

Electronic Tables: Probabilities used in the model

Table A: Screening and treatment probabilities by screening strategy

*Baseline values are emphasised in bold; values used in sensitivity analyses are given in brackets
Letters refer to chance nodes in Figure 1*

Probability of	Parameter value		
	Clinical screening alone	Universal ultrasound	Selective ultrasound
Being screened ^a [A]	1.0	0.98	1.0
Positive screening result [B]	0.021^a (0.011; 0.03) ^b	0.078^c (0.060; 0.210) ^d	0.081^e (0.048; 0.130) ^f
Abduction splinting treatment given a positive screening result [C]	0.198^g (0.396) ^h	0.068ⁱ (0.574) ^j	0.087^k (0.044; 0.174) ^l
Surgical treatment given not screened [D]	0.0012^m	0.0012^m	0.0012^m
Surgical treatment given a negative screening result [E]	0.00080ⁿ (0.00025) ^o	0.00029^p (0.00019 ;0.00033) ^q	0.00053^r (0.00037; 0.00067) ^s
Surgical treatment given unconfirmed positive screening result [F]	0.014^t (0.007; 0.028) ^u	-	-
Surgical treatment given abduction splinting treatment [G]	0.024^v (0.012; 0.052) ^w	0.024^v (0.012; 0.052) ^w	0.024^v (0.012; 0.052) ^w

^a baseline assumption that all newborns are examined clinically and are assessed for recognised risk factors, but that 2% miss ultrasound screening in a universal ultrasound programme (as cited in reference ⁷) giving rise to two cases of DDH

References in table A are cited in Appendix as follows:

- a references: ¹⁻⁵
- b baseline x 0.5; baseline x 2.0
- c references: ⁶⁻¹⁰
- d low estimate⁷ ; high estimate¹¹
- e references: ¹²⁻¹⁸
- f low estimate¹²; high estimate¹⁹
- g references: ^{1;5;20;21}
- h baseline x 2.0
- i references: ^{7;8;10;14;22}
- j references: ^{11;14;23}
- k references: ^{14-18;24}
- l references: low estimate:¹⁸ high estimate:¹⁴
- m taken as mid-point prevalence of DDH as cited in reference ²⁵
- n references: ^{1-4;26-30}
- o references: ³¹⁻³⁷
- p references: baseline as median of studies^{8;14;38;39}; zero false negative rate cited in studies^{7;9-11}
- q lower estimate:³⁸; higher estimate:³⁹
- r references: ^{12;14;16;18;24}
- s references: low estimate^{12;16}; high estimate¹⁸
- t reference: ¹
- u baseline x 0.5; baseline x 2.0
- v references: ^{1-4;29;31;33;40-43}
- w references: low estimate²⁹; high estimate⁴⁰

Web-only Tables: Probabilities used in the model

Table B Favourable¹ and unfavourable treatment outcomes

Baseline values are emphasised in bold; values used in sensitivity analyses are given in brackets

Probability of	Parameter Value
Favourable outcome ¹ following abduction splinting	0.98062^a (0.76744) ^b
Favourable outcome ¹ following surgery	0.74916^c (0.49595) ^d
Avascular necrosis following abduction splinting	0.00939^e (0.07225) ^f
Avascular necrosis following surgical closed reduction ²	0.1228^g
Avascular necrosis following surgical open reduction	0.2210^h

References in table are cited in Appendix as follows:

^a references: 44;45

^b probability used in sensitivity analysis using Severin grades 1 and 2 only as favourable outcomes

^c references: 46-48

^d probability used in sensitivity analysis using Severin grades 1 and 2 only as favourable outcomes

^e references: 49-52

^f references: high estimate includes studies reported in^{44;45;53;54}

^g references: 46;55-64

^h references: 48;65

¹ Favourable outcome refers to radiological appearances at skeletal maturity of Severin grades 1, 2 or 3 (see text)

² assuming 70% receive closed reduction initially of whom 20% require open reduction by 3 years of age

