PROCEDURE

Hip assessment

Scope (Staff):	Community health (Child health)
Scope (Area):	CAHS-CH, WACHS

Child Safe Organisation Statement of Commitment

CAHS commits to being a child safe organisation by applying the National Principles for Child Safe Organisations. This is a commitment to a strong culture supported by robust policies and procedures to reduce the likelihood of harm to children and young people.

This document should be read in conjunction with this disclaimer

Aim

To identify deviations from normal in the development of the hip joint.

Risk

If deviations from normal are not detected early the hip joint may develop abnormally, leading to degenerative joint disease, impaired gait, and/or hip, knee and lower back pain[1, 2].

Definitions

Developmental dysplasia of the hip (DDH) is the condition in which inadequate hip joint formation results in the femoral head having an abnormal relationship to the acetabulum[2]. This may be due to a shallow acetabulum or lax supporting structures[3]. It includes frank dislocation (luxation), partial dislocation (subluxation) and instability[1, 3, 4].

Luxation or dislocation refers to the femoral head being positioned completely outside the acetabulum[1].

Subluxation refers to the femoral head being partially displaced outside of the acetabulum[1].

Clinically unstable hips are those where the femoral head can move either within or outside the acetabulum. The hips can be displaced by stress maneuvers[3, 4].

Background

Developmental dysplasia of the hips is a developmental condition which can develop at any time until the child is walking and beyond[2, 5]. Therefore, repeated examination outside the newborn period is recommended and nurses should be alert to signs of

DDH at every contact during the period from birth to independent walking[1, 6]. The earlier that DDH is detected, the simpler and more effective is the treatment[7].

During the first few weeks after birth, instability of the hip is common. Newborn soft tissue hip 'clicks' may be palpable or audible during early examinations. These are not predictive of DDH[1] as they are benign and resolve in time[2] and do not require monitoring or referral[7]. Most hips stabilise after the first weeks of life, with over 90% of previously unstable hips having developed normally within 12 weeks[8].

DDH occurs in 1 to 2% of infants[2]. Late presenting DDH is estimated to be about 2 per 1000 live births[2].

Risk factors for DDH include[9].

- female (four times higher prevalence than males)[2]
- breech presentation (in either sex)[4]
- family history (first degree relative)[4]
- first born child
- twins
- tight wrapping with legs held straight[2, 10]
- birthweight over 4000g[4]

DDH is also associated with [6] torticollis and plagiocephaly[7, 10], foot deformities[2, 10] and oligohydramnios (lack of amniotic fluid).

Significantly, 60% of infants with DDH have no identifiable risk factors[11]. Pain is not usually present in infants and young children with hip dysplasia, although it may develop in adolescence and adulthood if DDH remains untreated.[2, 11]

The experience and training of the examiner and the age of the child influence the detection rates of DDH[1]. It takes practice and expertise to differentiate between a normal unstable hip during early development and a truly dislocatable hip.

Examination techniques will depend on the child's age[2, 12]. See **Table 1** for a summary of hip assessments at each universal contact.

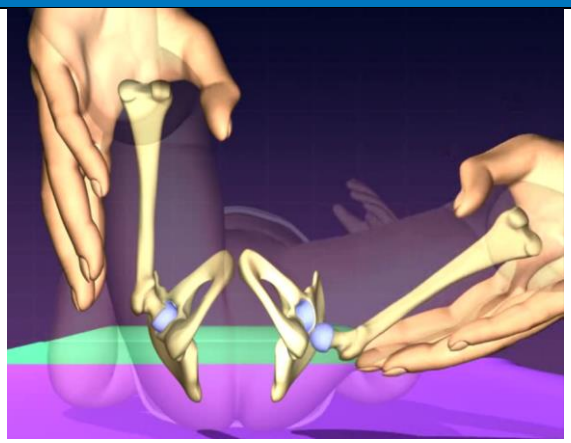
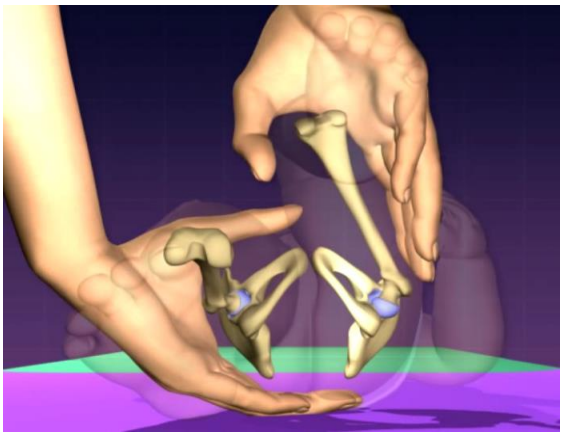
Key points

