

Neonatal Hip Screening and Management of Developmental Dysplasia of the Hip

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Note:

This guideline provides advice of a general nature. This statewide guideline has been prepared to promote and facilitate standardisation and consistency of practice, using a multidisciplinary approach. The guideline is based on a review of published evidence and expert opinion.

Information in this statewide guideline is current at the time of publication.

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Health practitioners in the South Australian public health sector are expected to review specific details of each patient and professionally assess the applicability of the relevant guideline to that clinical situation.

If for good clinical reasons, a decision is made to depart from the guideline, the responsible clinician must document in the patient's medical record, the decision made, by whom, and detailed reasons for the departure from the guideline.

This statewide guideline does not address all the elements of clinical practice and assumes that the individual clinicians are responsible for discussing care with consumers in an environment that is culturally appropriate, and which enables respectful confidential discussion. This includes:

- The use of interpreter services where necessary,
- Advising consumers of their choice and ensuring informed consent is obtained,
- Providing care within scope of practice, meeting all legislative requirements, and maintaining standards of professional conduct, and
- Documenting all care in accordance with mandatory and local requirements

Note: The words woman/women/mother/she/her have been used throughout this guideline as most pregnant and birthing people identify with their birth sex. However, for the purpose of this guideline, these terms include people who do not identify as women or mothers, including those with a non-binary identity. All clinicians should ask the pregnant person what their preferred term is and ensure this is communicated to the healthcare team.



“Aboriginal and Torres Strait Islander recognition statement: We use the term ‘Aboriginal’ to refer to people who identify as Aboriginal, Torres Strait Islander, or both Aboriginal and Torres Strait Islander. We do this because the people indigenous to South Australia are Aboriginal and we respect that many Aboriginal people prefer the term ‘Aboriginal’. We also acknowledge and respect that many Aboriginal South Australians prefer to be known by their specific language group(s).”



Australian Aboriginal Culture is the oldest living culture in the world, yet Aboriginal people continue to experience the poorest health outcomes when compared to non-Aboriginal Australians. In South Australia, Aboriginal women are 2–5 times more likely to die in childbirth and their babies are 2–3 times more likely to be of low birth weight. The accumulative effects of stress, low socio-economic status, exposure to violence, historical trauma, culturally unsafe and discriminatory health services, and health systems are all major contributors to the disparities in Aboriginal maternal and birthing outcomes. Despite these unacceptable statistics, the birth of an Aboriginal baby is a celebration of life and an important cultural event bringing family together in celebration, obligation, and responsibility. The diversity between Aboriginal cultures, language and practices differ greatly and so it is imperative that perinatal services prepare to respectfully manage Aboriginal protocol and provide a culturally positive health care experience for Aboriginal people to ensure the best maternal, neonatal and child health outcomes.

