

1 **Supplementary Report**

2 This supplementary document provides further details about model parameter estimates and model
3 results.

4 **Table x1.** Ethnicity of women in patient datasets and of UK

Ethnic group	HAPO (4) centres	Atlantic DiP	Norfolk^a	UK^b
White	79%	93%	96.5%	87%
Black	2%	2%	0.5%	3%
Asian	13%	4%	1.6%	7%
Other	6%	1%	1.6%	3%

5 (a) Our Norwich dataset did not include data on ethnicity and the values presented here are census data for Norfolk
6 (Estimated from 2011 Census: Ethnic group, local authorities in the United Kingdom. Office for National Statistics. 11
7 October 2013)

8 (b) Included for comparative purposes (2011 Census: Ethnic group, local authorities in the United Kingdom. Office for National
9 Statistics. 11 October 2013)

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11 **Multivariable prediction models to estimate baseline risk**

12 Model 1 includes the covariates used in the original analysis of the HAPO data whilst Model 2 is
13 restricted to plasma glucose variables (Tables x2 to Tables x7). In the base case analysis, backward
14 elimination of plasma glucose variables with non-significant coefficients from the prediction models
15 was undertaken. A sensitivity analysis was undertaken retaining all plasma glucose variables. For each
16 model Hosmer-Lemeshow goodness-of-fit statistics are presented and predicted probabilities are used
17 to derive the area under the receiver-operating characteristic (ROC) curve as an indicator of the
18 model's discriminatory ability.

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20 **Table x2.** Logistic regression models to predict neonatal shoulder dystocia

Variable	Co-efficient b (Standard error (SE(b)))			
	Model 1 (all covariates)		Model 2 (blood glucose covariates)	
	Base case analysis	Sensitivity analysis	Base case analysis	Sensitivity analysis
Centre (Manchester v Belfast)	1.151 (0.423)	1.151 (0.424)	-	-
(Brisbane v Belfast)	0.505 (0.489)	0.562 (0.491)	-	-
(Newcastle v Belfast)	1.604 (0.472)	1.622 (0.472)	-	-
Age at OGTT (yr)	-0.023 (0.024)	-0.022 (0.024)	-	-
BMI at OGTT (kg/m ²)	-0.006 (0.023)	-0.011 (0.024)	-	-
Smoker (Yes v No)	-0.480 (0.409)	-0.477 (0.409)	-	-
Drinker (Yes v No)	-0.101 (0.317)	-0.107 (0.317)	-	-
Family history DM (Yes v No)	-0.006 (0.184)	-0.008 (0.187)	-	-
Gestational age at OGTT (wk)	-0.111 (0.091)	-0.114 (0.092)	-	-
Neonate gender (F v M)	-1.321 (0.292)	-1.316 (0.292)	-	-
Family history HBP (Yes v No) ^a	-	-	-	-
Maternal UTI (Yes v No) ^a	-	-	-	-
Mean Blood Pressure (mmHg)	-0.006 (0.015)	-0.007 (0.015)	-	-
Hospital admission before delivery (Yes v No)	0.173 (0.266)	0.175 (0.267)	-	-
Parity (1 v 0)	-0.118 (0.420)	-0.108 (0.420)	-	-
(2+ v 0)	0.456 (0.412)	0.469 (0.414)	-	-
(Unknown v 0)	-0.026 (0.399)	-0.013 (0.399)	-	-
Fasting blood glucose ^b	-	0.151 (0.112)	-	0.166 (0.110)
1-hr blood glucose ^b	-	-0.138 (0.165)	-	-0.152 (0.163)
2-hr blood glucose ^b	0.223 (0.100)	0.222 (0.152)	0.267 (0.097)	0.265 (0.151)
Constant	0.925 (3.025)	1.139 (3.508)	-4.467 (0.122)	-4.475 (0.122)
Hosmer-Lemeshow goodness- of-fit test	$\chi^2 = 2.94,$ df=8; P=0.94	$\chi^2 = 6.36,$ df=8; P=0.61	$\chi^2 = 4.99,$ df=8; P=0.76	$\chi^2 = 11.51,$ df=8; P=0.18
Area under the ROC curve (95% CI)	0.75 (0.70, 0.80)	0.76 (0.70, 0.81)	0.58 (0.51, 0.65)	0.60 (0.53, 0.67)

21 (a) Omitted from HAPO model for shoulder dystocia

22 (b) Blood glucose values are 'standardised' – so the exponential of the coefficient represents the odds ratio for shoulder
23 dystocia arising from a 1 Standard Deviation (SD) increase in plasma glucose (fasting plasma glucose mean (SD) =
24 4.60(0.47); 1-hour plasma glucose mean (SD) = 7.57(1.83); 2-hour plasma glucose mean (SD) = 6.21(1.44)

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28 **Table x3.** Logistic regression models to predict caesarean section

Variable	Co-efficient b (Standard error (SE(b)))			
	Model 1 (all covariates)		Model 2 (blood glucose covariates)	
	Base case analysis	Sensitivity analysis	Base case analysis	Sensitivity analysis
Centre (Manchester v Belfast)	-0.494 (0.092)	-0.495 (0.092)	-	-
(Brisbane v Belfast)	-0.099 (0.098)	-0.114 (0.100)	-	-
(Newcastle v Belfast)	-0.681 (0.140)	-0.692 (0.141)	-	-
Age at OGTT (yr)	0.034 (0.007)	0.034 (0.007)	-	-
BMI at OGTT (kg/m ²)	0.039 (0.007)	0.039 (0.007)	-	-
Smoker (Yes v No)	-0.304 (0.106)	-0.292 (0.106)	-	-
Drinker (Yes v No)	-0.028 (0.087)	-0.025 (0.087)	-	-
Family history DM (Yes v No)	0.050 (0.057)	0.052 (0.057)	-	-
Gestational age at OGTT (wk)	0.004 (0.029)	0.004 (0.029)	-	-
Neonate gender (F v M)	-0.205 (0.071)	-0.205 (0.071)	-	-
Family history HBP (Yes v No) ^a	-	-	-	-
Maternal UTI (Yes v No) ^a	-	-	-	-
Mean Blood Pressure (mmHg)	0.003 (0.004)	0.003 (0.004)	-	-
Hospital admission before delivery (Yes v No)	0.514 (0.079)	0.510 (0.079)	-	-
Parity (1 v 0) ^a	-	-	-	-
(2+ v 0) ^a	-	-	-	-
(Unknown v 0) ^a	-	-	-	-
Fasting blood glucose ^b	-	-0.009 (0.044)	-	0.053 (0.040)
1-hr blood glucose ^b	0.144 (0.037)	0.101 (0.051)	0.138 (0.046)	0.119 (0.048)
2-hr blood glucose ^b	-	0.071 (0.048)	0.123 (0.046)	0.113 (0.046)
Constant	-3.518 (0.947)	-3.509 (0.950)	-1.435 (0.035)	-1.433 (0.035)
Hosmer-Lemeshow goodness- of-fit test	$\chi^2 = 1.88,$ df=8; P=0.99	$\chi^2 = 5.11,$ df=8; P=0.75	$\chi^2 = 16.56, df=8;$ P=0.04	$\chi^2 = 17.66,$ df=8; P=0.02
Area under the ROC curve (95% CI)	0.65 (0.63, 0.66)	0.65 (63, 0.66)	0.58 (0.56, 0.60)	0.58 (0.57, 0.60)

29 (a) Omitted from HAPO model for caesarean section

30 (b) Blood glucose values are 'standardised' – so the exponential of the coefficient represents the odds ratio for caesarean
31 section arising from a 1 Standard Deviation (SD) increase in plasma glucose (fasting plasma glucose mean (SD) =
32 4.60(0.47); 1-hour plasma glucose mean (SD) = 7.57(1.83); 2-hour plasma glucose mean (SD) = 6.21(1.44)

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36 **Table x4.** Logistic regression models to predict neonatal intensive care unit admissions

