

## **Revised analysis (1) conducted by ScHARR ‘Routine antenatal anti-D prophylaxis for RhD-negative women (review)’**

The model results of two changes which have been made to the original economic analysis are presented in this document. The analysis has been revised as follows:

- (1) The yearly cost of having a major disability has been updated. The original figure of £7,319 has been replaced with a yearly cost of £458. Both figures are based on Beecham *et al*, 2001; however, the original cost incorrectly included non-NHS costs such as education and accommodation, while the revised cost includes only costs incurred by the NHS (see below for more details).
- (2) The QALY loss associated with a foetal loss has been decreased from 24 QALYs lost to 10 QALYs lost. The original analysis assumed that a foetal loss is associated with 79 life years lost (life expectancy of other individuals in the model), which equates to 70 QALYs lost and 24 discounted QALYs lost. Conversely, assuming 10 QALYs are lost equates to 13 undiscounted life years lost (or a lower amount of life years lost for the foetus and the inclusion of quality of life loss for the adult). 95% confidence intervals have been placed around the revised analysis of 4 and 19 QALYs lost. The upper bound was chosen so that the QALY loss would never be above 24 within the PSA (i.e. the QALY loss would never be greater than losing 79 life years).

Additional notes for point (1): Beecham *et al* is a UK-based paper and ‘lays out the service and cost consequences of supporting a nationally representative sample of young adults with hemiplegic cerebral palsy’. The cost of £458 includes inpatient hospital stays, outpatient appointments, A&E attendances, community health services (including chiropody, othotist, occupational therapy, physiotherapy, speech therapy, psychiatry, psychology, counselling and contact with doctors and surgeons) and primary care services (including general practitioner, opticians and dentist). Although the mean estimate may seem quite low, the data is highly skewed (i.e. a small proportion of the people in the study incur the majority of the costs). This has been captured in the one-way sensitivity analysis and the PSA, with a lower 95% confidence interval of £78 and an upper 95% confidence interval of £1532.

**Table 28: Incremental cost-effectiveness outcomes associated with RAADP for primigravidae compared with no RAADP**

Anti-D dose	Total cost	No. of sensitisations avoided	No. of affected pregnancies avoided	No. of foetuses lost	LYG	QALYs gained	Cost per sensitisation avoided	Cost per affected pregnancy avoided	Cost per foetal loss avoided	Cost per LYG	Cost per QALY gained
Basecase value	£1,796,546	630	353	14.14	2878879	2533443					
2x500 IU (D-Gam)	£2,360,604	162	150	6	152	121	£14,561	£15,783	£394,580	£15,532	£19,438
2x1250 IU (Partobulin)	£3,081,262	162	150	6	152	121	£19,006	£20,602	£515,040	£20,274	£25,372
1x1500 IU (Rhopylac)	£1,797,590	162	150	6	152	121	£11,088	£12,019	£300,471	£11,828	£14,802
1x1500 IU (WinRho)	£13,823,575	162	150	6	152	121	£85,267	£92,426	£2,310,641	£90,957	£113,827

**Table 29: Incremental cost-effectiveness outcomes associated with RAADP for multigravidae compared with primigravidae**

Anti-D dose	Total cost	No. of sensitisations avoided	No. of affected pregnancies avoided	No. of foetuses lost	LYG	QALYs gained	Cost per sensitisation avoided	Cost per affected pregnancy avoided	Cost per foetal loss avoided	Cost per LYG	Cost per QALY gained
2x500 IU (D-Gam)	£2,645,120	233	72	3	73	59	£11,358	£36,679	£916,982	£36,096	£45,172
2x1250 IU (Partobulin)	£3,457,346	233	72	3	73	59	£14,846	£47,942	£1,198,556	£47,180	£59,043
1x1500 IU (Rhopylac)	£2,010,568	233	72	3	73	59	£8,634	£27,880	£697,002	£27,437	£34,336
1x1500 IU (WinRho)	£15,564,594	233	72	3	73	59	£66,836	£215,831	£5,395,767	£212,401	£265,807