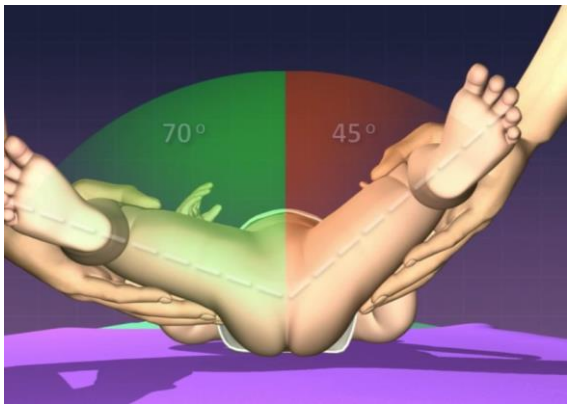
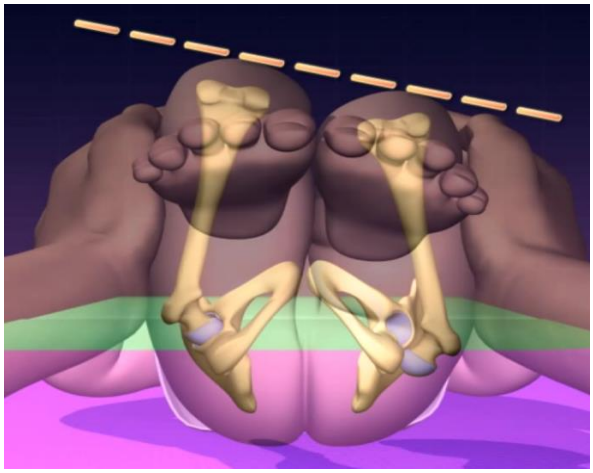
- Physical examination of the hips is only to be performed by nurses with appropriate training.
- For more information and a visual presentation, refer to the Training Package *Hip Assessment for Developmental Dysplasia of Hips (DDH).*
- All nurses will refer to the Nursing and Midwifery Board AHPRA Decision-making framework in relation to scope of practice and delegation of care to ensure that decision-making is consistent, safe, person-centred and evidence-based.

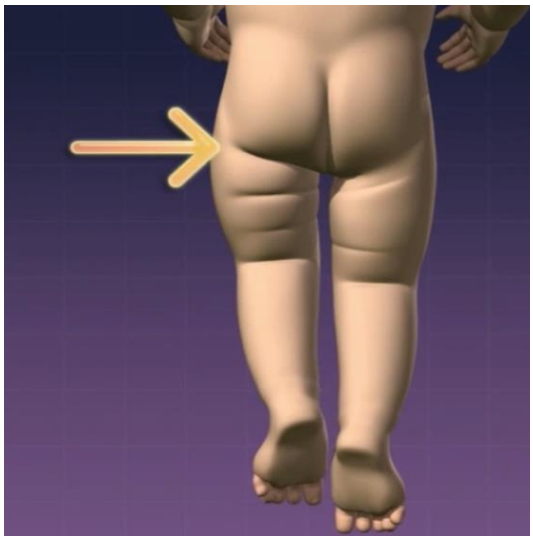
- Nurses need to provide a culturally safe service delivery which demonstrates a welcoming environment that recognises the importance of cultural beliefs and practices of all clients.
- Community health nurses must follow the organisation's overarching Infection Control Policies and perform hand hygiene in accordance with WA Health guidelines at all appropriate stages of the procedure.

