

# Policy on Infant Hip Screening

## COMMITTEE ON CHIROPRACTIC PAEDIATRIC DIAGNOSTIC AND THERAPEUTIC PROCEDURES

January 2020

**Note: This policy is relevant to infant ages only. A policy on hip screening in the post-infantile paediatric patient will be covered separately.**

### BACKGROUND

Developmental dysplasia of the hip (DDH) is one of the most common musculoskeletal conditions of infancy.<sup>1</sup> DDH is the result of abnormal relationship between the femoral head and the acetabulum. It can range in severity from instability to dislocation (requiring surgical intervention), with varying degrees of acetabular dysplasia in between.<sup>2-4</sup>

In Australia, there is a reported incidence of seven per 1000 live births.<sup>5</sup> The incidence of late-detection (clinically detected DDH after 3 months of age) and diagnosis has increased from 0.22 per 1000 live births in 1988-2003 to 0.7 per 1000 in 2003-2009.<sup>6,7</sup>

### SCREENING

In Australia, it is recommended that General Practitioners (GP) and Maternal and Child Health Nurses (MCHN) screen for DDH by performing Ortolani, Barlow, Abduction and Allis tests, as well as observing for leg length and thigh crease asymmetry.<sup>8-11</sup> This follows guidelines established by the American Academy of Orthopaedic Surgeons.<sup>12</sup> Regular screening is important as early detection of DDH has better outcomes and requires less aggressive management with reduced risks: bracing and non-surgical intervention compared to potential surgical intervention for those older than 6 months of age.<sup>5</sup>

Clinical hip examination by the infants' GP and MCHN remains the primary screening method to identify infants with possible DDH who require further investigation.<sup>2,13-15</sup> With appropriate training, non-medical staff such as chiropractors, physiotherapists and osteopaths, can be effectively used to conduct screening or surveillance utilising age-appropriate hip assessment tests.<sup>16,17</sup>

The Hip Abduction test has high specificity (99.3%<sup>18</sup>) and negative predictive value (97.3%<sup>18</sup>) for unilateral DDH, making it ideal for screening in infants over 8 weeks of age,<sup>2,14,15,18-20</sup> however literature does stress the importance of compounding findings of multiple tests to reduce false negatives.<sup>15,18-23</sup> Age appropriate hip tests are detailed in Table 2.

All non-ambulatory infants attending a chiropractor must undergo regular and routine hip assessment, even if recent assessment by another health practitioner has occurred. Frequency of assessment is modified according to the presence of risk factors.

Chiropractors seeing infants should be aware of the risks factors for DDH (Table 1). In the infant without risk factors suggestive of DDH, after the neonatal screen it is recommended to assess hips at 4 and 8 weeks of age, as well as 4, 6, 8, and 10 months of age (MOA).<sup>24</sup> Additional screening at 6 weeks of age and 12 MOA is appropriate particularly in the presence of risk factors suggestive of DDH. Consultation at these ages primarily for hip assessment is appropriate.



## RISK FACTORS

**Table 1**

Breech Presentation <sup>14,25</sup>	Limited hip abduction <sup>25</sup>
Multiple births or pregnancies of mother <sup>14,25</sup>	Born by Caesarean section <sup>14</sup>
Oligohydramnios <sup>14</sup>	Plagiocephaly* <sup>26,27</sup>
Female gender/ First-born female <sup>14,25</sup>	Metatarsus Adductus* <sup>28,29</sup>
Birth weight greater than 4000g <sup>14</sup>	Congenital muscular torticollis* <sup>25,26</sup>
First-Degree Relative treated for DDH/ Any family history of hip dysplasia <sup>14</sup>	

\*Evidence is limited or conflicting

Increased frequency of assessment is appropriate in the presence of one or more risk factors, however risk factors alone are a poor predictor of DDH with only one in 75 infant with a risk factor having a dislocated hip.<sup>30</sup>

Chiropractors should be aware that the risk factors for DDH change over time.<sup>7,30,31</sup> Risk factors for late-diagnosed DDH (DDH clinically detected after 3 MOA) include rural birth, female gender, discharge from hospital within 4 days, and birthweight <2500g.<sup>30</sup>

## EXAMINATION

**Table 2**

0-8 WOA	8WOA+
<p>The following tests should be performed:</p> <ul style="list-style-type: none"> <li>- Abduction</li> <li>- Supine Leg length equality</li> <li>- Thomas Test</li> <li>- Allis/Galeazzi Test</li> <li>- Ortolani</li> <li>- Telescoping</li> <li>- Barlow testing is not recommended as a part of routine screening by the chiropractor due to low predictive value and increased risk of adverse outcome.<sup>4</sup></li> </ul>	<p>The following tests should be performed:</p> <ul style="list-style-type: none"> <li>- Abduction</li> <li>- Supine Leg length equality</li> <li>- Thomas Test</li> <li>- Allis/Galeazzi Test</li> <li>- Telescoping</li> <li>- Klisic</li> <li>- Due to soft tissue contracture occurring after 8 weeks of age, Ortolani and Barlow tests are no longer reliable and are not recommended.<sup>24,32</sup></li> </ul>

The presence of asymmetric thigh creases as an isolated finding does not require referral due to poor predictive value.<sup>33-36</sup> Kang *et al* assessed 458 infants with isolated finding of asymmetric thigh crease with none having DDH.<sup>33</sup> Thigh crease asymmetry is a common normal finding in 20-25% of infants.<sup>2,37</sup>

## BILATERAL DDH

Bilateral DDH may be harder to detect clinically as there may be little asymmetry. Increased suspicion of the presence of bilateral DDH should be present in the following situations with early referral for imaging recommended.