Variable	Co-efficient b (Standard error (SE(b)))			
	Model 1 (all covariates)		Model 2 (blood glucose covariates)	
	Base case analysis	Sensitivity analysis	Base case analysis	Sensitivity analysis
Centre (Manchester v Belfast)	0.894 (0.159)	0.889 (0.159)	-	-
(Brisbane v Belfast)	1.393 (0.161)	1.400 (0.163)	-	-
(Newcastle v Belfast)	1.153 (0.190)	1.163 (0.191)	-	-
Age at OGTT (yr)	0.013 (0.009)	0.012 (0.009)	-	-
BMI at OGTT (kg/m ²)	0.025 (0.009)	0.024 (0.009)	-	-
Smoker (Yes v No)	0.209 (0.130)	0.201 (0.130)	-	-
Drinker (Yes v No)	-0.025 (0.117)	-0.023 (0.117)	-	-
Family history DM (Yes v No)	0.033 (0.069)	0.038 (0.069)	-	-
Gestational age at OGTT (wk)	-0.050 (0.038)	-0.052 (0.038)	-	-
Neonate gender (F v M)	-0.304 (0.094)	-0.302 (0.094)	-	-
Family history HBP (Yes v No) ^a	-	-	-	-
Maternal UTI (Yes v No) ^a	-	-	-	-
Mean Blood Pressure (mmHg)	0.006 (0.006)	0.006 (0.006)	-	-
Hospital admission before delivery (Yes v No)	0.794 (0.097)	0.792 (0.097)	-	-
Parity (1 v 0)	-0.474 (0.148)	-0.474 (0.148)	-	-
(2+ v 0)	-0.490 (0.157)	-0.493 (0.157)	-	-
(Unknown v 0)	-0.084 (0.135)	-0.086 (0.135)	-	-
Fasting blood glucose ^b	-	-0.003 (0.054)	-	-0.025 (0.050)
1-hr blood glucose ^b	-	0.082 (0.067)	-	0.078 (0.064)
2-hr blood glucose ^b	0.159 (0.045)	0.107 (0.063)	0.208 (0.041)	0.167 (0.060)
Constant	-3.181 (1.236)	-3.061 (1.243)	-2.374 (0.046)	-2.375 (0.046)
Hosmer-Lemeshow goodness- of-fit test	$\chi^2 = 14.18,$ df=8; P=0.08	$\chi^2 = 11.41,$ df=8; P=0.18	$\chi^2 = 22.16,$ df=8; P=0.005	$\chi^2 = 12.72,$ df=8; P=0.12
Area under the ROC curve (95% CI)	0.71 (0.69, 0.73)	0.71 (0.69, 0.73)	0.57 (0.55, 0.60)	0.57 (0.55, 0.60)

37 (a) Omitted from HAPO model for neonatal intensive care unit admissions

38 (b) Blood glucose values are 'standardised' – so the exponential of the coefficient represents the odds ratio for neonatal
 39 intensive care unit admissions arising from a 1 Standard Deviation (SD) increase in plasma glucose (fasting plasma glucose
 40 mean (SD) = 4.60(0.47); 1-hour plasma glucose mean (SD) = 7.57(1.83); 2-hour plasma glucose mean (SD) = 6.21(1.44)

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43 **Table x5.** Logistic regression models to predict jaundice

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Variable	Co-efficient b (Standard error (SE(b)))			
	Model 1 (all covariates)		Model 2 (blood glucose covariates)	
	Base case analysis	Sensitivity analysis	Base case analysis	Sensitivity analysis
Centre (Manchester v Belfast)	0.407 (0.157)	0.410 (0.157)	-	-
(Brisbane v Belfast)	0.449 (0.171)	0.420 (0.173)	-	-
(Newcastle v Belfast)	-0.315 (0.259)	-0.332 (0.259)	-	-
Age at OGTT (yr)	0.005 (0.011)	0.005 (0.011)	-	-
BMI at OGTT (kg/m ²)	-0.011 (0.011)	-0.009 (0.012)	-	-
Smoker (Yes v No)	0.082 (0.161)	0.093 (0.162)	-	-
Drinker (Yes v No)	-0.514 (0.163)	-0.508 (0.163)	-	-
Family history DM (Yes v No)	-0.060 (0.094)	-0.060 (0.094)	-	-
Gestational age at OGTT (wk)	-0.078 (0.047)	-0.077 (0.047)	-	-
Neonate gender (F v M)	-0.116 (0.113)	-0.115 (0.113)	-	-
Family history HBP (Yes v No) ^a	-	-	-	-
Maternal UTI (Yes v No) ^a	-	-	-	-
Mean Blood Pressure (mmHg)	0.018 (0.007)	0.018 (0.007)	-	-
Hospital admission before delivery (Yes v No)	0.867 (0.116)	0.865 (0.116)	-	-
Parity (1 v 0)	-0.382 (0.185)	-0.380 (0.185)	-	-
(2+ v 0)	-0.526 (0.200)	-0.526 (0.200)	-	-
(Unknown v 0)	0.078 (0.165)	0.078 (0.165)	-	-
Fasting blood glucose ^b	-	-0.055 (0.066)	-	-0.063 (0.061)
1-hr blood glucose ^b	0.216 (0.056)	0.192 (0.079)	0.237 (0.052)	0.199 (0.078)
2-hr blood glucose ^b	-	0.073 (0.074)	-	0.102 (0.072)
Constant	-1.927 (1.522)	-2.014 (1.526)	-2.846 (0.057)	-2.850 (0.057)
Hosmer-Lemeshow goodness- of-fit test	$\chi^2 = 8.42,$ df=8; P=0.39	$\chi^2 = 7.96,$ df=8; P=0.44	$\chi^2 = 2.47,$ df=8; P=0.96	$\chi^2 = 10.40,$ df=8; P=0.24
Area under the ROC curve (95% CI)	0.68 (0.65, 0.71)	0.68 (0.65, 0.71)	0.57 (0.54, 0.60)	0.58 (0.55, 0.61)

45 (a) Omitted from HAPO model for jaundice

46 (b) Blood glucose values are 'standardised' – so the exponential of the coefficient represents the odds ratio for jaundice
 47 arising from a 1 Standard Deviation (SD) increase in plasma glucose (fasting plasma glucose mean (SD) = 4.60(0.47); 1-hour
 48 plasma glucose mean (SD) = 7.57(1.83); 2-hour plasma glucose mean (SD) = 6.21(1.44)

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51 **Table x6.** Logistic regression models to predict pre-eclampsia

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Variable	Co-efficient b (Standard error (SE(b)))			
	Model 1 (all covariates)		Model 2 (blood glucose covariates)	
	Base case analysis	Sensitivity analysis	Base case analysis	Sensitivity analysis
Centre (Manchester v Belfast)	-0.784 (0.192)	-0.800 (0.193)	-	-
(Brisbane v Belfast)	-0.308 (0.200)	-0.277 (0.202)	-	-
(Newcastle v Belfast)	-0.685 (0.278)	-0.667 (0.278)	-	-
Age at OGTT (yr)	-0.009 (0.015)	-0.011 (0.015)	-	-
BMI at OGTT (kg/m ²)	0.101 (0.011)	0.097 (0.012)	-	-
Smoker (Yes v No)	-0.556 (0.245)	-0.569 (0.246)	-	-
Drinker (Yes v No)	-0.170 (0.194)	-0.168 (0.194)	-	-
Family history DM (Yes v No)	-0.004 (0.127)	0.006 (0.127)	-	-
Gestational age at OGTT (wk)	-0.092 (0.059)	-0.096 (0.059)	-	-
Neonate gender (F v M)	0.173 (0.147)	0.174 (0.147)	-	-
Family history HBP (Yes v No)	0.233 (0.150)	0.230 (0.150)	-	-
Maternal UTI (Yes v No)	0.734 (0.211)	0.721 (0.211)	-	-
Mean Blood Pressure (mmHg) ^a	-	-	-	-
Hospital admission before delivery (Yes v No) ^a	-	-	-	-
Parity (1 v 0)	-0.291 (0.240)	-0.292 (0.240)	-	-
(2+ v 0)	-0.701 (0.271)	-0.703 (0.271)	-	-
(Unknown v 0)	0.026 (0.224)	0.023 (0.224)	-	-
Fasting blood glucose ^b	-	0.062 (0.078)	0.201 (0.065)	0.183 (0.068)
1-hr blood glucose ^b	-	0.065 (0.104)	-	0.083 (0.098)
2-hr blood glucose ^b	0.272 (0.067)	0.195 (0.096)	0.196 (0.072)	0.150 (0.090)
Constant	-3.370 (1.842)	-3.107 (1.855)	-3.453 (0.075)	-3.455 (0.075)
Hosmer-Lemeshow goodness- of-fit test	$\chi^2 = 5.46,$ df=8; P=0.71	$\chi^2 = 8.02,$ df=8; P=0.43	$\chi^2 = 12.00,$ df=8; P=0.15	$\chi^2 = 15.98,$ df=8; P=0.04
Area under the ROC curve (95% CI)	0.75 (0.72, 0.78)	0.75 (0.72, 0.79)	0.65 (0.61, 0.68)	0.65 (0.61, 0.68)