Process

Steps	Additional Information
1. Engagement, consent, and preparation • Enquire at all contacts about risk factors, relevant family and past health history and any present concerns. • Explain the procedure to the parent/caregiver and child and ensure verbal consent has been obtained before the assessment. • Stand facing the firm, level and waist-height assessment surface. • Place infant/child on assessment bench with feet facing the nurse. • Infant must be examined while they are calm and relaxed[2]. • Assess the infant with gentle, warm hands.	• When conducting assessments for DDH, gentle handling of the infant/child is important, as the goal is not to prove that the hip can be dislocated. • Nappies must be removed, but baby may be more relaxed if lightly clothed above the waist. • If the child is crying or insufficiently relaxed, their resistance to passive movement may give a false test result[2]. • For children who are independently walking, assessments may be completed with child wearing light clothing such as underwear and t-shirt. • Observations are more accurate when the child is undressed below the waist. Staff must document if child is wearing light clothing when assessed.
2. Assessment of hip stability: Ortolani test (birth to ~12 weeks) • Hips are assessed one at a time. • Place infant supine. • Stabilise the pelvis with fingers of one hand under the sacrum and the thumb over the symphysis pubis [2, 13], or with palm of hand on knee, middle finger placed over the greater trochanter and thumb grasping the inside of the knee. • Place palm of other hand on knee, with middle finger placed over the	• The Ortolani test identifies dislocation. • The test is positive if a dislocated hip is manually reducible. A 'clunk' is felt when the dislocated head of the femur is relocated into the acetabulum[6]. • In newborns, the sensation is felt as a slight catch of cartilage sliding over cartilage. Finer clicks are frequently felt and are not characteristic of hip dysplasia. • Stabilise the pelvis, either as shown for Barlow procedure, or as below[9].

Steps	Additional Information
greater trochanter and thumb grasping the inside of the knee[2]. • Flex the hip to 90° and hold leg in neutral rotation. • Gently abduct the hip, while applying gentle pressure with the middle finger to elevate the greater trochanter. • Repeat test on opposite hip.	
3. Assessment of hip stability: **Barlow test** (birth to ~12 weeks) • Hips are assessed one at a time. • Place infant in supine position with hips flexed to 90 degrees and knees flexed. • Stabilise the pelvis with fingers of one hand under the sacrum and the thumb over the symphysis pubis [2]. • Place the palm of other hand over the knee of the leg that is being examined, with the middle finger placed on the greater trochanter and the thumb on the inner thigh. • Slowly adduct the thigh while applying gentle pressure backward and downward towards the examination surface. • Repeat test on opposite hip.	• A positive Barlow test identifies hip instability[2]. • A gentle posterior force will cause a dislocatable hip to palpably slip out over the posterior rim of the acetabulum[6]. Nurse *may* feel a palpable 'clunk' of dislocation. • If hip is unstable but not dislocatable, the femoral head will be felt sliding posteriorly and laterally within the joint. • Correct hand positioning is important, as below[9]. 
4. Assessment for limited hip abduction: (around 3 months until walking independently)[2] • Place the infant supine.	• This test checks for restriction in hip abduction. To ensure an accurate result, the test may need to be performed a few times to allow infant's hips to gradually relax. • Normal range for hip abduction is ≥ 60°.

Steps	Additional Information
• Stabilise pelvis in level position[14], and flex hips and knees to 90 degrees. • Thighs are gently and gradually abducted **simultaneously.**	• A reduction in range (unilateral or bilateral) is a significant abnormal finding requiring referral for further investigation. • Bilateral hip dislocation may be more difficult to identify as the hips are symmetrically tight[14]. • The image below shows normal right hip abduction to 70 degrees, and limited abduction of left hip[9]. 
5. Limb length discrepancy: Galeazzi test: (from birth onwards) • Place infant supine with pelvis stabilised and level[2]. • Flex hips to 90° in neutral adduction/ abduction and knees flexed[2,15]. • Stand facing the examination surface with eyes at level of infant's knees. • Assess knee height for asymmetry.	• Limb length discrepancy can identify unilateral hip subluxation or dislocation (positive Galeazzi sign). • The knee on affected side will be lower than the knee of the unaffected leg, due to contracted hip muscles[2]. • The image below shows a 'shorter' left leg[9]. 