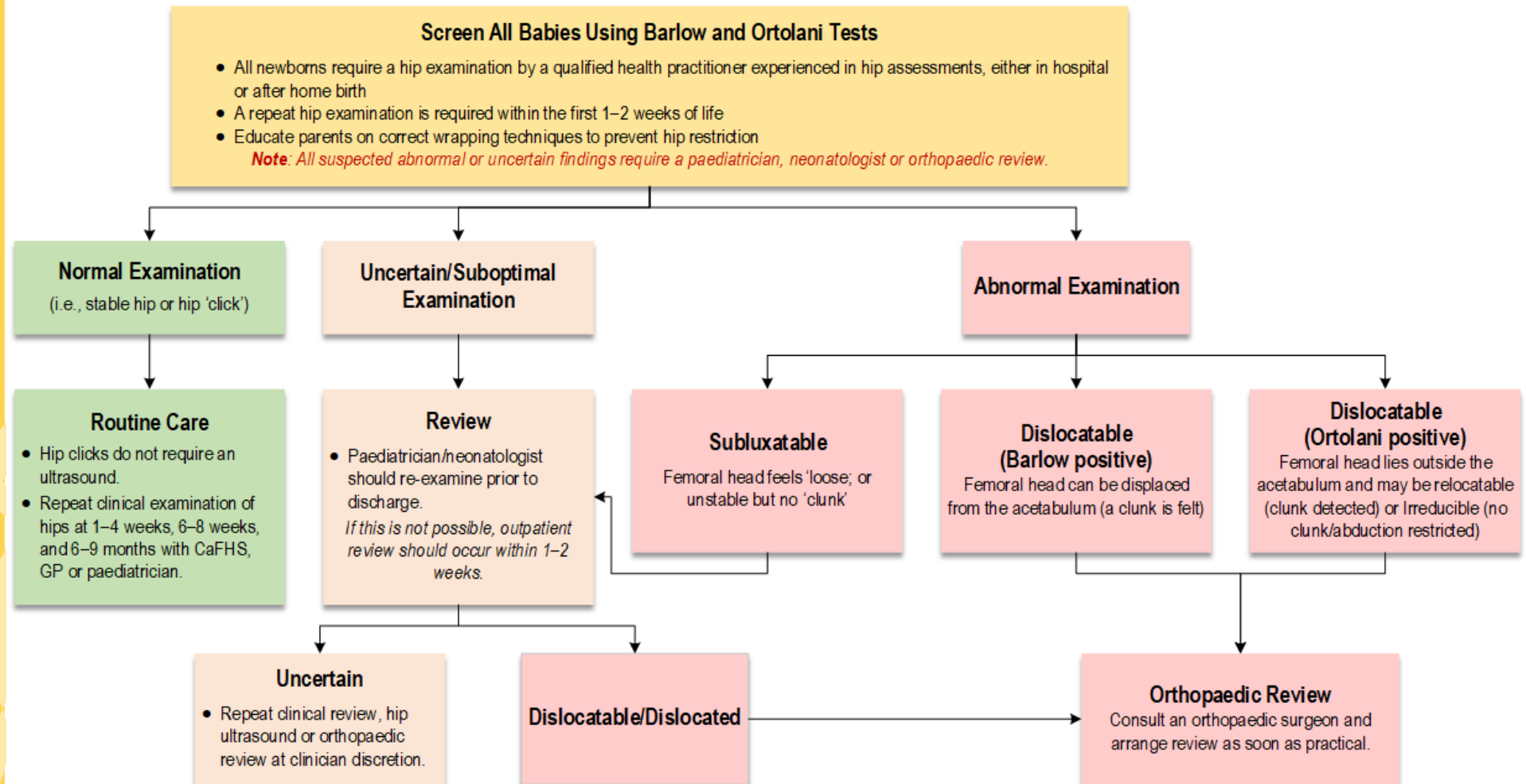
Explanation of the Aboriginal artwork: The Aboriginal artwork used symbolises the connection to country and the circle shape shows the strong relationships amongst families and the Aboriginal culture. The horseshoe shape design shown in front of the generic statement symbolises a woman and those enclosing a smaller horseshoe shape depicts a pregnant woman. The smaller horseshoe shape in this instance represents the unborn child. The artwork shown before the specific statements within the document symbolises a footprint and demonstrates the need to move forward together in unison.

Purpose and Scope of PPG

The purpose of this guideline is to give clinicians information on the causes of, screening for and management of Neonatal Developmental Dysplasia of the Hip.

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Flowchart 1| Screening and Management of Developmental Dysplasia of the Hip



Neonatal Hip Screening and Management of Developmental Dysplasia of the Hip PPG v3.0 (02/04/2025)

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Summary of Practice Recommendations

All babies should be screened at birth for developmental dysplasia of the hip (DDH).

Careful clinical examination is the most effective screening method.

Serial hip examinations are required at every well-baby check.

Universal and targeted ultrasound screening are not recommended.

 Ultrasound is not recommended for screening in DDH because of insufficient evidence of benefit in preventing late diagnosis of DDH.

Clinicians may elect to perform a hip ultrasound in selected cases between 6-12 weeks where examination findings are uncertain/follow-up unreliable.

 Mild DDH on ultrasound where the hip examination is normal can be followed with serial ultrasounds at 6 weekly intervals provided the dysplasia is improving. Orthopaedic advice may be preferred.

All suspect hips require an orthopaedic review before 4 months of age.

Treatment with a Pavlik harness or Denis-Browne splint is effective and safe.

All parents should be educated on the importance of avoiding swaddling legs in an extended and adducted posture and of allowing free movement of the legs.

All parents should be educated on hip-supportive positions for babywearing.