53 (a) Omitted from HAPO model for pre-eclampsia

54 (b) Blood glucose values are 'standardised' – so the exponential of the coefficient represents the odds ratio for pre-eclampsia
 55 arising from a 1 Standard Deviation (SD) increase in plasma glucose (fasting plasma glucose mean (SD) = 4.60(0.47); 1-hour
 56 plasma glucose mean (SD) = 7.57(1.83); 2-hour plasma glucose mean (SD) = 6.21(1.44)

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59 **Table x7.** Logistic regression models to predict induction of labour

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Variable	Co-efficient b (Standard error (SE(b)))		
	Model 1 (all covariates)		Model 2 (blood glucose covariates)
	Base case analysis	Sensitivity analysis	Base case analysis
Centre (Manchester v Belfast)	-0.476 (0.077)	-0.476 (0.077)	-
(Brisbane v Belfast)	-0.337 (0.085)	-0.333 (0.087)	-
(Newcastle v Belfast)	-0.387 (0.109)	-0.384 (0.110)	-
Age at OGTT (yr)	0.006 (0.006)	0.006 (0.006)	-
BMI at OGTT (kg/m ²)	0.039 (0.006)	0.039 (0.006)	-
Smoker (Yes v No)	0.051 (0.082)	0.051 (0.082)	-
Drinker (Yes v No)	0.079 (0.072)	0.079 (0.072)	-
Family history DM (Yes v No)	0.016 (0.048)	0.016 (0.048)	-
Gestational age at OGTT (wk)	0.011 (0.024)	0.011 (0.024)	-
Neonate gender (F v M)	-0.038 (0.059)	-0.038 (0.059)	-
Family history HBP (Yes v No) ^a	-	-	-
Maternal UTI (Yes v No) ^a	-	-	-
Mean Blood Pressure (mmHg)	0.008 (0.004)	0.008 (0.004)	-
Hospital admission before delivery (Yes v No)	0.608 (0.066)	0.608 (0.066)	-
Parity (1 v 0)	-0.363 (0.101)	-0.363 (0.101)	-
(2+ v 0)	-0.193 (0.105)	-0.193 (0.105)	-
(Unknown v 0)	0.141 (0.094)	0.141 (0.094)	-
Fasting blood glucose ^b	-	0.009 (0.037)	0.079 (0.033)
1-hr blood glucose ^b	-0.108 (0.041)	-0.111 (0.043)	-0.093 (0.041)
2-hr blood glucose ^b	0.096 (0.041)	0.094 (0.041)	0.100 (0.040)
Constant	-3.050 (0.794)	-3.037 (0.796)	-1.032 (0.029)
Hosmer-Lemeshow goodness-of-fit test	$\chi^2 = 9.08$, df=8; P=0.34	$\chi^2 = 9.42$ df=8; P=0.31	$\chi^2 = 9.83$ df=8; P=0.28
Area under the ROC curve (95% CI)	0.63 (0.61, 0.65)	0.63 (0.61, 0.65)	0.53 (0.51, 0.55)

61 (a) Omitted from HAPO model for induction of labour

62 (b) Blood glucose values are 'standardised' – so the exponential of the coefficient represents the odds ratio for induction of
63 labour arising from a 1 Standard Deviation (SD) increase in plasma glucose (fasting plasma glucose mean (SD) = 4.60(0.47);
64 1-hour plasma glucose mean (SD) = 7.57(1.83); 2-hour plasma glucose mean (SD) = 6.21(1.44)

65 **Table x8.** Cholesky decomposition of shoulder dystocia variance covariance matrix (Model 1, base case)

	Constant	Centre (Manchester v Belfast)	Centre (Manchester v Belfast)	Centre (Manchester v Belfast)	Age at OGTT (yr)	BMI AT OGTT (kg/m ²)	Smoker	Drinker	Family History DM	Gestational age at OGTT (wk)	Neonatal gender	Mean Blood Pressure	Parity (1 v 0)	Parity (2+ v 0)	Parity (Unknown v 0)	Hospital admission before	2-hr blood glucose
Constant	3.025																
Centre (Manchester v Belfast)	-0.104	0.410															
(Brisbane v Belfast)	-0.129	0.335	0.331														
(Newcastle v Belfast)	-0.135	0.334	0.074	0.295													
Age at OGTT (yr)	-0.005	-0.001	0.000	0.000	0.024												
BMI AT OGTT (kg/m ²)	-0.001	-0.001	-0.001	-0.001	0.001	0.023											
Smoker	-0.012	0.031	0.001	-0.003	0.047	0.006	0.404										
Drinker	0.001	0.014	-0.006	-0.020	-0.051	0.008	-0.018	0.311									
Family History DM	-0.023	0.012	-0.022	-0.018	-0.005	0.000	-0.009	-0.012	0.179								
Gestational age at OGTT (wk)	-0.080	-0.009	-0.001	0.006	-0.017	-0.007	-0.002	-0.001	-0.008	0.037							
Neonatal gender (F v M)	-0.037	-0.010	-0.006	-0.010	-0.002	0.009	0.003	-0.001	-0.005	-0.080	0.278						
Mean Blood Pressure (mmHg)	-0.004	-0.001	0.000	-0.002	-0.002	-0.006	0.000	0.000	-0.001	-0.011	-0.004	0.004					
Parity (1 v 0)	-0.038	0.014	0.011	-0.029	-0.024	-0.017	0.009	-0.013	0.006	-0.084	-0.020	-0.318	0.253				
(2+ v 0)	-0.026	0.007	0.025	-0.018	-0.082	-0.043	0.000	0.006	0.011	-0.072	-0.027	-0.317	0.021	0.229			
(Unknown v 0)	-0.052	0.019	0.005	-0.020	0.028	0.004	0.015	0.001	0.006	-0.090	-0.026	-0.311	0.020	0.026	0.219		
Hospital admission before delivery	-0.008	-0.007	-0.016	-0.006	0.005	-0.033	-0.006	0.007	-0.002	-0.002	0.004	-0.063	-0.061	-0.071	-0.079	0.225	
2-hr blood glucose	0.012	-0.003	-0.003	0.005	-0.016	-0.015	0.009	0.006	0.013	0.004	0.004	-0.003	-0.007	-0.021	-0.002	-0.015	0.091

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69 **Table x9.** Cholesky decomposition of caesarean section variance covariance matrix (Model 1, base case)

	Constant	Centre (Manchester v Belfast)	Centre (Manchester v Belfast)	Centre (Manchester v Belfast)	Age at OGTT (yr)	BMI/AT OGTT (kg/m ²)	Smoker	Drinker	Family History DM	Gestational age at OGTT	Neonatal gender	Mean Blood Pressure	Hospital admission	1-hr blood glucose
Constant	0.947													
Centre (Manchester v Belfast)	-0.020	0.089												
(Brisbane v Belfast)	-0.028	0.047	0.082											
(Newcastle v Belfast)	-0.028	0.048	0.025	0.126										
Age at OGTT (yr)	-0.001	0.000	0.000	0.000	0.007									
BMI AT OGTT (kg/m ²)	-0.001	-0.001	0.000	0.000	0.000	0.007								
Smoker	-0.004	0.010	0.004	0.001	0.013	0.000	0.104							
Drinker	0.001	0.004	0.000	-0.002	-0.011	0.004	-0.006	0.086						
Family History DM	-0.006	0.006	-0.005	-0.002	-0.003	0.000	-0.003	-0.003	0.056					
Gestational age at OGTT (wk)	-0.026	-0.001	0.000	0.001	-0.005	-0.002	-0.001	-0.001	-0.003	0.011				
Neonate gender	-0.009	-0.001	-0.002	0.000	-0.002	0.002	0.002	-0.001	-0.001	-0.020	0.067			
Mean Blood Pressure (mmHg)	-0.001	0.000	0.000	0.000	-0.001	-0.002	0.000	0.000	0.000	-0.003	-0.001	0.001		
Hospital admission before delivery	-0.003	-0.004	-0.007	-0.001	0.004	-0.009	-0.003	0.004	-0.001	0.000	0.000	-0.042	0.065	
1-hr blood glucose	0.005	-0.001	0.002	0.002	-0.006	-0.006	0.000	0.001	0.005	0.003	0.002	-0.003	-0.003	0.035

