Supplemental Table 1. Data Used to Calculate Prevalence at Birth and at Screen

Parameter	Base case value	Probability distribution	Source
Probability of CHD	.00530	Beta (1,590, 298,512)	Wren et al., 1999 (43)
Probability of extracardiac defect (not associated with CHD)	.00128	Beta (4, 3,116)	Tulloh et al., 1994 (41) Alberman, 2002 (3) Eurocat, 2004 (19)
Probability of specific CHD given CHD			
TGA	.0528	Dirichlet (84, 67, 27, 45, 132, 74, 590, 571)	Wren et al., 1999 (43)
AS	.0421		
TAPVC	.0170		
HLH/MA	.0283		
COA/IAA	.0830		
PA	.0465		
VSD	.3711		
All other CHDs	.3591		
Probability of extra VSDs detected with SE	.0416	Beta (3.79, 87.38)	Hoffman and Kaplan, 1999 (24)
Probability of extra CHD detected with SE	.0006	Beta (4.0, 6,770.66)	Wren and O'Sullivan, 2001 (42)
Probability of antenatal detection given a specific CHD			
TGA	.0238	Beta (2, 84)	Wren et al., 1999 (43)
AS	.0746	Beta (5, 62)	
TAPVC	0	N/A	
HLH/MA	.2	Beta (9, 36)	
COA/IAA	.0606	Beta (8, 124)	
PA	.0676	Beta (5, 69)	
VSD	.0169	Beta (10, 580)	
All other CHDs	.0333	Beta (19, 552)	
Probability of diagnosis of extracardiac defect given a specific CHD			
TGA	.0244	Beta (2, 80)	Wren et al., 1999 (43)
AS	.0161	Beta (1, 61)	Tulloh et al., 1994 (41)
TAPVC	.0111	Beta (3, 24)	Alberman, 2002 (3)
HLH/MA	.0556	Beta (2, 34)	
COA/IAA	.0161	Beta (2, 122)	
PA	.0435	Beta (3, 66)	
VSD	.0621	Beta (36, 544)	
All other CHDs	.2826	Beta (156, 396)	
Probability of additional CHD diagnosed between 1 and 16 years of age given no CHD			
TGA	0	N/A	Hoffman and Kaplan, 1999 (24)
AS	.000117	Beta (4, 34,179)	Wren and O'Sullivan, 2001 (42)
TAPVC	.0000053	Beta (4, 754,707)	
HLH/MA	.000008	Beta (4, 499,991)	
COA/IAA	.000106	Beta (4, 37,727)	
PA	0	N/A	
VSD	.000547	Beta (4, 7,304)	
All other CHDs	.001017	Beta (4, 3,924)	
Probability of symptomatic presentation prior 24 hours of age given a specific CHD			
TGA	.4625	Beta (37, 43)	Wren et al., 1999 (43)
AS	.1639	Beta (10, 51)	
TAPVC	.111	Beta (3, 24)	
HLH/MA	.2941	Beta (10, 24)	
COA/IAA	.1148	Beta (14, 108)	
PA	.3333	Beta (22, 44)	
VSD	.0993	Beta (54, 490)	
All other CHDs	.2020	Beta (80, 316)	

Parameter	Base case value	Probability distribution	Source
Probability of symptomatic presentation prior 48 hours of age given a specific CHD			
TGA	.7625	Beta (61, 19)	Wren et al., 1999 (43)
AS	.4098	Beta (25, 36)	
TAPVC	.4444	Beta (12, 15)	
HLH/MA	.6765	Beta (23, 11)	
COA/IAA	.3689	Beta (45, 77)	
PA	.6212	Beta (41, 25)	
VSD	.3805	Beta (207, 337)	
All other CHDs	.5379	Beta (213, 183)	

CHD, congenital heart defects; TGA, transposition of the great arteries; AS, aortic stenosis; TAPVC, total anomalous pulmonary venous connection; HLH/MA, hypoplastic left heart/mitral atresia; COA/IAA, coarctation of the aorta/interruption of the aortic arch; PA, pulmonary valve atresia; VSD, ventricular septal defect; SE, screening echocardiography.

Supplemental Table 2. Data Used to Calculate Screening Test Performance and Other Model Parameters