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Abbreviations

AVN	Avascular necrosis
CaFHS	Child and Family Health Service
DDH	Developmental dysplasia of the hip
GP	General Practitioner

Definitions

Clinically unstable hips	Can be classified as subluxatable, dislocatable, dislocated and reducible, or dislocated and irreducible DDH.
Developmental dysplasia of the hip	Inadequate formation of the acetabulum resulting in an abnormal relationship between the femoral head and acetabulum. Varying degrees of clinical instability of the hip joint result, ranging from a feeling of looseness of the joint to frank dislocation. Is also applied to a range of ultrasound and radiographic abnormalities of the acetabulum. DDH can evolve post-delivery in early infancy and is not always detectable at birth.
Shared decision making	Shared decision making involves discussion and collaboration between a consumer and their healthcare providers. It is about bringing together the consumer's values, goals, and preferences with the best available evidence about benefits, risks and uncertainties of screening, investigations, and treatment, to reach the most appropriate healthcare decisions for that person.

Introduction

The incidence of developmental dysplasia of the hip (DDH) is approximately 1 in 100 live births screened clinically, with higher incidence found in infants screened by ultrasound.^{1, 2} There was a significant downward trend in the prevalence of DDH in South Australia over the 1986–2016 period.³

DDH is more frequent in:

- females
- breech presentation (in either sex)
- where a baby has a first-degree relative with DDH^{1, 4, 5}
- fixed foot deformities
- first born child
- oligohydramnios.⁴

Birth in a rural hospital and second born child are independent risk factors for late DDH diagnosis indicating the importance of clinical screening of all babies and the recognition that most DDH occurs without the classically described risk factors.



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Screening

- All babies at birth need to be screened for DDH.
 - The aim is early detection and treatment with an abduction splint within the first 6–8 weeks after birth. This is to avoid later surgical treatment and long-term morbidities related to hip osteoarthritis.^{1, 6}
- Clinical examination is the mainstay of screening for DDH.^{4, 5, 7}
 - Careful examination is required in the neonatal period using the Ortolani and Barlow manoeuvres, and assessment for full abduction.⁵
- Serial hip examinations are also required at every well-baby check to reduce the age of diagnosis.^{5, 7}
- Above 3 months of age the Ortolani and Barlow tests are less reliable, however reduced hip abduction and leg length discrepancy can indicate DDH. Previously, asymmetry in leg and buttock creases were deemed to be indicative of DDH. Newer evidence demonstrates that isolated asymmetrical skin creases are an unreliable clinical sign in the diagnosing DDH.⁸

Ultrasound Screening

The role of ultrasound screening is uncertain based on current evidence.² Ultrasound has a high sensitivity for DDH, but also a high false positive rate in the first 6 weeks after birth. Inter-observer variability is problematic with inexperienced operators and inconsistent protocols for image acquisition and interpretation. Neither universal ultrasound screening (all babies) or targeted ultrasound screening (babies with risk factors) has been shown to reduce late diagnosed DDH.² However, studies of ultrasound screening are underpowered to show differences in late diagnosed DDH especially in subgroups with risk factors.

An increase in late DDH diagnosis has been noted in Australia despite widespread targeted ultrasound screening in some states.⁷ Universal and targeted ultrasound screening are therefore not considered cost effective and are not recommended. Ultrasound may have a role where examination findings are uncertain or clinical follow-up is unreliable.⁵ Where an ultrasound is performed this should generally be left for 6 weeks after birth to reduce false positive results.

Treatment

Treatment of DDH with a Pavlik harness or Denis-Browne splint is effective and safe but requires close supervision by an orthopaedic surgeon and experienced physiotherapist to ensure the hip remains unlocated and developing in a satisfactory manner.^{4, 9} Splinting also has a defined morbidity, the main concern being avascular necrosis (AVN) of the hip.⁹

Note: *Where splints are applied and adjusted correctly, the risk of developing AVN is minimal.⁹*

Late diagnosis of DDH at or after 3 months of age requires more invasive treatment including surgery.

Education

Continuing education regarding clinical examination of hips is an important responsibility of the healthcare professional. All parents should also be educated on the importance of avoiding swaddling legs in an extended and adducted posture and allowing free movement of the legs. All parents should be educated on hip-supportive positions for babywearing.