70

71

72 **Table x10.** Cholesky decomposition of neonatal intensive care admission variance covariance matrix (Model 1, base case)

	Constant	Centre (Manchester v Belfast)	Centre (Manchester v Belfast)	Centre (Manchester v Belfast)	Age at OGTT (yr)	BMI AT OGTT (kg/m2)	Smoker	Drinker	Family History DM	Gestational age at OGTT (wk)	Neonatal gender	Mean Blood Pressure	Parity (1 v 0)	Parity (2+ v 0)	Parity (Unknown v 0)	Hospital admission	2-hr blood glucose
Constant	1.236																
Centre (Manchester v Belfast)	-0.037	0.154															
(Brisbane v Belfast)	-0.047	0.115	0.102														
(Newcastle v Belfast)	-0.050	0.115	0.042	0.137													
Age at OGTT (yr)	-0.002	0.000	0.000	0.000	0.009												
BMI AT OGTT (kg/m2)	-0.001	0.000	0.000	0.000	0.000	0.009											
Smoker	-0.007	0.012	0.002	-0.001	0.018	-0.001	0.128										
Drinker	0.002	0.004	-0.002	-0.004	-0.017	0.006	-0.007	0.115									
Family History DM	-0.008	0.004	-0.008	-0.003	-0.003	0.000	-0.004	-0.003	0.068								
Gestational age at OGTT (wk)	-0.034	-0.003	-0.001	0.002	-0.007	-0.002	-0.001	-0.001	-0.004	0.015							
Neonatal gender (F v M)	-0.012	-0.003	-0.004	-0.002	-0.002	0.003	0.000	-0.001	-0.001	-0.025	0.090						
Mean Blood Pressure (mmHg)	-0.002	0.000	0.000	-0.001	-0.001	-0.002	0.000	0.000	0.000	-0.004	-0.001	0.001					
Parity (1 v 0)	-0.011	0.006	0.004	-0.009	-0.009	-0.005	0.002	-0.003	0.002	-0.024	-0.004	-0.103	0.102				
(2+ v 0)	-0.006	0.002	0.011	-0.005	-0.032	-0.015	-0.002	0.003	0.003	-0.021	-0.006	-0.102	0.012	0.111			
(Unknown v 0)	-0.016	0.008	0.003	-0.005	0.010	0.002	0.006	0.001	0.002	-0.025	-0.006	-0.101	0.011	0.011	0.081		
Hospital admission before delivery	-0.005	-0.001	-0.005	0.000	0.004	-0.012	-0.003	0.005	0.000	-0.001	0.000	-0.033	-0.028	-0.025	-0.032	0.075	
2-hr blood glucose	0.004	0.000	0.000	0.001	-0.007	-0.006	0.004	0.002	0.005	0.003	0.002	-0.002	-0.002	-0.006	0.000	-0.006	0.042

73

74 **Table x11.** Cholesky decomposition of jaundice variance covariance matrix (Model 1, base case)

	Constant	Centre (Manchester v Belfast)	Centre (Brisbane v Belfast)	Centre (Newcastle v Belfast)	Age at OGTT (yr)	BMI AT OGTT (kg/m ²)	Smoker	Drinker	Family History DM	Gestational age at OGTT (wk)	Neonatal gender	Mean Blood Pressure	Parity (1 v 0)	Parity (2+ v 0)	Parity (Unknown v 0)	Hospital admission	1-hr blood glucose
Constant	1.522																
Centre (Manchester v Belfast)	-0.038	0.153															
(Brisbane v Belfast)	-0.049	0.102	0.128														
(Newcastle v Belfast)	-0.055	0.102	0.041	0.228													
Age at OGTT (yr)	-0.002	0.000	0.000	0.000	0.011												
BMI AT OGTT (kg/m ²)	-0.001	-0.001	-0.001	0.000	0.000	0.011											
Smoker	-0.011	0.017	0.003	-0.001	0.023	0.000	0.158										
Drinker	0.003	0.004	0.000	-0.002	-0.020	0.006	-0.011	0.161									
Family History DM	-0.011	0.010	-0.010	-0.003	-0.005	-0.001	-0.004	-0.005	0.092								
Gestational age at OGTT (wk)	-0.042	-0.003	0.000	0.002	-0.008	-0.004	-0.001	-0.001	-0.005	0.018							
Neonatal gender (F v M)	-0.014	-0.003	-0.003	-0.002	-0.002	0.004	0.002	-0.001	0.000	-0.031	0.108						
Mean Blood Pressure (mmHg)	-0.002	0.000	0.000	0.000	-0.001	-0.003	0.000	0.000	0.000	-0.005	-0.002	0.002					
Parity (1 v 0)	-0.016	0.010	0.008	-0.006	-0.011	-0.007	0.001	-0.001	0.003	-0.032	-0.007	-0.128	0.126				
(2+ v 0)	-0.008	0.002	0.014	-0.004	-0.039	-0.016	-0.003	0.005	0.006	-0.030	-0.009	-0.127	0.016	0.144			
(Unknown v 0)	-0.021	0.013	0.006	-0.004	0.012	0.003	0.005	0.002	0.002	-0.034	-0.008	-0.126	0.015	0.013	0.094		
Hospital admission before delivery	-0.006	-0.003	-0.008	-0.002	0.005	-0.016	-0.004	0.003	-0.001	-0.002	0.001	-0.040	-0.034	-0.028	-0.042	0.089	
1-hr blood glucose	0.007	-0.001	0.004	0.003	-0.008	-0.009	0.003	0.001	0.008	0.004	0.003	-0.004	-0.004	-0.009	-0.001	-0.008	0.051

75

76 **Table x12.** Cholesky decomposition of pre-clampsia variance covariance matrix (Model 1, base case)

	Constant	Centre (Manchester v Belfast)	Centre (Manchester v Belfast)	Centre (Manchester v Belfast)	Age at OGTT (yr)	BMI AT OGTT (kg/m2)	Smoker	Drinker	Family History DM	Gestational age at OGTT (wk)	Neonatal gender (F v M)	Parity (1 v 0)	Parity (2+ v 0)	Parity (Unknown v 0)	Family History HBP	Maternal UTI	2-hr blood glucose
Constant	1.842																
Centre (Manchester v Belfast)	-0.045	0.187															
(Brisbane v Belfast)	-0.059	0.083	0.173														
(Newcastle v Belfast)	-0.072	0.085	0.053	0.249													
Age at OGTT (yr)	-0.004	0.000	0.000	0.000	0.015												
BMI AT OGTT (kg/m2)	-0.002	-0.001	-0.001	-0.002	0.000	0.010											
Smoker	-0.010	0.019	0.002	0.001	0.026	0.001	0.243										
Drinker	0.002	0.007	-0.002	-0.004	-0.023	0.007	-0.009	0.192									
Family History DM	-0.017	0.013	-0.009	-0.006	-0.009	-0.001	-0.004	-0.004	0.124								
Gestational age at OGTT (wk)	-0.054	-0.003	0.000	0.002	-0.013	-0.012	-0.001	-0.001	-0.008	0.011							
Neonatal gender (F v M)	-0.023	-0.004	-0.006	-0.007	-0.003	0.009	0.001	-0.002	-0.001	-0.106	0.099						
Parity (1 v 0)	-0.020	0.013	0.016	-0.006	-0.014	-0.011	0.003	-0.001	0.001	-0.121	-0.123	0.163					
(2+ v 0)	-0.011	-0.001	0.020	-0.005	-0.047	-0.030	0.000	0.000	0.007	-0.117	-0.120	0.042	0.199				
(Unknown v 0)	-0.029	0.014	0.013	-0.004	0.017	0.002	0.006	0.001	0.000	-0.122	-0.125	0.036	0.025	0.127			
Family History HBP	-0.009	0.000	0.006	-0.005	-0.017	-0.014	0.001	-0.001	0.023	-0.034	-0.037	-0.060	-0.038	-0.048	0.108		
Maternal UTI	-0.004	-0.012	0.031	0.002	0.015	-0.001	-0.014	0.004	0.009	-0.021	-0.022	-0.030	-0.018	-0.028	-0.052	0.193	
2-hr blood glucose	0.006	-0.004	0.002	0.001	-0.012	-0.009	0.005	0.004	0.008	-0.006	-0.004	-0.006	-0.011	-0.002	-0.012	-0.009	0.061