Reference List

1. Lennox IAC, McLauchlan J, Murali R. Failures of screening and management of congenital dislocation of the hip. *J Bone Joint Surg.[Br]* 1993;**75-B**:72-5.
2. MacKenzie IG. Congenital dislocation of the hip. *J Bone Joint Surg.[Br]* 1972;**54-B**:18-39.
3. MacKenzie IG, Wilson JG. Problems encountered in the early diagnosis and management of congenital dislocation of the hip. *J Bone Joint Surg.[Br]* 1981;**63-B**:38-42.
4. Bertol P, Macnicol MF, Mitchell GP. Radiographic features of neonatal congenital dislocation of the hip. *J Bone Joint Surg.[Br]* 1982;**64-B**:176-9.
5. Galasko CSB, Galley S, Menon TJ. Detection of congenital dislocation of the hip by an early screening program, with particular reference to false negatives. *Israel J.Med.Sci.* 1980;**16**:257-9.
6. Rosendahl K, Markestad T, Lie RT. Developmental dysplasia of the hip: prevalence based on ultrasound diagnosis. *Pediatric Radiology* 1996;**26**:635-9.
7. Marks DS, Clegg J, Al-Chalabi AN. Routine ultrasound screening for neonatal hip instability. *J Bone Joint Surg.[Br]* 1994;**76-B**:534-8.
8. Becker, M., Hubbard, C., Howard, D., and Vaughan-Lane, T. Ultrasound screening for hip dysplasia: results and lessons from a pilot study. 1999. Unpublished Work
9. Terjesen T, Bredland T, Berg V. Ultrasound for hip assessment in the newborn. *J Bone Joint Surg.[Br]* 1989;**71-B**:767-73.
10. Bialik V, Bialik GM, Blazer S, Sujov P, Wiener F, Berant M. Developmental dysplasia of the hip: a new approach to incidence [see comments]. *Pediatrics* 1999;**103**:93-9.
11. Rosendahl K, Markestad T, Lie RT. Congenital dislocation of the hip: a prospective study comparing ultrasound and clinical examination. *ap* 1992;**81**:177-81.
12. Teanby DN, Paton RW. Ultrasound screening for congenital dislocation of the hip: a limited targeted programme. *J Pediatr Orthop* 1997;**17**:202-4
13. Walter RS, Donaldson JS, Davis CL, Shkolnik A, Binns HJ, Carroll NC *et al.* Ultrasound screening of high-risk infants. A method to increase early detection of congenital dysplasia of the hip. *American Journal of Disease Control* 1992;**146**:230-126234.
14. Rosendahl K, Markestad T, Lie RT. Ultrasound screening for developmental dysplasia of the hip in the neonate: the effect on treatment rate and prevalence of late cases. *Pediatrics* 1994;**94**:47-52.
15. Jones DA, Powell N. Ultrasound and neonatal hip screening. A prospective study of 'high risk' babies. *J Bone Joint Surg.[Br]* 1990;**72-B**:457-9.
16. Boeree NR, Clarke NMP. Ultrasound imaging and secondary screening for congenital dislocation of the hip. *J Bone Joint Surg.[Br]* 1994;**76-B**:525-33.
17. Jones DA. Importance of the clicking hip in screening for congenital dislocation of the hip. *Lancet* 1989;**i**:599-601.
18. Clarke NMP, Clegg J, Al-Chalabi AN. Ultrasound screening of hips at high risk for CDH: failure to reduce the incidence of late cases. *J Bone Joint Surg.[Br]* 1989;**71-B**:9-12.
19. Lewis K, Jones DA, Powell N. Ultrasound and neonatal hip screening: the five-year results of a prospective study in high-risk babies. *J Pediatr Orthop* 1999;**19**:760-2.
20. Myles JW. Secondary screening for congenital displacement of the hip. *J Bone Joint Surg.[Br]* 1990;**72-B**:326-7.