Steps	Additional Information
6. Asymmetrical skin folds: (from birth onwards)[2] • Place infant prone, with pelvis even. • Check thigh and gluteal folds for asymmetry.	• Asymmetrical creases may be a sign of unilateral DDH [2]. • Note that asymmetrical thigh folds alone are a 'soft sign' of unilateral DDH. They are a more reliable sign if associated with uneven gluteal creases[2, 14]. • Image below shows an example of asymmetrical thigh and gluteal folds associated with a left DDH[9]. 
7. Observation for gait anomaly[16] (for children who walk independently) Observe for: • Unilateral toe walking • Limp • Trendelenberg gait (Lurching gait as trunk moves side to side) • Waddling gait	• Gait assessment is not reliable if child still walks unsteadily or with support. • Unilateral DDH may cause limping, Trendelenberg gait, or unilateral toe walking because of the shortened limb. • Bilateral DDH causes a duck-like waddling gait with hyperlordosis (exaggerated curvature of lower spine)[2]. • If child is undressed, gluteal and thigh folds may be noted while gait is assessed.
8. Communicate results with parents • Discuss any concerns and/or abnormal findings with the	• If infants are wrapped/swaddled, their legs should be able to bend at the hips and move freely with knees apart[2, 17].

Steps	Additional Information
parent/caregiver and obtain consent for referral if needed. • Anticipatory guidance for all parents should include avoidance of tight lower limb swaddling[1].	

9. Review and referral
• Consider a timely review for reassessment if infant/child is unsettled or uncooperative and unable to relax hips.
• For any deviations from normal, refer to a General Practitioner[2].
• Infants **less than 4 months** (corrected age) may be referred directly to PCH Orthopaedic Clinic pch.referrals@health.wa.gov.au
  ○ Some WACHS sites use eReferral with DDH proforma.
• For clients at risk, follow up must occur with parents/caregivers to determine if the referral has been actioned. This includes clients of concern, children in care, or those with significant assessment concerns or at increased risk of hip dysplasia.
  ○ For other clients, use clinical judgment about need to follow-up actioning of referral.
	• Complete CHS663 Clinical Handover/Referral form and provide parent/caregiver with completed form.
	• Document referral in CDIS/CHIS.
	  ○ Attach copy of CHS663 Clinical Handover/Referral form.
	  ○ Update CHS725 Consent for Release of Information form if required.
	• PCH Orthopaedic Clinic accepts referrals for asymmetrical thigh creases alone[13].
	• Follow up with parent/caregiver about the outcome of any referrals made for the infant in response to risk factors at hospital discharge check.

Documentation

Nurses maintain accurate, comprehensive, and contemporaneous documentation of assessments, planning, decision making and evaluations according to CAHS-CH and WACHS processes.

Table 1. Hip assessments at Universal contacts

Universal Contact	Assessment	Additional information
0 – 14 day	• Check if the hip assessment was performed at the discharge check, and if referral was made. • A physical hip assessment is not part of Universal 0-14 day assessment	• Hip assessment has usually been completed at discharge check. • Suitable assessment surface is rarely available • WH&S risk if infant's hip assessment is performed in cot, or on the floor or a couch.
8 week	• Hip instability (positive Ortolani or Barlow tests)	• Hip abduction, skin creases, and limb length discrepancy can be performed on infants and children at any age, but Ortolani and Barlow tests are considered the 'gold standard' of hip assessment until ~3 months age.
4 month	• Restriction of hip abduction in 90-degree flexion • Leg length discrepancy (Galeazzi sign) • Asymmetric skin creases (gluteal, thigh)	• Limited abduction is the most sensitive sign associated with DDH from ~3 months age[2]. • Muscle tightness increases by ~3 months, so Barlow and Ortolani tests are no longer accurate[4, 8]. • Bilateral hip dislocation can be more difficult to identify, as skin folds, knee height and hip abduction may be symmetrical.
12 month (if not walking independently)	• Restriction of hip abduction in 90-degree flexion • Leg length discrepancy (Galeazzi sign) • Asymmetric skin creases (gluteal, thigh)	• Assessment of gait is not reliable if child walking unsteadily or with support. • If walking independently, observe gait as for 2 year Universal contact.