78 **Table x13.** Cholesky decomposition of induction of labour variance covariance matrix (Model 1, base case)

	Constant	Centre (Manchester v Belfast)	Centre (Manchester v Belfast)	Centre (Manchester v Belfast)	Age at OGTT (yr)	BMI AT OGTT (kg/m ²)	Smoker	Drinker	Family History DM	Gestational age at OGTT	Neonatal gender (F v M)	Mean Blood Pressure	Parity (1 v 0)	Parity (2+ v 0)	Parity (Unknown v 0)	Hospital admission	1-hr blood glucose	2-hr blood glucose
Constant	0.794																	
Centre (Manchester v Belfast)	-0.018	0.074																
(Brisbane v Belfast)	-0.024	0.039	0.072															
(Newcastle v Belfast)	-0.024	0.039	0.020	0.097														
Age at OGTT (yr)	-0.001	0.000	0.000	0.000	0.006													
BMI AT OGTT (kg/m ²)	0.000	0.000	0.000	0.000	0.000	0.006												
Smoker	-0.005	0.008	0.002	0.001	0.013	0.001	0.081											
Drinker	0.001	0.003	0.000	-0.002	-0.010	0.003	-0.006	0.071										
Family History DM	-0.006	0.005	-0.004	-0.002	-0.002	0.000	-0.002	-0.003	0.047									
Gestational age at OGTT (wk)	-0.021	-0.001	0.000	0.001	-0.004	-0.002	-0.001	0.000	-0.003	0.010								
Neonatal gender (F v M)	-0.007	-0.002	-0.002	-0.001	-0.001	0.002	0.001	-0.001	-0.001	-0.016	0.056							
Mean Blood Pressure (mmHg)	-0.001	0.000	0.000	0.000	-0.001	-0.001	0.000	0.000	0.000	-0.003	-0.001	0.001						
Parity (1 v 0)	-0.008	0.008	0.005	-0.004	-0.006	-0.004	0.000	-0.002	0.001	-0.020	-0.005	-0.075	0.061					
(2+ v 0)	-0.004	0.004	0.008	-0.002	-0.020	-0.010	-0.002	0.001	0.002	-0.019	-0.006	-0.075	0.005	0.067				
(Unknown v 0)	-0.012	0.007	0.003	-0.002	0.006	0.001	0.002	0.001	0.001	-0.021	-0.005	-0.075	0.005	0.004	0.050			
Hospital admission before delivery	-0.004	-0.004	-0.005	-0.001	0.002	-0.007	-0.002	0.003	0.000	-0.001	0.000	-0.017	-0.017	-0.016	-0.020	0.055		
1-hr blood glucose	0.004	0.000	0.004	0.002	-0.004	-0.003	-0.001	0.000	0.003	0.001	0.001	0.000	0.001	-0.001	0.001	0.000	0.040	
2-hr blood glucose	0.001	0.000	-0.003	-0.001	-0.001	-0.002	0.004	0.001	0.001	0.002	0.000	-0.001	0.000	-0.002	0.001	-0.001	-0.027	0.030

79

80 **Table x14:** Model unit costs

Category	Cost	Standard Error	Distribution ^a	Source
2 sample OGTT	£8.07	n/a	n/a	NICE 2015 ^b
3 sample OGTT	£12.11	n/a	n/a	NICE 2015 ^b
Rapilose OGTT solution	£3.48	n/a	n/a	BNF July 2016 ^c
Health Care Assistant Band 3 (per hour)	£25	n/a	n/a	Unit Costs of Health and Social Care 2015 ^d
Nurse Band 7 (per hour of patient contact)	£147	n/a	n/a	Unit Costs of Health and Social Care 2015 ^d
Dietician	£38	n/a	n/a	Unit Costs of Health and Social Care 2015 ^d
Antenatal appointment	£96	£9.07	Normal	NHS Reference Costs 2014-15 ^e
Ultrasound scan	£112	£7.65	Normal	NHS Reference Costs 2014-15 ^e
Rapid acting insulin	£0.02	n/a	n/a	BNF June 2016 ^c
Regular insulin	£0.02	n/a	n/a	BNF June 2016 ^c
Needles	£0.10	n/a	n/a	NHS Drugs Tariff June 2016 ^f
Lancets	£0.03	n/a	n/a	NHS Drugs Tariff June 2016 ^f
Strips	£0.18	n/a	n/a	NHS Drugs Tariff June 2016 ^f
Treatment of GDM	£987	n/a	n/a	Calculated
Severe hypoglycaemia	£650	n/a	n/a	NHS Reference Costs 2014-15 ^e
Admission to NICU	£1,176	£38	Normal	NHS Reference Costs 2014-15 ^e
Caesarean section	£982	£80	Normal	NHS Reference Costs 2014-15 ^e
Neonatal death	£777	£39	Normal	NHS Reference Costs 2014-15 ^e
Shoulder dystocia	£1,394	£79	Normal	NHS Reference Costs 2014-15 ^e
Birth trauma	£1,394	£79	Normal	NHS Reference Costs 2014-15 ^e
Serious perinatal complication (death, shoulder dystocia, birth trauma)	£1,347	n/a	n/a	Calculated
Phototherapy	£788	£72	Normal	NHS Reference Costs 2014-15 ^e
Pre-eclampsia	£4,750	n/a	n/a	NICE 2015 ^b

81 (a) The method used to obtain standard errors and the choice of a normal distribution for probabilistic sampling is described in
82 detail in the NICE 2015 guideline⁶

- 83 (b) National Institute for Health and Care Excellence (NICE) (2015) *Diabetes in pregnancy: management of diabetes and its*
 84 *complications from preconception to the postnatal period. Clinical guideline NG3 (2015).*
 85 (c) *British National Formulary. July 2016. <https://www.medicinescomplete.com/mc/bnf/current/> (accessed 4 Aug 2016).*
 86 (d) *Unit Costs of Health and Social Care 2015. Personal Social Services Research Unit, The University of Kent, 2015.*
 87 (e) *Department of Health. NHS reference costs: financial year 2014–2015. [https://www.gov.uk/government/publications/nhs-](https://www.gov.uk/government/publications/nhs-reference-costs-2014-to-2015)*
 88 *reference-costs-2014-to-2015 , Department of Health, 2015.*
 89 (f) *NHS Electronic Drug Tariff, August 2016. http://www.drugtariff.nhsbsa.nhs.uk/#/00336026-DD_1/DD00336022/Home*
 90 *(accessed 4 Aug 2016).*
 91

92 **QALYs**

93 A QALY loss was estimated for each individual component (shoulder dystocia, death and birth trauma)
 94 of the composite serious perinatal outcome, which was used in the ACHOIS study.¹¹ A weighting for
 95 each individual component was derived according to their relative frequency in the selected studies to
 96 assess treatment effectiveness.^{11, 12} These were then used in order to derive a weighted average for a
 97 serious perinatal complication as shown in Table x15. QALY losses from a serious perinatal complication
 98 could be experienced over a lifetime and therefore an annual discount rate of 3.5% was applied in line
 99 with NICE methods.¹⁹ For each patient, an expected QALY decrement is calculated based on their risk of
 100 serious perinatal complications. These individual patient QALY decrements are then summed across all
 101 patients to give the total QALY decrement for the patient dataset for each different diagnostic
 102 threshold.

