Australian Government

Department of Health and Ageing

Australia and New Zealand Horizon Scanning Network

ANZHSN

AN INITIATIVE OF THE NATIONAL, STATE AND TERRITORY GOVERNMENTS OF AUSTRALIA AND THE GOVERNMENT OF NEW ZEALAND

National Horizon Scanning Unit
Horizon scanning prioritising summary

Volume 2, Number 2:

Ultrasound screening for hip dysplasia: A new screening programme for the early detection of hip dysplasia in neonates.

December 2003

AHTA

Adelaide Health Technology Assessment

Electronic copies can be obtained from http://www.horizonscanning.gov.au

Enquiries about the content of this summary should be directed to:

HealthPACT Secretariat
Department of Health and Ageing
MDP 106
GPO Box 9848
Canberra ACT 2606
AUSTRALIA

The production of this *Horizon scanning prioritising summary* was overseen by the Health Policy Advisory Committee on Technology (HealthPACT), a sub-committee of the Medical Services Advisory Committee (MSAC). HealthPACT comprises representatives from health departments in all states and territories, the Australia and New Zealand governments; MSAC and ASERNIP-S. The Australian Health Ministers' Advisory Council (AHMAC) supports HealthPACT through funding.

This *Horizon scanning prioritising summary* was prepared by Linda Mundy and Tracy Merlin from the National Horizon Scanning Unit, Adelaide Health Technology Assessment, Department of Public Health, Mail Drop 511, University of Adelaide, South Australia, 5005.

PRIORITISING SUMMARY

REGISTER ID: **0000054**

NAME OF TECHNOLOGY: **ULTRASOUND SCREENING FOR HIP DYSPLASIA**

PURPOSE AND TARGET GROUP: **A NEW SCREENING PROGRAMME FOR THE EARLY DETECTION OF HIP DYSPLASIA IN NEONATES**

STAGE OF DEVELOPMENT (IN AUSTRALIA):

☐	Experimental	☐	Established
☒	Investigational	☐	Established *but* changed indication or modification of technique
☐	Nearly established	☐	Should be taken out of use

AUSTRALIAN THERAPEUTIC GOODS ADMINISTRATION APPROVAL

☐	Yes	ARTG number	
☐	No	☒	Not applicable

INTERNATIONAL UTILISATION:

COUNTRY	LEVEL OF USE		
	Trials Underway or Completed	Limited Use	Widely Diffused
5 year screening programme, Germany	✓		✓
5 year screening programme, Wales	✓		✓
Cost-benefit analysis of screening programme, Croatia	✓		
Targeted screening programme, United Kingdom	✓		
Prospective randomised trial, targeted vs universal screening, Norway	✓		
Screening programme, Switzerland	✓		✓

IMPACT SUMMARY:

Congenital hip dislocation (CDH) or developmental dysplasia of the hip (DDH) may lead to impaired hip function and premature degenerative joint disease, such as arthritis, due to increased load and shearing forces on the hip (Godward et al, 1998; Maxwell et al, 2002 & von Kries et al, 2003). In Australia universal screening for CDH/DDH in neonates was introduced in the 1960s. Currently all newborn infants are clinically tested for CDH/DDH using either the Ortolani or Barlow tests, which involve a physical examination that assesses the range of hip abduction and leg length discrepancy (Maxwell et al, 2002 & Neonatal Handbook Editorial Board, 2002). High-risk infants (breech presentation, familial history of CDH/DDH or infants suffering a neuromuscular disease) are examined by ultrasound. Infants who test positive are fitted with either a Von Rosen splint or a Pavlik harness. Early treatment

may avoid the need for surgery later in life (Neonatal Handbook Editorial Board, 2002). Infants are tested again at approximately 6 weeks and 6-8 months (Chan et al, 1999).

A retrospective survey by Chan et al (1999) reported the prevalence of CDH/DDH as 7.74 per 1000 live births in South Australia, for children born between 1988 and 1993. The incidence of cases requiring surgical procedures for CDH/DDH was 0.46 per 1000 live births, or 6% of all cases.

It has been suggested that the current screening regimen may miss the early detection of a proportion of infants with CDH/DDH. These infants may be detected at a later age and surgery may be their only option. The early utilisation of ultrasound for CDH/DDH screening may identify morphological abnormalities of the hip that would otherwise go undetected by a physical examination, therefore enabling these infants to be treated with the early non-invasive interventions, avoiding the need for surgery. The study by von Kries et al (2003) which assessed the ultrasound screening program in Germany, found that the rate of first operative procedure for ultrasound screening was 0.26 per 1000 live births. Godward et al (1998) assessed the screening program in the United Kingdom, which utilises the conventional physical examination, and found the rate of first operative procedure to be 0.39 per 1000 live births.