Parameter	Base case value	Range of subjective probabilities[a]	Probability distribution	Source
Detection rate: clinical examination [B]				
TGA	.389	N/A	Beta (7.0, 11.0)	Wren et al., 1999 (43)
AS	.544	N/A	Beta (31.0, 26.0)	
TAPVC	.035	N/A	Beta (5.2, 143.9)	
HLH/MA	.375	N/A	Beta (6.0, 10.0)	
COA/IAA	.221	N/A	Beta (21.0, 74.0)	
PA	.469	N/A	Beta (15.0, 17.0)	
VSD	.493	N/A	Beta (237.0, 244.0)	
All other CHDs	.465	N/A	Beta (174.0, 200.0)	
Detection rate: pulse oximetry [B]				
TGA	.950	.900–1	Beta (17.1, .9)	Expert
AS	.596	N/A	Beta (34.0, 23.0)	Richmond et al., 2002 (34)
TAPVC	.950	.900–1	Beta (17.1, .9)	Expert
HLH/MA	.950	.900–1	Beta (17.1, .9)	Expert
COA/IAA	.600	.300–.900	Beta (1.0, .7)	Expert
PA	.940	.900–.980	Beta (32.2, 2.1)	Expert
VSD	.714	N/A	Beta (15.0, 6.0)	Richmond et al., 2002 (34)
All other CHDs	.667	N/A	Beta (8.0, 4.0)	Richmond et al., 2002 (34)
Detection rate: screening echocardiography [B]				
TGA	.900	.850–.950	Beta (31.5, 3.5)	Expert
AS	.821	.750–.890	Beta (23.9, 5.2)	
TAPVC	.600	.400–.800	Beta (3.0, 2.0)	
HLH/MA	.990	.980–1	Beta (97.0, 1.0)	
COA/IAA	.600	.400–.800	Beta (3.0, 2.0)	
PA	.900	.850–.950	Beta (31.5, 3.5)	
VSD	.950	.850–.950	Beta (17.1, .9)	
All other CHDs	.900	.85–.95	Beta (31.5, 3.5)	
Probability of collapse given negative screening test or no screening [C]				
TGA	.200	.150–.250	Beta (12.6, 50.4)	Expert
AS	.050	.030–.070	Beta (5.9, 111.9)	
TAPVC	.050	.030–.070	Beta (5.9, 111.9)	
HLH/MA	.900	.800–1	Beta (7.2, .8)	
COA/IAA	.150	.100–.200	Beta (7.5, 42.5)	
PA	.500	.400–.800	Beta (12.0, 12.0)	
VSD	.005	0–.010	Beta (1.0, 197.0)	
All other CHDs	.005	0–.010	Beta (1.0, 197.0)	

Parameter	Base case value	Range of subjective probabilitiesᵃ	Probability distribution	Source
Probability of collapse given positive screen and no diagnostic echocardiography [D]				
TGA	.125	.085–.165	Beta (8.4, 58.9)	Expert
AS	.100	.050–.150	Beta (3.5, 31.5)	
TAPVC	.100	.050–.150	Beta (3.5, 31.5)	
HLH/MA	.350	.300–.400	Beta (31.5, 58.5)	
COA/IAA	.150	.100–.200	Beta (7.5, 42.5)	
PA	.075	.050–.100	Beta (8.3, 101.8)	
VSD	.005	0–.010	Beta (1.0, 197.0)	
All other CHDs	.005	0–.010	Beta (1.0, 197.0)	
Probability of death given negative screening test or no screening [E]				
TGA	.020	.010–.030	Beta (3.9, 191.1)	Expert
AS	.020	.005–.035	Beta (1.7, 84.4)	
TAPVC	.050	.030–.070	Beta (5.9, 111.9)	
HLH/MA	.125	.050–.020	Beta (2.3, 16.1)	
COA/IAA	.050	.030–.070	Beta (5.9, 111.9)	
PA	.125	.100–.150	Beta (21.8, 152.3)	
VSD	.005	0–.010	Beta (1.0, 197.0)	
All other CHDs	.005	0–.010	Beta (1.0, 197.0)	
Probability of diagnosis without collapse given negative screen or no screening [F]				
TGA	1.0	N/A	No distribution assigned as always diagnosed in first year	Wren and O'Sullivan, 2001 (42)
AS	.653	N/A	Beta (22.0, 11.7)	
TAPVC	.944	N/A	Beta (9.0, .5)	
HLH/MA	1.0	N/A	No distribution assigned as always diagnosed in first year	
COA/IAA	.806	N/A	Beta (44.0, 10.6)	
PA	1.0	N/A	No distribution assigned as always diagnosed in first year	
VSD	.783	N/A	Beta (197.0, 54.7)	
All other CHDs	.679	N/A	Beta (215.0, 101.7)	
Probability of death given collapse after positive screen [G]				
TGA	.005	.003–.007	Beta (6.2, 1,236.5)	Expert
AS	.020	.005–.035	Beta (1.7, 84.4)	
TAPVC	.050	.030–.070	Beta (5.9, 111.9)	
HLH/MA	.020	.010–.030	Beta (3.9, 191.1)	
COA/IAA	.005	.003–.007	Beta (6.2, 1,236.5)	
PA	.015	.010–.020	Beta (8.9, 5,81.2)	
VSD	.005	0–.010	Beta (1.0, 197.0)	
All other CHDs	.005	0–.010	Beta (1.0, 197.0)	
Probability of negative screening test in an unaffected screened infant [H]				
Clinical Examination	.997	n/a	Beta (4,777.0, 14.0)	Glazener et al., 1999 (21)
Pulse oximetry in addition to clinical examination	.990	n/a	Beta (5,520.0, 54.0)	Richmond et al., 2002 (34)
Screening echocardiography in addition to clinical examination	.990	.985–.995	Beta (391.1, 3.9)	Expert

ᵃ The range of subjective probabilities is only relevant where data were derived from expert opinion.

CHD, congenital heart defects; TGA, transposition of the great arteries; AS, aortic stenosis; TAPVC, total anomalous pulmonary venous connection; HLH/MA, hypoplastic left heart/mitral atresia; COA/IAA, coarctation of the aorta/interruption of the aortic arch; PA, pulmonary valve atresia; VSD, ventricular septal defect.