103 **Table x15:** QALY losses and weights from individual components of the composite outcome of serious
 104 perinatal complications

Complication	Weight	QALY	Weighted QALY
Death	0.08	25	2.00
Shoulder dystocia	0.73	0.2	0.15
Birth trauma	0.20	0.2	0.04

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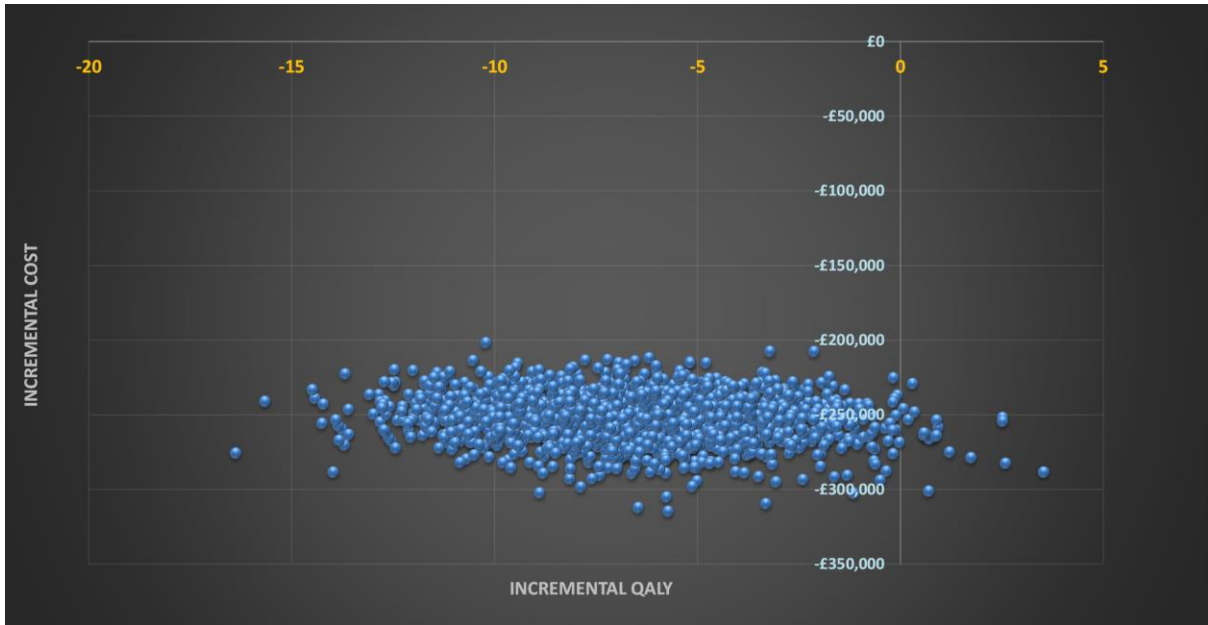
106 The analyses presented in this paper include a maternal health state utility which was estimated from
 107 quality of life data collected as part of the ACHOIS study. Whilst treatment conferred a small benefit in
 108 maternal health state utility, this was small in comparison to QALYs derived from infant outcomes. The

109 value of the maternal health state utility with and without treatment is the same as has been used
110 previously.⁶

111 **Results for the HAPO (4) population with risk factors**

112 **Figure x1:** Cost-effectiveness plane for NICE 2015 compared with WHO 2013 for HAPO (4) with risk
113 factors

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118 **Summary of results for each model population**

119 **Table x16:** Summary of deterministic ICERs for each population with backward elimination of plasma
 120 glucose variables with non-significant coefficients

Diagnostic threshold	All covariates		Plasma glucose covariates				Norwich (n=12,754)
	HAPO Risk factor (n=3,549)	HAPO No Risk factor (n=2,614)	HAPO Risk factor (n=3,549)	HAPO No Risk factor (n=2,614)	Atlantic DiP Risk factor (n=1,988)	Atlantic DiP No Risk factor (n=3,302)	
No Treatment	-	-	-	-	-	-	-
NICE 2015	£20,400	£36,878	£22,281	£30,449	£20,830	£31,136	£28,893
WHO 2013	£33,596	£141,812	£36,473	£88,661	£35,941	£40,526	£37,918

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123 **Table x17:** Probability that a threshold is cost-effective at a threshold of £30,000 per QALY and the
 124 net monetary benefit in each population using regression models with backward elimination of
 125 plasma glucose variables with non-significant coefficients

Diagnostic threshold	All covariates		Plasma glucose covariates				Norwich (NMB)
	HAPO Risk factor (NMB)	HAPO No Risk factor (NMB)	HAPO Risk factor (NMB)	HAPO No Risk factor (NMB)	Atlantic DiP Risk factor (NMB)	Atlantic DiP No Risk factor (NMB)	
No Treatment	21.0% (£0)	78.1% (£0)	33.7% (£0)	69.3% (£0)	30.6% (£0)	70.0% (£0)	61.2% (£0)
NICE 2015	51.5% (£239,902)	21.9% (-£57,790)	53.2% (£104,075)	30.7% (£36,652)	54.6% (£113,042)	23.5% (-£37,716)	29.3% (-£96,248)
WHO 2013	27.6% (£186,675)	0.1% (-£111,179)	13.2% (£13,836)	0.1% (£79,581)	14.9% (£36,377)	6.6% (-£109,809)	9.6% (-£414,428)

126

127 **Results for the HAPO (4) population without risk factors**

128 **Table x18:** Clinical outcomes for HAPO (4) population without NICE risk factors (n=2,614)

Diagnostic threshold	Diagnosed	SD	SPC	CS	NICU	Jaund	PE	IOL
No Treatment	0	24	34	466	188	126	55	647
NICE 2015	208	23	31	460	184	124	51	655
WHO 2013	253	23	31	459	184	123	51	657

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130 **Table x19:** Deterministic analysis for HAPO (4) population without NICE risk factors (n=2,614)

Diagnostic threshold	Cost^a	QALY^a	Incremental cost	Incremental QALY	ICER
No Treatment	£0	0.00	n/a	n/a	n/a
NICE 2015	£238,074	6.46	£238,074	6.46	£36,878
WHO 2013	£297,364	6.87	£59,290	0.41	£141,812

131 a) *Costs and QALYs are measured relative to a baseline of No Treatment*

132

133 **Table x20:** Probabilistic sensitivity analysis for HAPO (4) in a population without NICE risk factors

Diagnostic threshold	NMB^a	Probability cost-effective
	CE threshold £30,000 per QALY	CE threshold £30,000 per QALY
No Treatment	£0	78.1%
NICE 2015	-£57,790	21.9%
WHO 2013	-£111,179	0.1%

134 a) *NMB is measured relative to a baseline of no treatment*

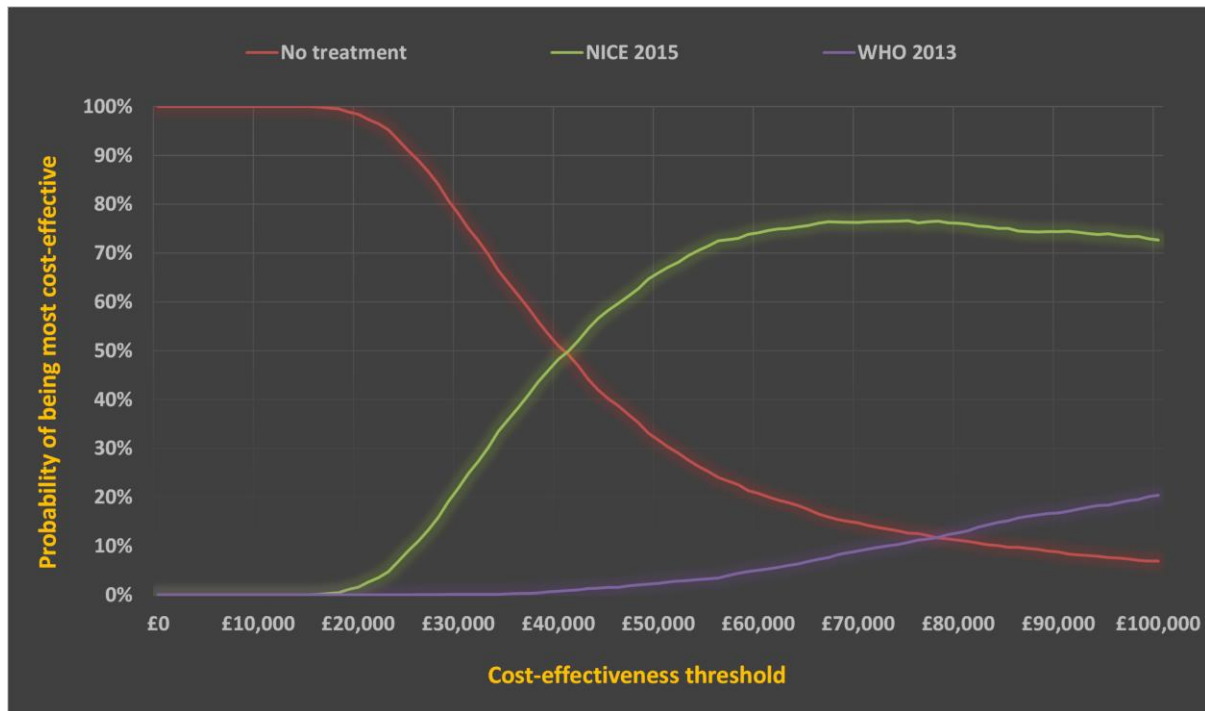
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138 **Figure x2:** Cost-effectiveness acceptability curve indicating the probability of a threshold or a no
 139 diagnosis/no treatment strategy being cost-effective at different cost-effectiveness thresholds for
 140 HAPO (4) population without risk factors