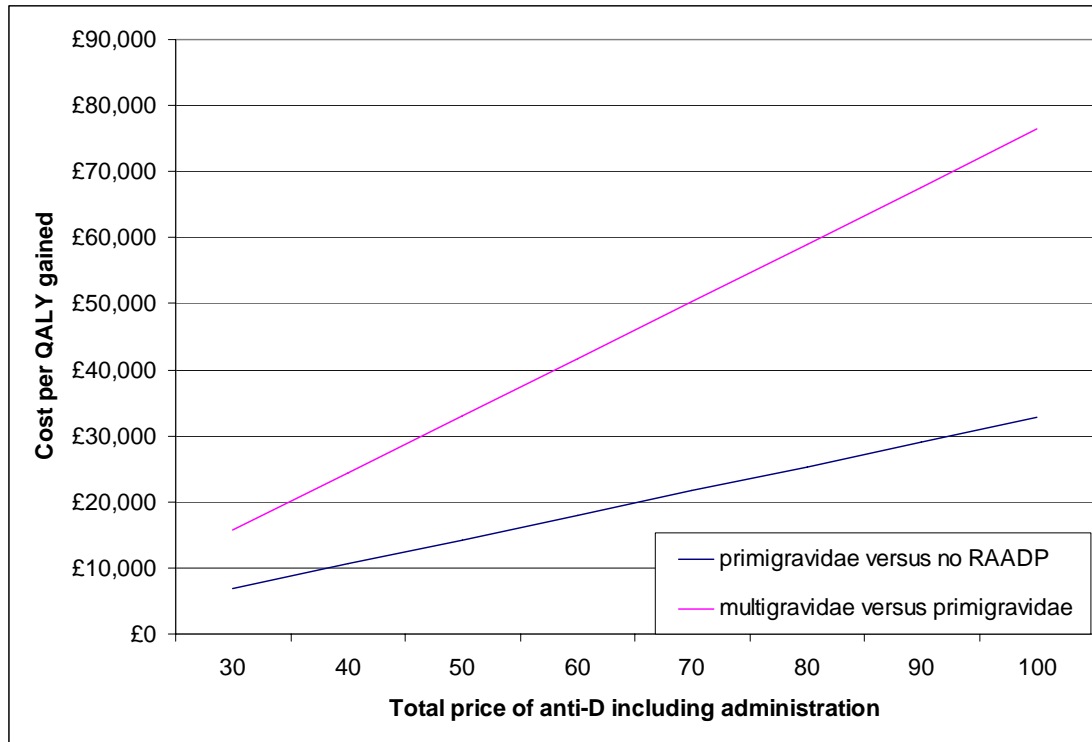
**Table 30: Incremental cost-effectiveness results for different ethnicities**

Ethnicity (% RhD-negative)	Total cost	No. of sensitisations avoided	No. of affected pregnancies avoided	No. of foetuses lost	LYG	QALYs gained	Cost per sensitisation avoided	Cost per affected pregnancy avoided	Cost per foetal loss avoided	Cost per LYG	Cost per QALY gained
Basecase Caucasian (16%)	£1,796,546	630	353	14.14	2878879	2533443					
Primigravidae	£2,360,604	162	150	6	152	121	£14,561	£15,783	£394,580	£15,532	£19,438
Multigravidae	£2,645,120	233	72	3	73	59	£11,358	£36,679	£916,982	£36,096	£45,172
Basecase Asian (9%)	£1,073,357	375	216	8.64	1619352	1425048					
Primigravidae	£1,302,875	99	93	4	94	75	£13,188	£14,080	£352,012	£13,857	£17,341
Multigravidae	£1,473,105	136	43	2	44	35	£10,797	£34,316	£857,902	£33,771	£42,262
Basecase West African (5%)	£615,566	215	125	5.02	899634	791689					
Primigravidae	£715,875	57	54	2	55	44	£12,494	£13,226	£330,651	£13,016	£16,289
Multigravidae	£814,149	77	25	1	25	20	£10,525	£33,158	£828,949	£32,631	£40,836
Basecase Chinese (1%)	£126,868	44	26	1.05	179926	158337					
Primigravidae	£141,583	12	11	0	12	9	£11,856	£12,445	£311,116	£12,247	£15,326
Multigravidae	£162,045	16	5	0	5	4	£10,284	£32,119	£802,986	£31,609	£39,557

