appear duller than the other. A severe cataract can make the pupil appear white when viewed with the naked eye. The fundal reflex is abnormal if it is completely or partially obscured, is abnormal in shape (iris coloboma or aniridia), white or asymmetrical in colour or brightness to the other eye

Examples of partially (left) and completely (right) obscured fundal reflexes.



Example of a white 'fundal reflex'

Copied with consent from Newborn and infant examination Cymru (NIPEC) examination of the eyes pg. 8 and 9 2023

Appendix C

Incidence and Risk Factors for Congenital heart disease (CHD)

The purpose of screening is the early identification of major congenital heart diseases. Congenital heart disease (CHD) describes a problem with the heart's structure and function present at birth.

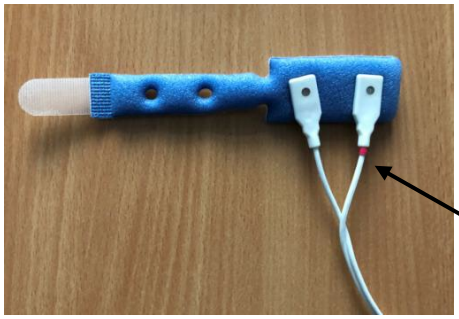
Incidence	Risk Factors for CHD
The overall incidence of CHD ranging from non-significant to major and critical lesions, is about 8 per 1,000 (range 6 to 12 /1,000 live births). Critical congenital CHD accounts for 15% to 25% of these and is a leading cause of morbidity and mortality; CHS's can be categorized as: • CCHD, which includes all potentially life-threatening duct-dependent conditions and those conditions that require procedures within the first 28 days of life. • Major serious CHD, which includes defects not classified as critical but requiring invasive intervention in the first year of life. Some critical and major cardiac diseases may be detected during pregnancy as part of the fetal anomaly screening, during the 20-week ultrasound scan.	• Family history of CHD (1st degree relative) • Fetal trisomy 21 or other trisomy diagnosed (these babies have high risk of cardiac defects and require continues surveillance) • Cardiac abnormality suspected from the antenatal scan • Maternal exposure to viruses, for example, rubella during early pregnancy • Maternal conditions, such as diabetes (type 1), epilepsy, systemic lupus erythematosus (SLE) • Teratogenic drugs taken during pregnancy. Although practitioners should be aware of these risk factors, they do not alter the NIPEC national heart examination pathway.

Appendix D

Guide to use the Masimo Rad- 5 Handheld pulse oximeter monitor.

1. Ensure the saturation sensor is connected to the monitor. Clean the surface of the YI sensor **(re-usable)** with clinell wipes and ensures it is dry before use.

YI sensor
These
ARE NOT disposable



2. Place the saturation sensors on the posi wrap as shown in the picture

Red Band

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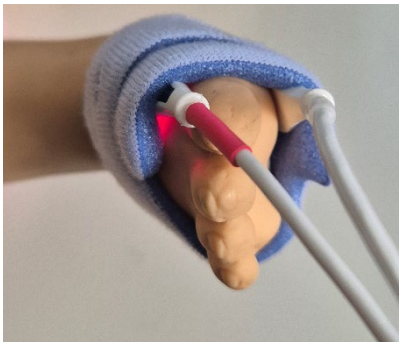
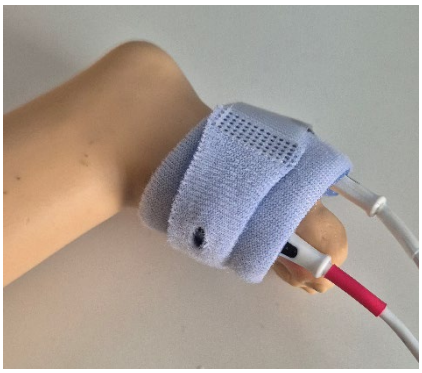




