Aim
To detect developmental dysplasia of the hip (DDH) in children.

Risk
If DDH is not detected or treated effectively, the hip joint may grow abnormally leading to degenerative joint disease, impaired walking/ gait abnormalities, hip, knee and lower back pain.

Background
Developmental dysplasia of the hip (DDH) is an abnormality that affects the hip joint, involving an improper alignment of the head of the femur and the acetabulum. The incidence of DDH in Western Australia is approximately 6/1000 births.¹

The range of defects includes:
- Dysplasia – inadequate acetabulum formation.²
- Dislocatable – femoral head can be displaced out of the acetabulum with maneuvers.²
- Subluxable – femoral head can be partially displaced out of the acetabulum.²
- Frank dislocation – femoral head is completely outside the acetabulum.²

In the immediate newborn period, the femoral head may spontaneously dislocate and relocate related to laxity of the hip capsule. If hip development is normal it will stabilise within a few days.

Risk factors for DDH include:²
- Breech presentation
- Family history (1st degree relative)
- Female (more susceptible to maternal hormone relaxin)
- Abnormal hip examination
- Oligohydramnios
- Tight wrapping with legs held straight
- Postural and non-postural abnormalities of the lower limb¹,³
- First pregnancy

However >60% infants have no identifiable risk factors.¹
Key Points

- The Barlow and Ortolani tests are best used for infants up to 8 weeks of age. Thereafter and until the child is walking, an assessment of hip abduction and femur length should be performed. If child is walking, gait is observed.
- Physical examination to be performed by staff with appropriate training.
- For more information and a visual presentation, refer to the DVD “Developmental Dysplasia of the Hip in Infants –Diagnosis and Management” in the Useful Resources section.
- As DDH is a developmental condition, it can manifest at any time until the child is walking. Staff should be alert to signs of DDH at every contact during the period from birth to independent walking.
- If infants are wrapped, legs should be able to move freely.
- Community health staff are to observe infection control procedures and perform hand hygiene in accordance with WA Health guidelines at all appropriate stages of the procedure.

Equipment

- A firm, flat surface is required on which to conduct the examination.

Procedure

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| 1. Engagement | • Review family and pregnancy history to identify risk factors.  
• Explain the procedure to the parent/caregiver. |
| 2. Ortolani Test (Birth to 8 weeks) | Demonstrates true dislocation with femoral head outside acetabulum.  
**Preparation:**  
• Infant is placed in supine position with knees fully flexed and hips flexed to the right angle.  
• Place palm of hands on knees, with middle finger of each hand being placed over the greater trochanter and thumb of each hand on inner sides of the thighs.  
**Procedure:**  
• The hip is flexed to 90°. Thighs are gently abducted **one at a time.** Gently...  
Infant needs to be relaxed and quiet. Examine with gentle warm hands.  
In neonates, the sensation is of a slight catch of cartilage sliding over cartilage. Finer clicks are frequently felt and are not... |
### Hip Examination

- Elevate the greater trochanter with the middle finger during abduction, and apply gentle pressure.
  - The Ortolani sign is a ‘clunk’ felt when the head of the femur returns to the acetabulum.

### 2.1 Barlow Test (Birth to 6-8 weeks):

Demonstrates unstable and/or dislocatable hip.

**Procedure:**

- Thighs are slowly adducted **one at a time** and thumb applying pressure backward and downward towards the examination surface.
- If the hip is unstable it will be levered out of the acetabulum over its posterior rim.

### 2.2 Abduction (from 8 weeks )

**Preparation:**

- Infant is placed on a firm flat surface, unclothed below waist.
- Buttocks must be flat against the surface.
- Hips and knees flexed to 90°

**Procedure:**

- Thighs are gradually and gently abducted to 70° from the midline.
- Limited abduction of a stable hip unilateral or bilateral is abnormal.

**NOTE:** This may need to be performed a few times to allow infant to relax.

### 2.3 Galeazzi Test for shortened femur (from 8 weeks )

Identifies **unilateral** hip dislocation.

**Preparation:** as per Abduction

**Procedure:**

- Compare femur length.
- The knee with affected hip and contracted muscles will be shorter than the unaffected leg in the horizontal plane, as femur is shortened on this side.

Any limb-length discrepancy results in a positive Galeazzi sign.

The examiner must stand at the end of the examination surface, with eyes level with infant’s knees.

This observation is more accurate, when the child is undressed in conjunction with a weight assessment.
• Asymmetry of buttock folds and thigh creases and greater pelvis width should be noted.

**NOTE:** Bilateral dislocation may not present with a positive Galeazzi sign

### 3. Gait (Walking)

Procedure: Observe gait.

- Unilateral DDH will cause limping because of shortened limb.
- Bilateral DDH will cause waddling gait, with hyperlordosis.

### 4. Documentation

- Documentation should confirm normal or abnormal response to age appropriate tests conducted.
- Positive Barlow, Ortolani tests, abnormal abduction tests should be documented in referral process.

Document according to local processes.

### Referral pathway

- Discuss any abnormal findings with the parent /caregiver and obtain consent for referral to a medical practitioner.
- Infants, less than 4 months, with signs of DDH can be referred to the PMH Orthopaedic Clinic.

### References

## Related internal policies, procedures and guidelines

The following documents can be accessed in the Community Health Manual via HealthPoint or the Internet link:

- Child Health Services Policy
- Universal Contact guidelines

## Useful resources

- **Developmental Dysplasia of the Hip - Learning resource** (Department of Education and Early Childhood Development, Government of Victoria)
- The ‘Hippy Doll’ models available from CACH Learning and Development
- Developmental Dysplasia of the Hip in Infants –Diagnosis and Management. DVD [http://www.ddheducation.com/](http://www.ddheducation.com/) - Royal Children’s Hospital, Melbourne
- **Safe wrapping for Developmental Dysplasia of the Hips (DDH)** Health Department of Victoria

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This document can be made available in alternative formats on request for a person with a disability.