**Table 31: Results of one-way sensitivity analysis**

Parameter (LB=Lower Bound, UB=Upper Bound)	Parameter value	Cost per QALY gained	
		Primigravidae	Multigravidae
Basecase		£19,438	£45,172
Odds ratio for sensitisation rate of RAADP	Base case	0.37	
	LB	0.21	£14,602
	UB	0.65	£38,541
Basecase sensitisation rate	Base case	0.95%	
	LB	0.18%	£120,299
	UB	1.71%	£8,973
Proportion of heterozygous males	Base case	55%	
	LB	35%	£14,510
	UB	75%	£27,008
Foetal loss rate per woman at risk	Base case	4%	
	LB	2%	£25,422
	UB	6%	£15,737
Cost of anti-D administration per dose	Base case	£5	
	LB	£1	£16,471
	UB	£9	£22,405
Cost of management of sensitisation	Base case	£2,885	
	LB	£1,513	£21,272
	UB	£4,257	£17,604
Rate of major developmental problems	Base case	3%	
	LB	1%	£28,926
	UB	5%	£14,546
Yearly cost of major developmental problems	Base case	£458	
	LB	£78	£19,738
	UB	£1532	£18,588
Life exp. for people with major devlpm. problems	Base case	60	
	LB	40	£18,531
	UB	79	£19,967
QoL of people with major devlpm. problems	Base case	0.42	
	LB	0.36	£18,425
	UB	0.48	£20,568
% of births outside marriage with same father	Base case	50%	
	LB	26%	£19,112
	UB	74%	£19,775
Total discounted QALYs lost as a result of foetal loss	Base case	10	
	LB	4	£27,594
	UB	19	£13,467
	Previous analysis	24	£11,384

**Figure 6: Cost per QALY gained based on cost of anti-D and its administration**



The results presented here include an administration cost of £5 per dose. Hence, at a cost per QALY gained of £30,000 and £20,000, a two-dose regimen of RAADP given to all RhD-negative pregnant women compared to primigravidae would be considered cost-effective at a cost of £18 and £12.50 per dose respectively whereas, at this threshold, a one-dose regimen would be considered cost-effective at a cost of £41 and £30 per dose respectively.

**Table 32: Results of probabilistic sensitivity analysis – RAADP given to primigravidae versus no RAADP**

Anti-D regimen	Difference in costs	Difference in LYs	Difference in QALYs	Cost per LYG	Cost per QALY gained
Basecase: no RAADP	£1,808,015	£2,878,877	2532761		
D-Gam: 2x500 IU	£2,360,462	151	122	£15,582	£19,354
Partobulin: 2x1250 IU	£3,080,967	152	122	£20,262	£25,239
Rhophylac: 1x1500 IU	£1,797,115	151	122	£11,863	£14,684
WinRho: 1x1500 IU	£13,822,266	152	122	£90,936	£112,976

**Table 33: Results of probabilistic sensitivity analysis – RAADP given to multigravidae versus primigravidae**

Anti-D regimen	Difference in costs	Difference in LYs	Difference in QALYs	Cost per LYG	Cost per QALY gained
D-Gam: 2x500 IU	£2,643,486	73	59	£36,124	£44,868
Partobulin: 2x1250 IU	£3,455,534	73	59	£47,162	£58,595
Rhophylac: 1x1500 IU	£2,008,665	73	59	£27,345	£33,975
WinRho: 1x1500 IU	£15,561,866	74	59	£211,671	£262,936

**Figure 7: Cost effectiveness acceptability curve (CEAC)**