3. Wrap the posi wrap with the sensor having red band on top of baby's foot and the other sensor opposite

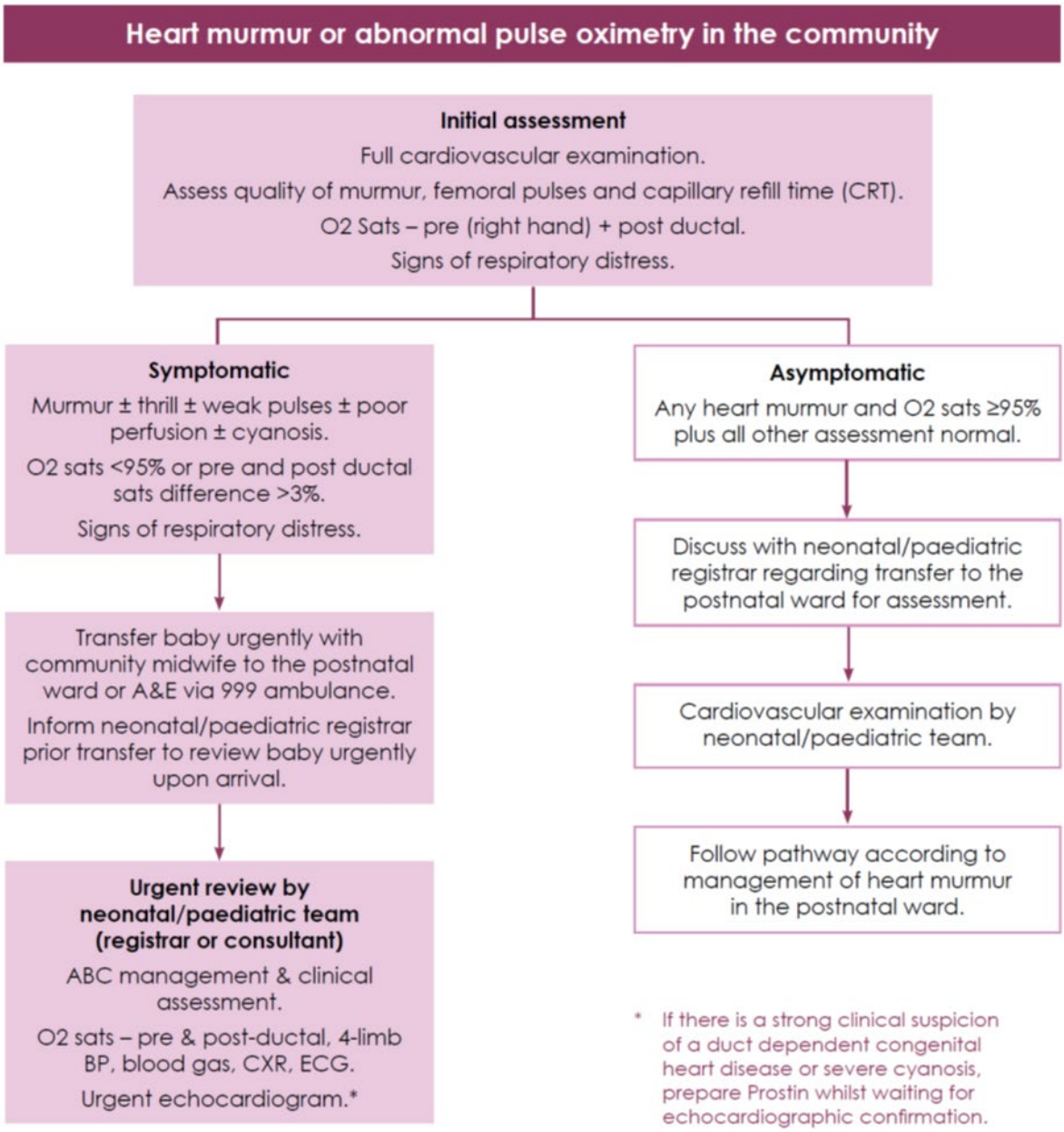
4. Switch on the monitor and once you get a reading, this may take several minutes, ensure reading is consistent to record the saturations. **Normal reading is ≥ 95% in air.**

Please note these posi wraps are ideally single use and if the wraps are unavailable, you can still get a reading by holding the sensor in the correct position using an alternative to prevent ambient light. (Standard posi wrap or any plaster tape).

-

Appendix E

Pathway for Heart Murmur or abnormal pulse oximetry in the Community



Clinical Risk factors for developmental dysplasia of the hip

Incidence

Developmental dysplasia of the hip (DDH) is the most used term for the congenital disorder where there is an abnormal relationship between the ball and socket of the hip joint. It is also referred to as congenital hip dislocation or hip dysplasia.

DDH has a reported incidence of 1-2 per 1000 live births with 35–70 new cases of DDH treated in Wales each year.

Early identification of sonographic pathological hip dysplasia through selective ultrasound allows more successful non-surgical intervention with harness treatment. With optimum treatment, most children can develop normal hips, with full range of mobility.