21. Rao S, Thurston AJ. Congenital dislocation of the hip in the newborn: a postnatal study. *New Zealand Medical Journal* 1986;**99**:752-4.
22. Clegg J, Bache CE, Raut VV. Financial justification for routine ultrasound screening of the neonatal hip. *J Bone Joint Surg.[Br]* 1999;**81**:852-7.
23. Altenhofen L, Allhoff PG, Niethard FU. [Hip ultrasound screening within the scope of U3--initial experiences]. *Z.Orthop.Ihre.Grenzgeb.* 1998;**136**:501-7.
24. Vedantam R, Bell MJ. Dynamic ultrasound assessment for monitoring of treatment of congenital dislocation of the hip. *J Pediatr Orthop* 1995;**15**:725-8.
25. Leck I. An epidemiological assessment of neonatal screening for dislocation of the hip. *J Roy Coll Phys* 1986;**20**:56-62.
26. Williamson J. Difficulties of early diagnosis and treatment of congenital dislocation of the hip in Northern Ireland. *J Bone Joint Surg.[Br]* 1972;**54-B**:13-7.
27. Kernohan WG, Trainor BP, Mollan RAB, Normand CEM. Cost-benefit appraisal of screening for congenital dislocation of the hip. *Journal of Management in Medicine* 1989;**4**:230-5.
28. Catford JC, Bennet GC, Wilkinson JA. Congenital hip dislocation: an increasing and still uncontrolled disability? *Br Med J* 1982;**285**:1527-30.
29. Dunn PM, Evans RE, Thearle MJ, Griffiths HED, Witherow PJ. Congenital dislocation of the hip: early and late diagnosis and management compared. *Arch Dis Child* 1985;**60**:407-14.
30. Knox EG, Armstrong EH, Lancashire RJ. Effectiveness of screening for congenital dislocation of the hip. *J Epidemiol Community Health* 1987;**41**:283-9.
31. Krikler SJ, Dwyer NSP. Comparison of results of two approaches to hip screening in infants. *J Bone Joint Surg.[Br]* 1992;**74-B**:701-3.
32. Bernard AA, O'Hara JN, Bazin S, Humby B, Jarrett R, Dwyer NSP. An improved screening system for the early detection of congenital dislocation of the hip. *J Pediatr Orthop* 1987; **7**:277-82.
33. Fiddian NJ, Gardiner JC. Screening for congenital dislocation of the hip by physiotherapists. Results of a ten year study. *J Bone Joint Surg.[Br]* 1994;**76-B**:458-9.
34. Hadlow V. Neonatal screening for congenital dislocation of the hip. *J Bone Joint Surg.[Br]* 1988; **70-B**:740-3.
35. Poul J, Bajero J, Sommernitz M, Straka M, Pokorny M, Wong FYH. Early diagnosis of congenital dislocation of the hip. *J Bone Joint Surg.[Br]* 1992;**74-B**:695-700.
36. Lehmann ECH, Street DG. Neonatal screening in Vancouver for congenital dislocation of the hip. *Can Med Assoc J* 1981;**124**:1003-8.
37. Barlow TG. Early diagnosis and treatment of congenital dislocation of the hip. *J Bone Joint Surg.[Br]* 1962;**44-B**:292-301.
38. Tegnander A, Terjesen T, Bredland T, Holen KJ. Incidence of late-diagnosed hip dysplasia after different screening methods in newborns. *J Pediatr Orthop* 1994;**3**:86-8.
39. Gunther KP, Stoll S, Schmitz A, Niethard FU, Altenhofen L, Melzer C *et al.* [Initial results of the evaluation study of ultrasound hip screening in Germany]. *Z.Orthop.Ihre.Grenzgeb.* 1998;**136**:508-12.
40. Jones D. An assessment of the value of examination of the hip in the newborn. *J Bone Joint Surg.[Br]* 1977;**59-B**:318-22.
41. Hey, E. Neonatal screening for congenital dislocation of the hip. 1999. Unpublished Work