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144 **Results for the Atlantic DiP population with risk factors**

145 **Table 21:** Clinical outcomes for Atlantic DiP population with NICE risk factors (n=1,988)

Diagnostic threshold	Diagnosed	SD	SPC	CS	NICU	Jaund	PE	IOL
No Treatment	0	25	34	408	177	122	73	522
NICE 2015	497	19	26	391	163	116	56	545
WHO 2013	749	17	24	385	158	112	51	555

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151 **Table x22:** Deterministic analysis for the Atlantic DiP population with NICE risk factors (n=1,988)

Diagnostic threshold	Cost^a	QALY^a	Incremental cost	Incremental QALY	ICER
No Treatment	£0	0.00	n/a	n/a	n/a
NICE 2015	£414,714	19.91	£414,714	17.46	£20,830
WHO 2013	£638,590	26.14	£223,876	6.23	£35,941

152 a) *Costs and QALYs are measured relative to a baseline of No Treatment*

153

154 **Table x23:** Probabilistic sensitivity analysis for Atlantic in a population with NICE risk factors

Diagnostic threshold	NMB^a CE threshold £30,000 per QALY	Probability cost-effective CE threshold £30,000 per QALY
No Treatment	£0	30.6%
NICE 2015	£113,042	54.3%
WHO 2013	£36,377	14.9%

155 a) *NMB is measured relative to a baseline of no treatment*

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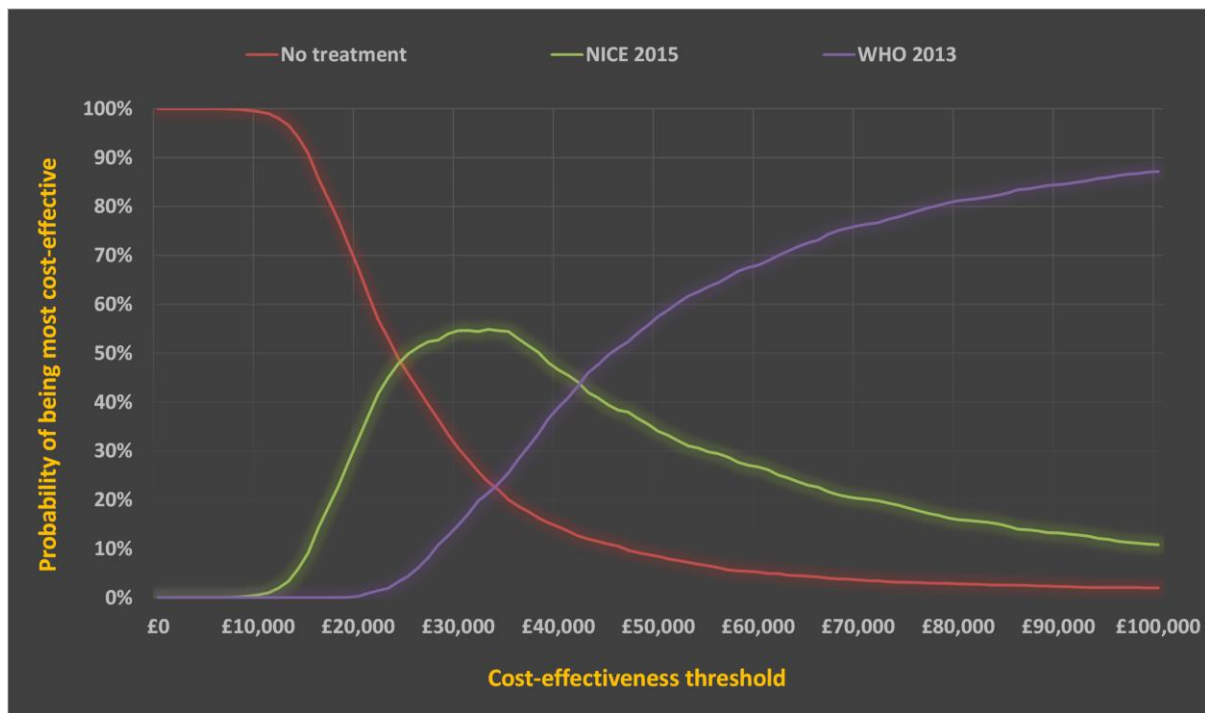
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167 **Figure x3:** Cost-effectiveness acceptability curve indicating the probability of a threshold or a no
 168 diagnosis/no treatment strategy being cost-effective at different cost-effectiveness thresholds for
 169 the Atlantic DiP centres population with risk factors



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172 **Results for the Atlantic DiP population without risk factors**

173 **Table x24:** Clinical outcomes for Atlantic DiP population without NICE risk factors (n=3,302)

Diagnostic threshold	Diagnosed	SD	SPC	CS	NICU	Jaund	PE	IOL
No Treatment	0	33	45	575	254	168	84	828
NICE 2015	194	31	42	569	248	166	79	837
WHO 2013	371	30	41	564	245	163	76	844

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181 **Table x25:** Deterministic analysis for the Atlantic DiP population without NICE risk factors (n=3,302)

Diagnostic threshold	Cost^a	QALY^a	Incremental cost	Incremental QALY	ICER
No Treatment	£0	0.00	n/a	n/a	n/a
NICE 2015	£231,633	7.44	£231,633	7.44	£31,136
WHO 2013	£402,014	11.64	£170,381	4.20	£40,526

182 a) *Costs and QALYs are measured relative to a baseline of No Treatment*

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184 **Table x26:** Probabilistic sensitivity analysis for the Atlantic DiP population without NICE risk factors

Diagnostic threshold	NMB^a	Probability cost-effective
	CE threshold £30,000 per QALY	CE threshold £30,000 per QALY
No Treatment	£0	70.0%
NICE 2015	-£37,716	23.5%
WHO 2013	-£109,809	6.6%

