



## CLINICAL PRACTICE GUIDELINE

Guideline coverage includes NICU KEMH, NICU PMH and NETS WA

# Developmental Dysplasia of the Hips (DDH)

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Developmental Dysplasia of the Hips (DDH) is a condition with a range of anatomical abnormalities of the hip joint in which the femoral head has an abnormal relationship with the acetabulum. This includes<sup>1</sup>:

- Dysplasia - there is an inadequate acetabulum formation (may not be clinically noted).
- Subluxatable - occurs if the femoral head can be partially displaced out of the acetabulum.
- Dislocatable - when the femoral head may be displaced from the acetabulum with manoeuvres.
- Dislocated - the femoral head is completely outside the acetabulum.

Clinically detected neonatal hip instability ranges from 1.6 - 28.5 neonates per 1000. Long term consequences of undiagnosed or untreated DDH leads to pain in the hip, knee and lower back, gait abnormalities, and degenerative changes of the hip joint.<sup>2</sup> During the immediate neonatal period, laxity of the hip capsule predominates, and if considerable enough can cause the femoral head to spontaneously dislocate. If it spontaneously relocates and stabilises within a few days future hip development is usually normal; however, if dislocation continues structural abnormalities may develop.<sup>3</sup> Audible and palpable tendinous 'clicks' can be confused with true neonatal instability of the hips. These clicks often disappear within the first few weeks after birth. Clinical examinations by performing the Barlow and Ortolani tests are used to detect DDH. A positive test for Barlow or Ortolani signs also resolve quickly in more than 80% of infants with hip instability.<sup>4</sup> Ultrasound is used for hip imaging in the first few months following birth as the femoral head is composed entirely of cartilage, and from 4-6 months of age X-ray's are more reliable. Despite clinical examination and screening practices for DDH there is a 1:5000 rate of late-onset dislocation of the hips.

### Risk factors for DDH<sup>5,6</sup>

DDH is more common in girls than boys (girls 19 in 1000 verses boys 4.1 in 1000 of clinically diagnosed neonates). Other risk factors for DDH include first degree relative with DDH and breech delivery. Oligohydramnios, birth weight more than 4000 g, and foot deformities like metatarsus adductus and talipes may also increase risk of DDH. However, it is important to note that more than 60% of neonates have no identifiable risk factors for DDH, with only 1 in 75 infants with identified risk factors for DDH being diagnosed with hip dislocation.

### Screening for DDH<sup>3,6</sup>

**All neonates:** The physical examination is the most important component of screening for DDH. All newborn infants should have their hips clinically checked by a clinician competent in performing hip examination - a positive examination warrants verification by SR/Consultant and then referral to orthopaedic clinic.

The physical examination should look for following signs of DDH:

1. Limb length discrepancy
2. Asymmetric gluteal and thigh folds
3. Restricted hip movements (supine: stabilised pelvis abducts to 75° and adducts to 30° under normal circumstances)
4. Positive Ortolani and Barlow tests

**Ortolani Test:** The manoeuvre reduces a recently dislocated hip. Newborn must be relaxed and in supine position on a firm surface. Pelvis is steadied with one hand. Examiner's index and middle fingers are placed along the greater trochanter with thumb placed along the inner thigh. With hip flexed at 90°, the hip is gently abducted while lifting the femoral head anteriorly. If test is positive, a "clunk" is felt as the dislocated femoral head reduces into the acetabulum.

**Barlow Test:** It is a test for laxity or instability of hip joint. It may be performed concomitantly with the Ortolani Test. Pelvis is steadied with one hand. Examiner's index and middle fingers are placed along the greater trochanter with thumb placed along the inner thigh. With hip flexed at 90° and abducted, the hip is adducted while palpating for the head falling out the back of the acetabulum. The test should be performed gently without using posterior-directed force. The test is positive if there is either lateral glide of the middle finger indicating joint laxity, a palpable clunk or sensation of movement if the femoral head dislocates the acetabulum posteriorly.

### **Orthopaedic referral is required in following circumstances:**

#### Neonates with 'risk factor' **without** clinical signs of DDH

- A history of DDH in a first degree relative
- Breech presentation at birth: American Academy of Pediatrics recommends to consider ultrasound screening of all infants born with breech presentation, regardless of gestational age at birth.<sup>3</sup> The data regarding risk of DDH born in preterm infants with breech presentation is limited and conflicting.<sup>7,8</sup> Hence, our current position is to refer all infants regardless of gestational age born with breech presentation for hip ultrasound at six weeks of corrected age.

Multiple gestation is not a risk factor for DDH. Hence, if one of the twins had breech presentation, only the twin with breech presentation should be referred.

Referral to Orthopaedic clinic at PMH is done using "Hip Referral Form" for clinical examination and ultrasound follow-up (as required) at 6 weeks' corrected age.

#### Neonates with abnormal hip examination

Refer the neonate to the Orthopaedic Clinic at PMH using "Hip Referral Form" for clinical examination and ultrasound follow-up (as required) at 6 weeks' corrected age.

#### Neonates with Ortolani positive examination that is dislocated at rest

Refer the neonate to the Orthopaedic Clinic at PMH using "Hip Referral Form" for clinical examination and ultrasound follow-up. This will usually occur within two weeks

### **Hip Referral Form**

[Hip Referral Form SCN](#)

[Hip Referral Form 6B](#)


## References

1. Gelfer P, Kennedy KA. Developmental Dysplasia of the Hip. **Journal of Pediatric Health Care.** 2008;22(5):318-22.
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5. De Hundt M, Vlemmix F, Bais JMJ, et al. Risk factors for developmental dysplasia of the hip: a meta-analysis. *Eur J Obstet Gynecol Reprod Biol.* 2012;165:8-17.
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7. Quan T, Kent AL, Carlisle H. Breech preterm infants are at risk of developmental dysplasia of the hip. *J Paediatr Child Health* 2013;49:658-63.
8. Lee J, Spinazzola RM, Kohn N, et al. Sonographic screening for developmental dysplasia of the hip in preterm breech infants: do current guidelines address the specific needs of premature infants? *J Perinatol.* 2016;36:552-56.

## Related WNHS policies, procedures and guidelines

[Hip Referral Form SCN](#)

[Hip Referral Form 6B](#)

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