Several studies found that universal ultrasound screening of newborn infants was more effective at detecting CDH/DDH than targeted ultrasound screening of only high-risk infants. The randomised controlled trial conducted by Holen et al (2002) screened 15,529 infants randomised to either clinical screening and ultrasound of all hips, or clinical screening and ultrasound of only high-risk infants and found the rate of late dysplasia detection to be 0.13 and 0.65 per 1000, respectively (p=0.22). Similarly, Lewis et al (1999), in their assessment of an on-going screening programme, estimated the late detection rate of CDH/DDH to be 0.34/1000 if ultrasound screening was confined to only high-risk infants.

A cost-benefit analysis conducted in Croatia found that an ultrasound screening programme would return a saving of US$195,000 compared with the existing diagnostic approach. In addition, treatment costs without ultrasound screening were 1.6 times higher than the costs associated with the screening programme (Bralic et al, 2001).

HEALTHPACT ACTION:

It is recommended that this technology be archived, however this information should be forwarded to stakeholders such as the division of Paediatrics.

SOURCES OF FURTHER INFORMATION:

Bralic, I., Vrdoljak, J. & Kovacic, L. (2001). 'Ultrasound screening of the neonatal hip: cost-benefit analysis', *Croat Med J,* 42 (2), 171-174.

Chan, A., Cundy, P. J. et al (1999). 'Late diagnosis of congenital dislocation of the hip and presence of a screening programme: South Australian population-based study', *Lancet,* 354 (9189), 1514-1517.

Eastwood, D. M. (2003). 'Neonatal hip screening', *Lancet,* 361 (9357), 595-597.

Godward, S. & Dezateux, C. (1998). 'Surgery for congenital dislocation of the hip in the UK as a measure of outcome of screening. MRC Working Party on Congenital Dislocation of the Hip. Medical Research Council', *Lancet,* 351 (9110), 1149-1152.

Gunther, K. P., Stoll, S. et al (1998). '[Initial results of the evaluation study of ultrasound hip screening in Germany]', *Z Orthop Ihre Grenzgeb,* 136 (6), 508-512.

Holen, K. J., Tegnander, A. et al (2002). 'Universal or selective screening of the neonatal hip using ultrasound? A prospective, randomised trial of 15,529 newborn infants', *J Bone Joint Surg Br,* 84 (6), 886-890.

Kohler, G. & Hell, A. K. (2003). 'Experiences in diagnosis and treatment of hip dislocation and dysplasia in populations screened by the ultrasound method of Graf', *Swiss Med Wkly,* 133 (35-36), 484-487.

Lewis, K., Jones, D. A. & Powell, N. (1999). 'Ultrasound and neonatal hip screening: the five-year results of a prospective study in high-risk babies', *J Pediatr Orthop,* 19 (6), 760-762.

Maxwell, S. L., Ruiz, A. L. et al (2002). 'Clinical screening for developmental dysplasia of the hip in Northern Ireland', *BMJ,* 324 (7344), 1031-1033.

Neonatal Handbook Editorial Board (2002). *Neonatal Handbook* [Internet]. Available from: http://www.rch.unimelb.edu.au/nets/handbook/index.cfm?doc_id=453 [Accessed 8th January, 2004].

Paton, R. W., Hossain, S. & Eccles, K. (2002). 'Eight-year prospective targeted ultrasound screening program for instability and at-risk hip joints in developmental dysplasia of the hip', *J Pediatr Orthop,* 22 (3), 338-341.

Rosendahl, K., Markestad, T. & Lie, R. T. (1994). 'Ultrasound screening for developmental dysplasia of the hip in the neonate: the effect on treatment rate and prevalence of late cases', *Pediatrics,* 94 (1), 47-52.

Teanby, D. N. & Paton, R. W. (1997). 'Ultrasound screening for congenital dislocation of the hip: a limited targeted programme', *J Pediatr Orthop,* 17 (2), 202-204.

Toma, P., Valle, M. et al (2001). 'Paediatric hip--ultrasound screening for developmental dysplasia of the hip: a review', *Eur J Ultrasound,* 14 (1), 45-55.

von Kries, R., Ihme, N. et al (2003). 'Effect of ultrasound screening on the rate of first operative procedures for developmental hip dysplasia in Germany', *Lancet,* 362 (9399), 1883-1887.

SEARCH CRITERIA TO BE USED:

Hip Dislocation, Congenital/epidemiology/surgery/*ultrasonography/*prevention & control
Ultrasonography/methods
Infant, Newborn
*Neonatal Screening
Mass Screening/methods/*standards
Hip Joint/ultrasonography
Joint Instability/ultrasonography