Without treatment DDH may lead to problems in later life including a limp, hip pain, and predictable osteoarthritis. Undetected unstable hip(s) with delayed treatment may result in the need for complex surgery and, or long-term complications such as impaired mobility and pain osteoarthritis of the hip and back.

Clinical risk factors

The mother should be questioned directly with regards to of the identified risk factors below if they have not already been identified;

Family history

- First-degree family history of hip problems in early life as defined by a positive response to this question, "Is there anyone in the baby's close family, i.e., a mother, father, brother or sister, who has had a hip problem that started when they were a baby or young child that needed treatment with a splint, harness or operation?"

The identification of a breech presentation

- Any baby at or after 32 completed weeks of pregnancy, irrespective of presentation at birth or mode of birth should be referred for an USS as per pathway.

In the case of a **multiple birth**, if any of the babies falls into either of these categories, all babies in this pregnancy should have an ultrasound examination.

This is because if one of the babies meets the criteria of breech presentation described above during pregnancy, it may be difficult to accurately identify which baby was affected.

Appendix F Continued

Unless a history of breech presentation at these times has already been handed over from the midwifery staff, or is evident from the maternal notes, the parent should be asked "**Was your baby head down after 32 weeks of pregnancy?**

Additional risk factors

If the health board indication for screening is more extensive than those stated above, they should continue to provide that level of screening. The advice above is the minimum requirement for each health board within Wales. There are other conditions associated with DDH that may also require hip screening, and this will be decided locally. The variation across Wales for additional risk factors include:

- Oligohydramnios is defined as the deepest vertical pool (DVP) or amniotic fluid index (AFI) < 5th percentile for liquor volume or when a sonographer has recorded subjective diagnosis of oligohydramnios at any stage in pregnancy.
- Large Birthweight infants > 4.5 kg
- Congenital Foot deformities – metatarsus adductus, calcaneovalgus, positional talipes
- Packaging deformities – congenital knee dislocation, torticollis, plagiocephaly
- Neuromuscular Conditions – Spina bifida, Arthrogryposis, Syndromic Conditions – VATER / VACTERL

It is advised that the local clinicians responsible for managing DDH have written protocols so that all staff examining infants are aware of the local diagnostic and treatment pathways.

On this basis **clinically abnormal** hips will fall into three broad categories:

1. FRANKLY DISLOCATED BUT RELOCATABLE: There is a leg length discrepancy with the dislocated side being short. On Ortolani's test there is a clunk as the hip re-enters the socket. In this situation the hip is dislocated as the child lies on the couch but relocates.

2. FRANKLY DISLOCATED HIPS BUT IRREDUCIBLE: There is a leg length discrepancy, but Ortolani's test is negative.

3. HIPS WHICH ARE LOCATED BUT DISLOCATABLE: The leg length equal but Barlow test positive. The most likely cause for this situation is physiological neonatal instability of the hip rather than frank dislocation. 90% of these cases settle within six weeks.

Appendix G

Newborn Infant physical Examination Cymru

Mother's Name | Baby's Name

Mother's D/O/B | Baby's surname | Weight in gms

Mother's P Number | Baby's NHS No

Consent for examination given? | Date of Birth

Type of birth | Place of birth | Time of birth

Head circumference cm | Apgars @ 1 min | @ 5 mins | @ 10 mins

Maternal Rhesus status | Sex of baby | GAP centile

Relevant Medical or Obstetric History

Family History of CH | **Family history of DD**

Family history of undescended testes

Family history of congenital cataracts or other visual pro

Family history of congenital hearing problem | High risk group for TB

Examination

Head including fontanelles | Hard palate | Soft palate | Lips & tongue

Mouth

Eyes Fundal reflex in right eye | Fundal reflex seen in left eye

Roundness of pupils

Eyelids | Both eyes the same size | Symmetry and clarity of the cornea

Examination of the heart

Number

General Observation | Tone | Well perfused or cyanosed | Respiratory rate

Femoral pulses | Brachial pulse | Air entry

Auscultation of the heart | Grade loudness of murmur

Examination of the hips

Observation and manipulation tests Galleazzi test | Limitation in abduction

Barlow - screen for a **dislocatable** hip | Ortolani - screen for a **reducible** hip

Genitalia | Examination of the **testes**

Any abnormalities of female or male genitalia noted? (free

Abdominal palpation and observation | Umbilicus

free text

Neck | Spine | Skin | Posture

Hands including palmer creases | Feet

Anus | Bowels open | Colour | Passed urine

Reflexes present Grasp | Moro | Babinski | Suck

Feeding | Any parental concerns with feeding?

