



# Promoting Excellence In Ultrasound

## **Policies and Statements**

### **D6**

Statement On The Use Of Ultrasound In The Diagnosis Of Developmental  
Hip Dysplasia And Dislocation

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#### Statement On The Use Of Ultrasound In The Diagnosis Of Developmental Hip Dysplasia And Dislocation

*JOINT STATEMENT AUSTRALASIAN SOCIETY FOR ULTRASOUND IN MEDICINE AND  
AUSTRALASIAN SOCIETY FOR PAEDIATRIC IMAGING*

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#### **PREAMBLE**

The early and accurate diagnosis of developmental hip dysplasia and dislocation in young infants remains a significant problem. There are inadequacies in radiologic examination of the hip while the femoral head and portions of the acetabulum remain cartilaginous, and it may be difficult to decide on the basis of clinical signs alone which infants will benefit from treatment. Both under-treatment and over-treatment of this condition can result in morbidity, while early diagnosis and treatment are associated with good results.

Ultrasound examination has played a significant role in improving the display of hip anatomy and dynamics during infancy, and in improving the selection of patients for treatment. All those involved in these studies, or contemplating involvement, should however be aware that the accuracy and reliability of results produced are dependent on the training and experience of those involved. Inadequacy in either the technique of the examination or its interpretation can readily lead to incorrect conclusions and serious long term consequences for the infant.

The following information is provided as a guide.

#### **INDICATIONS:**

- a) Infants with abnormal clinical examination
- b) Infants with risk factors for DDH, including
  - a. Asymmetrical skin folds
  - b. Family History
  - c. Breech Presentation
  - d. Skull or foot moulding anomalies
- c) Follow up studies to monitor acetabular development
- d) Following application of a brace or harness to confirm satisfactory enlocation

#### **OPTIMAL AGE FOR ULTRASOUND ASSESSMENT:**

- a) Infants with risk factors: 6 weeks of age
- b) Infants with clinically dislocated hip: immediately
- c) Ultrasound is suitable for infants up to the age of 6 months – after which femoral head ossification interferes with ultrasound imaging

## **PERSONNEL**

A service in ultrasonography of the infant hip should only be provided by those sonologists who have competence in the examination. Where a sonographer conducts the study, the sonologist should ensure that the sonographer is competent in the examination. The level of direct supervision of the sonographer by a qualified operator should be appropriate their level of training and experience.

## **EQUIPMENT**

The examination should be performed with a linear array transducer of appropriate length, frequency and near field resolution in order to provide high quality images of bony margins, cartilage and soft tissue structures associated with the infant hip joint. The frequency of the transducer used should be 5MHz or above.

## **TECHNIQUE**

a) The examination should provide high quality coronal images of the hip, with adequate display of the bony and cartilaginous components of the acetabulum, perichondrium, the fibro cartilage of the labrum, the femoral head, and its relationship to the acetabulum.

b) The section must be aligned in an accurate coronal plane and the section obtained over the deepest portion of the acetabulum.

c) It must be appreciated that minor differences in transducer alignment can substantially alter the apparent acetabular development and the apparent relationship of the femoral head to the acetabulum.

d) The anatomical study of the hip joint should be complemented by an accepted dynamic method of functional testing for joint instability.

e) When splinting is in place, the ultrasound technique may need to be modified according to the type of splint. In these cases, reports can be confined to the presence or absence of enlocation.

## **5. TRAINING**

a) All those undertaking this examination should be aware of the potential pit-falls in both technique and interpretation. A consistently high standard can only be achieved with an adequate level of training both for the sonologist and the sonographer.

b) As a minimum, training must ensure understanding of normal hip development and the pathology and evolution of developmental hip dysplasia. It should include a full understanding of the bony, cartilaginous and soft tissue components of the hip joint and adjacent structures, together with the patterns of deformity which ensue with pathologic changes.

c) It is necessary to understand the normal variation in rate of maturation of the bony acetabulum, and its relationship to age. It should be appreciated that if an examination is performed in the neonatal period, a second study performed at over six weeks of age may be required to differentiate acetabular immaturity from significant pathology, and to avoid potential overtreatment.

d) Training may include attendance at courses or lectures as available, and attendance in departments experienced in this technique.

Training should ideally be acquired in a situation where there is close contact with referring clinicians, and opportunity for follow up with ongoing evaluation of results.

## **SUMMARY**

The technique requires considerable experience in its application and interpretation, together with close attention to detail of technique. Only in this way will accurate and reproducible results be obtained. It requires frequent and ongoing involvement in the technique to maintain an adequate standard, and is not recommended in situations where only occasional examinations are performed.



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