2 year	• Observe gait	• Unilateral DDH may cause limp, Trendelenberg gait, or unilateral toe-walking. • Increased lumbar lordosis, prominent buttocks, or waddling gait may indicate bilateral DDH.

References

1. Lehmann. HP, Hinton. R, Morello. P, Santoli. J. Developmental dysplasia of the hip practice guideline: technical report. Committee on Quality Improvement, and Subcommittee on Developmental Dysplasia of the Hip. Pediatrics. 2000;April;(4).
2. Developmental Dysplasia of the Hip (DDH) [Internet]. WA Primary Health Alliance. 2020. Available from: https://wa.communityhealthpathways.org/13034.htm.
3. Donnan. L. The dislocated hip. Melbourne: Victorian Orthopaedic Centre.
4. Gelfer P, Kennedy KA. Developmental dysplasia of the hip. J Pediatr Health Care. 2008;22(5):318-22.
5. Stannage. Kate. Pre-referral guidelines: Developmental Dysplasia of the Hip. 2023.
6. Williams N. Improving early detection of developmental dysplasia of the hip through general practitioner assessment and surveillance. Australian Journal of General Practice. 2018;47(9).
7. Loh. B, Woollett. E. Update on the management of infant and toddler developmental dysplasia of the hip. Australian Journal of General Practitioners. 2021;50(4).
8. Sewell. M, Eastwood. D. Screening and treatment in developmental dysplasia of the hip - where do we go from here? International Orthopedics. 2011;35(8).
9. Donnan L. Developmental dysplasia of the hip DDH educational resource. Melbourne: The Royal Children's Hospital Melbourne.
10. The Royal Childrens Hospital Melbourne. Developmental dysplasia of the hip – DDH: Initial pre-referral workup. Melbourne: The Royal Children's Hospital Melbourne.
11. Shaw. BA, Segal. LS. Evaluation and Referral for Developmental Dysplasia of the Hip in Infants. Pediatrics. 2016;138(6).
12. Tachdjian. MO. Clinical Pediatric Orthopedics - The Art of Diagnosis and Principles of Management. Stamford, Conneticut: Appleton and Lange; 1997.
13. Stannage K. In: A/Nurse Co-Director - Community Health, editor. 2023.
14. International Hip Dysplasia Institute. Diagnosis and Referral Pathway for DDH. Florida, USA: International Hip Dysplasia Institute; 2023.
15. Yang.S, Zusman.N, Lieberman.E, Goldstein.R. Developmental Dysplasia of the Hip. American Academy of Pediatrics. 2019,;143,(1).
16. Foster H, Drummond P, Jandial S. Assessment of gait disorders in children. BMJ Best Practice. 2021.
17. Donnan. L. Safe Swaddling Explained. Melbourne: Victorian Orthpaedic Centre.

Related internal policies, procedures and guidelines
The following documents can be accessed in the CH Clinical Nursing Manual: HealthPoint link or Internet link or for WACHS staff in the WACHS Policy link
Universal contact guidelines
The following documents can be accessed in the CAHS Policy Manual
Hand hygiene

Related external resources (including related forms) *(if required)*
Hip Assessment for Developmental Dysplasia of the Hips E-learning (accessible via MyLearning)
Hip dysplasia – education module
Safe wrapping for hip dysplasia

This document can be made available in alternative formats on request.

Document Owner:	Nurse Director - Community Health		
Reviewer / Team:	Clinical Nursing Policy Team		
Date First Issued:	July 2017	Last Reviewed:	29 June 2023
Amendment Dates:		Next Review Date:	29 June 2026
Approved by:	Community Health Clinical Nursing Policy Governance Group	Date:	27 June 2023
Endorsed by:	Executive Director – Community Health	Date:	29 June 2023
Standards Applicable:	NSQHS Standards:  1.6, 1.7, 1.27, 2.7, 3.5, 3.6, 3.11, 5.3, 5.4, 5.7, 5.10, 5.11, 5.12, 5.13, 6.4, 6.8, 6.11 Child Safe Standards: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10		

Printed or personally saved electronic copies of this document are considered uncontrolled

Healthy kids, healthy communities

Compassion | Excellence | Collaboration | Accountability | Equity | Respect

Neonatology | Community Health | Mental Health | Perth Children's Hospital