Vitamin K

Date and time of examination | **Signature** | **Print name & qualification**

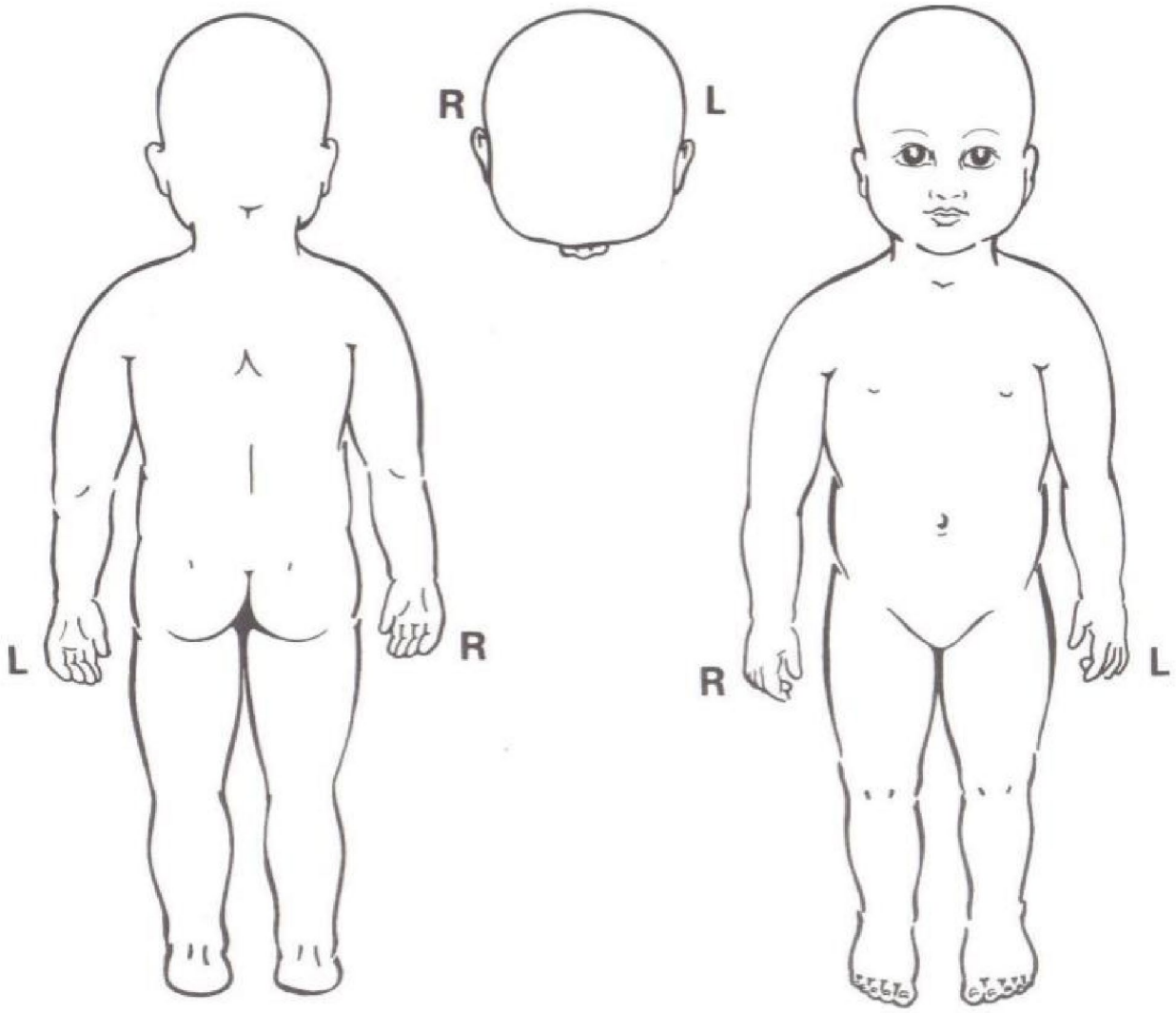
Date | Time

This copy to be filed in maternal notes

For any abnormalities suspected - see Guideline for referral framework | Copy sent to GP

Appendix G continued

Body map



Date **Time**