42. Grill F, Bensahel H, Canadell J, Dungal P, Matasovic T, Vizkelety T. The Pavlik harness in the treatment of congenital dislocating hip: Report on multicenter study of the european paediatric orthopaedic society. *J Pediatr Orthop* 1988;**8**:1-8.
43. Taylor GR, Clarke NM. Monitoring the treatment of developmental dysplasia of the hip with the Pavlik harness. The role of ultrasound. *J Bone Joint Surg.Br.* 1997;**79** :719-23.
44. Fujioka F, Terayama K, Sugimoto N, Tanikawa H. Long-term results of congenital dislocation of the hip treated with the Pavlik harness. *J Pediatr Orthop* 1995;**15**:747-52.
45. Kumazawa H, Yoshihashi Y. Long-term results of congenital dislocation of the hip treated with Pavlik harness. *Nippon Seikeigeka Gakkai Zasshi* 1991;**65**:851-61.
46. Gibson PH, Benson MKD. Congenital dislocation of the hip: review at maturity of 147 hips treated by excision of the limbus and derotation osteotomy. *J Bone Joint Surg.[Br]* 1982;**64-B**:169-75.
47. Sugimoto N, Terayama K, Fujioka F. Results of congenital dislocation of the hip joint with open reduction followed up to an age of fifteen years or more. *Bull.Hosp.Jt.Dis.* 1993;**53**:30-6.
48. Sherlock DA, Gibson PH, Benson MK. Congenital subluxation of the hip. A long-term review. *J Bone Joint Surg.Br.* 1985;**67**:390-8.
49. Bradley J, Wetherill M, Benson MKD. Splintage for congenital dislocation of the hip. *J Bone Joint Surg.[Br]* 1987;**69-B**:257-63.
50. Ramsey PL, Lasser S, MacEwen GD. Congenital dislocation of the hip. Use of the Pavlik harness in the child during the first six months of life. *J Bone Joint Surg.Am.* 1976;**58**:1000-4.
51. Fredensborg N. The results of early treatment of typical congenital dislocation of the hip in Malmo. *J Bone Joint Surg.[Br]* 1976;**58-B**:272-8.
52. Tucci JJ, Kumar SJ, Guille JT, Rubbo ER. Late acetabular dysplasia following early successful Pavlik harness treatment of congenital dislocation of the hip. *J Pediatr Orthop* 1991;**11**:502-5.
53. Suzuki S, Yamamuro T. Avascular necrosis in patients treated with the Pavlik harness for congenital dislocation of the hip. *J Bone Joint Surg.Am.* 1990;**72**:1048-55.
54. Takahashi I. Functional treatment of congenital dislocation of the hip using Pavlik harness (Riemenbugel). *Nippon.Seikeigeka.Gakkai.Zasshi.* 1985;**59**:973-84.
55. Castillo R, Sherman FC. Medial adductor open reduction for congenital dislocation of the hip. *J.Pediatr.Orthop.* 1990;**10**:335-40.
56. Morcuende JA, Meyer MD, Dolan LA, Weinstein SL. Long-term outcome after open reduction through an anteromedial approach for congenital dislocation of the hip. *J Bone Joint Surg.Am.* 1997;**79**:810-7.
57. Thomas IH, Dunin AJ, Cole WG, Menelaus MB. Avascular necrosis after open reduction for congenital dislocation of the hip: analysis of causative factors and natural history. *J.Pediatr.Orthop.* 1989;**9**:525-31.
58. Koizumi W, Moriya H, Tsuchiya K, Takeuchi T, Kamegaya M, Akita T. Ludloff's medial approach for open reduction of congenital dislocation of the hip. A 20-year follow-up. *J Bone Joint Surg.Br.* 1996;**78**:924-9.
59. Galpin RD, Roach JW, Wenger DR, Herring JA, Birch JG. One-stage treatment of congenital dislocation of the hip in older children, including femoral shortening. *J Bone Joint Surg.Am.* 1989;**71**:734-41.
60. Mergen E, Adyaman S, Omeroglu H, Erdemli B, Isiklar U. Medial approach open reduction for congenital dislocation of the hip using the Ferguson procedure. A review of 31 hips. *Arch.Orthop.Trauma.Surg.* 1991;**110**:169-72.
61. Molina Guerrero JA, Munuera Martinez L, Esteban Mugica B. Acetabular development in congenital dislocation on the hip. *Acta Orthop.Belg.* 1990;**56**:293-300.

62. Gur E, Sarlak O. The complications of Salter innominate osteotomy in the treatment of congenital dislocation of hip. *Acta Orthop. Belg.* 1990;**56**:257-61.
63. Doudoulakis JK, Cavadias A. Open reduction of CDH before one year of age. 69 hips followed for 13 (10-19) years. *Acta Orthop. Scand.* 1993;**64**:188-92.
64. Valdiserri L, Campagnaro JG, Urso R. The treatment of congenital hip dislocation between the ages of 1 and 3. *Chir. Organi. Mov.* 1992;**77**:219-31.
65. Fogarty EE, Accardo NJ, Jr. Incidence of avascular necrosis of the femoral head in congenital hip dislocation related to the degree of abduction during preliminary traction. *J. Pediatr. Orthop.* 1981;**1**:307-11.