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Resources

Australian Charter of Healthcare Rights: (www.safetyandquality.gov.au)

[Australian Charter of Healthcare Rights | Australian Commission on Safety and Quality in Health Care](http://www.safetyandquality.gov.au)

Australian Government Pregnancy, Birth and Baby: (www.pregnancybirthbaby.org.au)

[Pregnancy, Birth and Baby | Pregnancy Birth and Baby \(pregnancybirthbaby.org.au\)](http://www.pregnancybirthbaby.org.au)

Medicines Information: (sahealthlibrary.sa.gov.au)

<https://sahealthlibrary.sa.gov.au/friendly.php?s=SAPharmacy>

SA Health Pregnancy:

[Pregnancy | SA Health](http://sahealth.sa.gov.au)

SAPPGs Web-based App:

[Practice Guidelines \(sahealth.sa.gov.au\)](http://sahealth.sa.gov.au)

Pathology Tests Explained: (<https://pathologytestsexplained.org.au/>)

[Pathology Tests Explained](https://pathologytestsexplained.org.au/)

References

1. Zhongbin T, Jie W, Yanming L, Yongkang Z, Xiaoli Y, Junqiang Y, et al. Prevalence of developmental dysplasia of the hip (DDH) in infants: a systematic review and meta-analysis. *BMJ Paediatrics Open*. 2023;7(1):e002080.
2. Kuitunen I, Uimonen MM, Haapanen M, Sund R, Helenius I, Ponkilainen VT. Incidence of Neonatal Developmental Dysplasia of the Hip and Late Detection Rates Based on Screening Strategy: A Systematic Review and Meta-analysis. *JAMA Network Open*. 2022;5(8):e2227638-e.
3. Gibson C, Scott H, Hernandex J. Birth Defects in South Australia 2016. Adelaide: SA Birth Defects Register, Women's and Children's Health Network.; 2020.
4. Loh B, Woollett E. Update on the management of infant and toddler developmental dysplasia of the hip. *Australian Journal for General Practitioners*. 2021;50:207-12.
5. Nandhagopal T, Tiwari V, De Cicco FL. Developmental Dysplasia of the Hip. StatPearls. Treasure Island (FL) with ineligible companies. Disclosure: Vivek Tiwari declares no relevant financial relationships with ineligible companies. Disclosure: Franco De Cicco declares no relevant financial relationships with ineligible companies.: StatPearls Publishing Copyright © 2024, StatPearls Publishing LLC.; 2024.
6. Marriott E, Twomey S, Lee M, Williams N. Variability in Australian screening guidelines for developmental dysplasia of the hip. *J Paediatr Child Health*. 2021;57(12):1857-65.
7. Williams N. Improving early detection of developmental dysplasia of the hip through general practitioner assessment and surveillance. *Australian Journal for General Practitioners*. 2018;47:619-23.
8. Anderton MJ, Hastie GR, Paton RW. The positive predictive value of asymmetrical skin creases in the diagnosis of pathological developmental dysplasia of the hip. *Bone Joint J*. 2018;100-b(5):675-9.
9. Pavone V, de Cristo C, Vescio A, Lucenti L, Sapienza M, Sessa G, et al. Dynamic and Static Splinting for Treatment of Developmental Dysplasia of the Hip: A Systematic Review. *Children*. 2021;8(2):104.



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Write Group Lead

Dr Scott Morris

Other Major Contributors

Elise Bell

Susie Jones

Dr Michael McEvoy

Dr Jojy Varghese

SAPPG Management Group Members

Dr Michael McEvoy (Chair)

Monica Diaz (SAPPG EO)

Dr Elizabeth Allen

Elise Bell

Dr Angela Brown

Marnie Campbell

John Coombas

Dr Danielle Crosby

Imogen Downard John

Kate Greenlees

Luke Grzeskowiak

Kathryn Hansen

Dr Gemma Hardi

Dr Susie Keynes

Belinda Nitschke

Dr Angela Mathew

Dr Scott Morris

Dr Amanda Poprzeczny

Dr Anthia Rallis

Amy Rigano

Dr Shruti Tiwari

Sally Wadsworth

Allison Waldron



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20/06/2017	V2	SA Health Safety & Quality Strategic Governance Committee	Reviewed in line with 3-year timeframe.
29/03/2010	V1	SA Maternal & Neonatal Clinical Network	Original SA Maternal and Neonatal Clinical Network approved version.