185 a) *NMB is measured relative to a baseline of no treatment*

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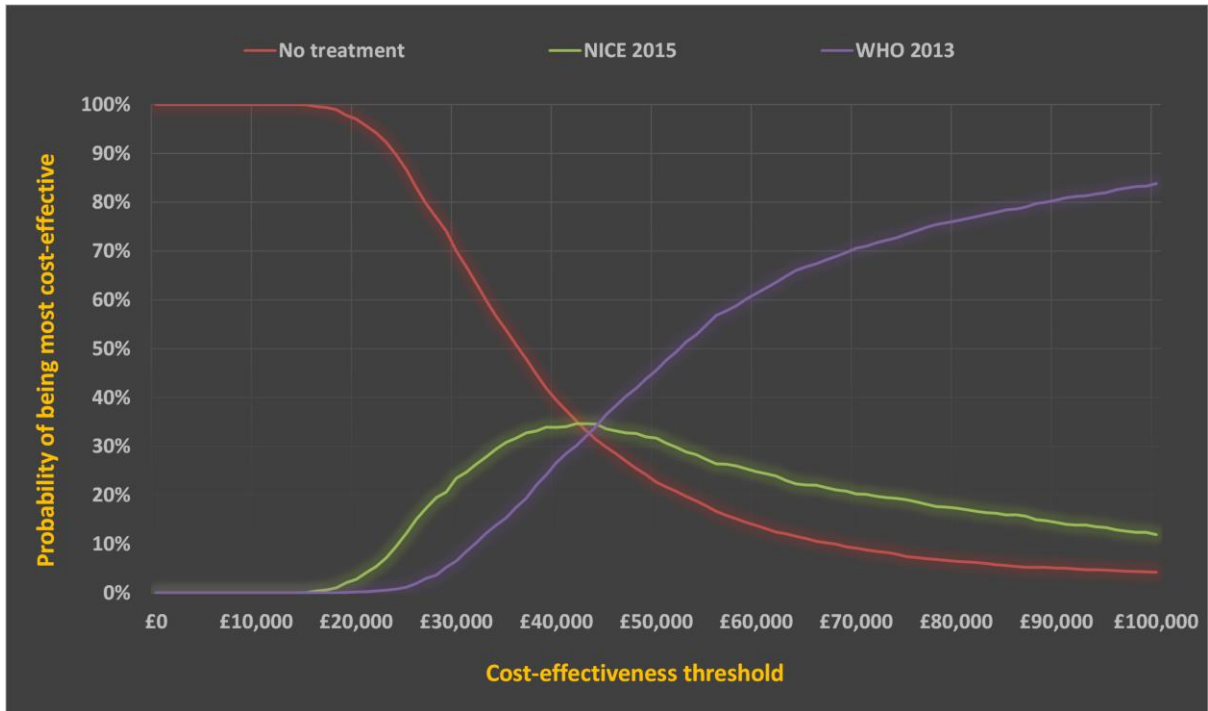
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197 **Figure x4:** Cost-effectiveness acceptability curve indicating the probability of a threshold or a no
198 diagnosis/no treatment strategy being cost-effective at different cost-effectiveness thresholds for
199 the Atlantic DiP centres population without risk factors

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203 **Results for the Norwich population**

204 **Table x27:** Clinical outcomes for Norwich population (n=12,754)

Diagnostic threshold	Diagnosed	SD	SPC	CS	NICU	Jaund	PE	IOL
No Treatment	0	132	182	2,333	1,005	699	346	3,173
NICE 2015	888	122	168	2,305	981	687	318	3,214
WHO 2013	1,771	117	161	2,283	965	676	301	3,248

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206 **Table x28:** Deterministic analysis for the Norwich population (n=12,754)

Diagnostic threshold	Cost^a	QALY^a	Incremental cost	Incremental QALY	ICER
No Treatment	£0	0.00	n/a	n/a	n/a
NICE 2015	£979,903	33.91	£979,903	33.91	£28,893
WHO 2013	£1,803,196	55.63	£823,293	21.72	£37,918

207 a) *Costs and QALYs are measured relative to a baseline of No Treatment*

208

209 **Table x29:** Probabilistic sensitivity analysis for the Norwich population

Diagnostic threshold	NMB^a	Probability cost-effective
	CE threshold £30,000 per QALY	CE threshold £30,000 per QALY
No Treatment	£0	61.2%
NICE 2015	-£96,248	29.3%
WHO 2013	-£414,428	9.6%

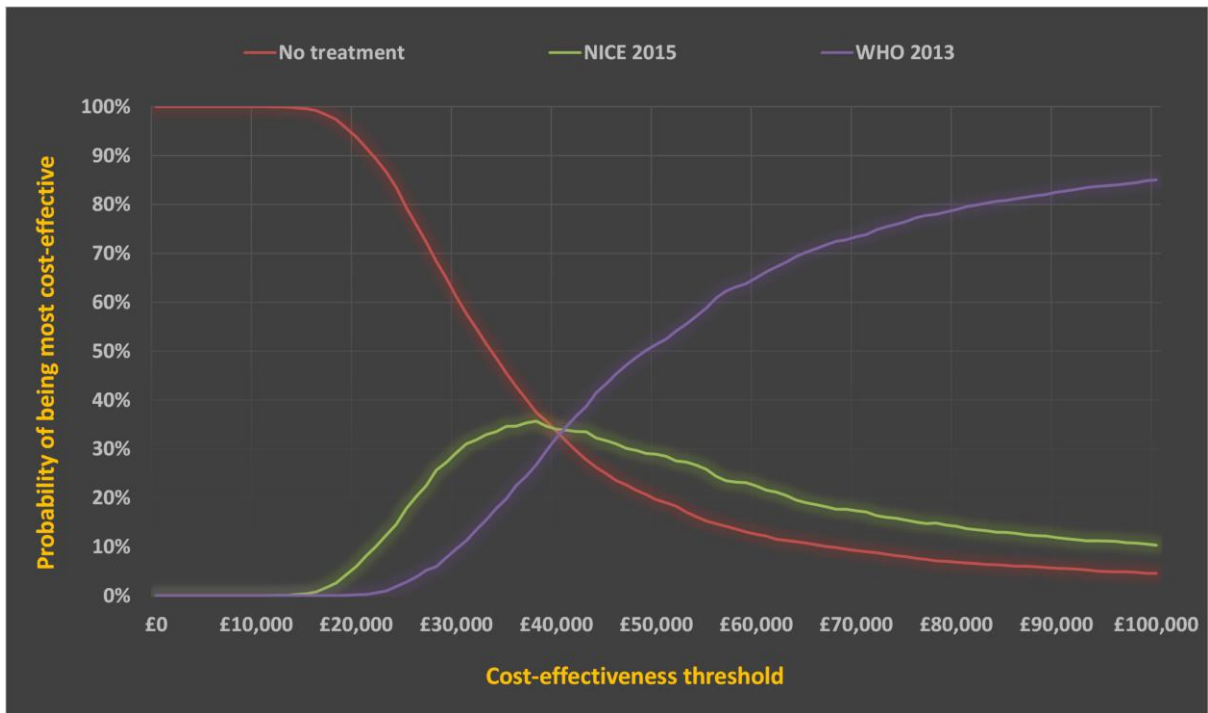
210 a) *NMB is measured relative to a baseline of no treatment*

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213 **Figure x5:** Cost-effectiveness acceptability curve indicating the probability of a threshold or a no
214 diagnosis/no treatment strategy being cost-effective at different cost-effectiveness thresholds for
215 the Norwich population

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220 **Deterministic sensitivity analysis**

221 The cost-effectiveness of universal screening was not generally affected when the model was re-run
 222 using the regression models without backward elimination of non-significant variables with no
 223 screening/no treatment continuing to be the cost-effective option in populations not selected on the
 224 basis of NICE risk factors (see Table x30). In the Norwich population, universal screening was
 225 borderline cost-effective compared to no screening/no treatment at £30,000 per QALY but the same
 226 point remains that a risk factor subset in this population would have a lower ICER than that
 227 reported, and that a subset without risk factors, (i.e. those additionally incorporated as a result of
 228 universal screening compared to risk factor screening), would have a higher ICER. In populations
 229 with NICE risk factors the NICE 2015 diagnostic thresholds were still found to be cost-effective at a
 230 threshold of £30,000 per QALY, with broadly similar ICERs as previously. Similarly, the WHO 2013
 231 diagnostic threshold was never found to be cost effective even in a population with risk factors.

232 **Table x30:** Summary of deterministic ICERs for each population without backward elimination of
 233 non-significant coefficients

Diagnostic threshold	All covariates		Plasma glucose covariates				Norwich (n=12,754)
	HAPO Risk factor (n=3,549)	HAPO No Risk factor (n=2,614)	HAPO Risk factor (n=3,549)	HAPO No Risk factor (n=2,614)	Atlantic DiP Risk factor (n=1,988)	Atlantic DiP No Risk factor (n=3,302)	
No Treatment	-	-	-	-	-	-	-
NICE 2015	£20,162	£38,869	£21,786	£33,473	£19,557	£32,762	£27,354
WHO 2013	£30,734	£94,585	£32,267	£58,604	£35,285	£39,076	£38,402

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236 **Mean plasma glucose values according to risk factor status**

237 **Table x311:** Mean plasma glucose values in HAPO (4) and Atlantic DiP population according to their
 238 risk factor status

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	HAPO (4)			Atlantic DiP		
	Fasting	1-hour	2-hour	Fasting	1-hour	2-hour
True Positives	5.24	9.90	7.89	5.21	10.21	7.61
False Positives	4.50	7.20	5.95	4.33	6.75	5.33
True Negatives	4.44	6.95	5.78	3.92	5.99	4.76
False Negatives	4.89	9.52	7.41	4.90	9.51	7.12

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