### Findings suggestive of bilateral presentation DDH

- Delay crawl
- Delay in walk
- Trendelenberg/Lurching gait
- Limping
- Less than 75° abduction bilaterally on Hip Abduction Test

## DIAGNOSTIC IMAGING

It is not recommended to refer for ultrasound at newborn screen.<sup>24</sup> Equivocal findings at the 4-week assessment with accompanying risk factors warrant referral for ultrasound.<sup>24</sup>

### *Under 5 months of age*

Ultrasound is the diagnostic imaging of choice for infants under 5 months of age. This may require a referral from their GP.<sup>38</sup>

### *Over 6 months of age*

The femoral epiphysis begins to calcify between 4-6 MOA, with girls typically earlier than boys.<sup>38</sup> AP-Lumbopelvic x-ray will provide diagnostic information based on acetabular angles for the diagnosis of DDH. In the presence of findings suggestive of DDH, immediate referral for Paediatric Orthopaedic assessment from their GP is required.

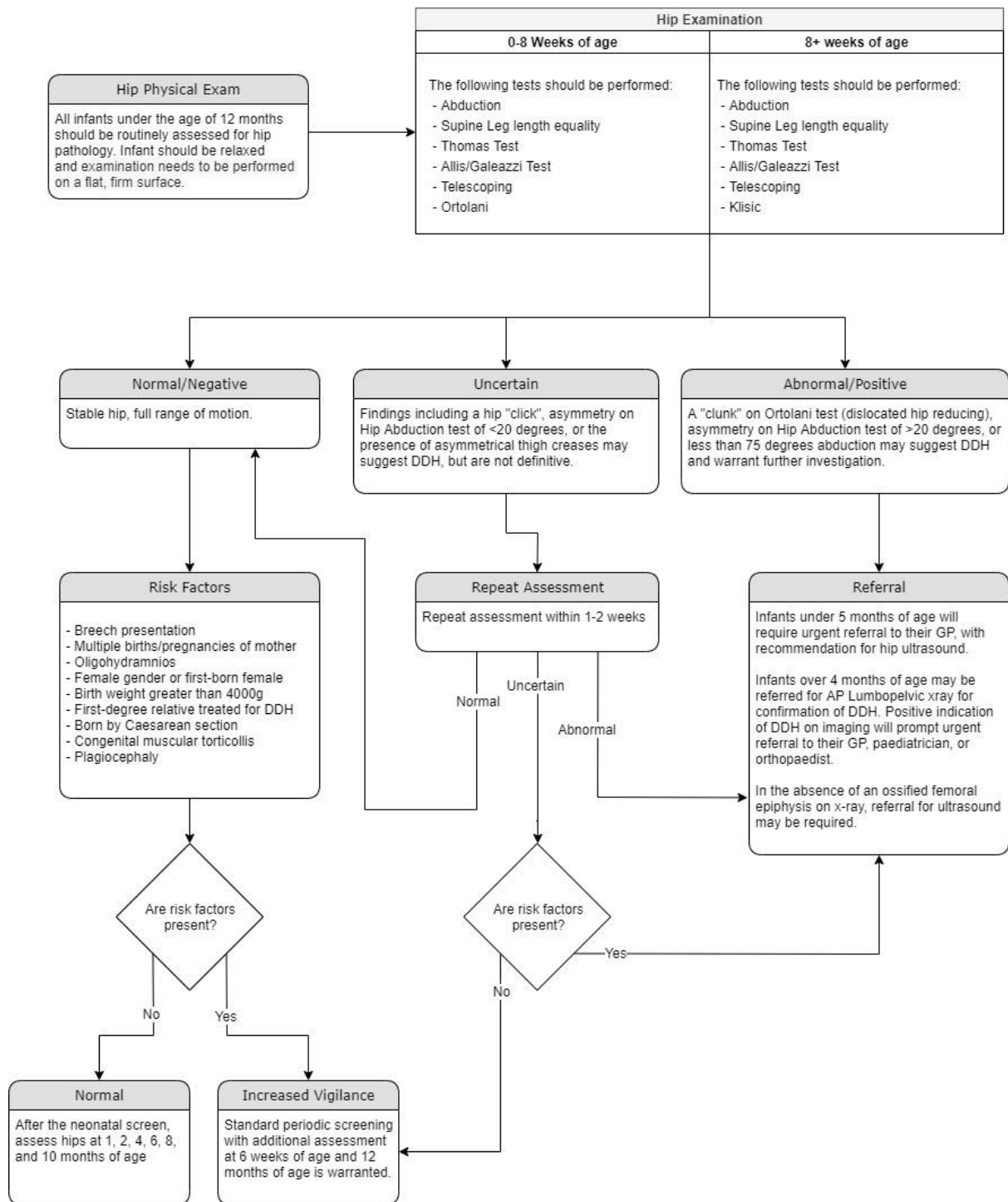
### *Between 4 and 6 months of age*

Ultrasonography and radiography are of equal diagnostic effectiveness, however a radiograph performed closer to 6 months of age is of greater diagnostic value.<sup>24</sup> In the absence of an ossified femoral epiphysis on x-ray, referral for ultrasound may be required.

## REFERRAL

In the presence of unequivocal positive findings on hip examination, referral for appropriate imaging is required (Figure 1).

**Figure 1 – DDH Management and Referral Criteria**



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