

TECHNICAL PAPER ON THE METHODOLOGY FOR DEVELOPING MATERNITY PBR PATHWAY PRICES

Developing casemix, weightings and prices using the Methodology Spreadsheet – TECHNICALCALCULATIONS.XLS

1. Developing the casemix – sheets CASEMIXRAWDATA, CASEMIX

Source: Maternity Pathways Project Data Collection, Jan/Feb 2011

This information provides casemix proportions between standard, intermediate and intensive in the antenatal pathway based on information gleaned at the booking appointment.

Initial casemix for antenatal module:

Standard:	64.6%
Intermediate:	28.5%
Intensive:	6.9%

The data being raw, the casemix proportions can be developed using any combination of the data.

2. Verifying the casemix – sheets CASEMIXRAWDATA, RELATIVITIES, CASEMIX

Source: Maternity Pathways Project data Collection, May-Aug 2011

The RELATIVITIES sheet contains information from providers on the costs of providing care to women with certain characteristics and factors. This gave cost evidence for grouping different characteristics together for payment purposes. In some cases, specific characteristics moved from one group to a different one.

The data in CASEMIXRAWDATA was analysed again according to the new groupings for both antenatal and postnatal modules in order to produce new CASEMIX proportions for both antenatal and postnatal, based on information gleaned at the booking appointment.

Revised casemix for antenatal module:

Standard:	65.5%
Intermediate:	27.3%
Intensive:	7.1%

Initial casemix for postnatal module (information from booking appointment):

Standard:	77.3%
Intermediate:	22.0%
Intensive:	0.7%

3. Onset of conditions - sheet ONSET

The information within this sheet (and provided in the table below – green = intermediate; red = intensive) provides sources of information that verify the proportion of women who develop conditions during their pregnancy that would allocate them to a higher casemix pathway.

These proportions are used to enhance payment for standard and intermediate categories in the antenatal module, and for enhancing the casemix levels in the postnatal period.

Factor	% known at booking ¹	% known in pregnancy ²	% occur during pregnancy/ found after booking	² Source of % known in pregnancy
Diabetes	1.20%	3.30%	2.10%	FTN Maternity Benchmarking Analysis 2011; NICE Guidance "Diabetes in Pregnancy" CG63, July 2008; Yorkshire and Humber Public Health Observatory: APHO Diabetes Prevalence Model June 2010
Hypertension	3.10%	9.10%	6.00%	FTN Maternity Benchmarking Analysis 2011; NICE Guidance "Hypertension in Pregnancy" CG107, August 2010 (Revised reprint Jan 2011)
Twins	1.20%	1.61%	0.41%	Office of National Statistics
Multiple pregnancies	0.00%	0.20%	0.20%	Office of National Statistics
Complex social factors	5.20%	6.00%	0.80%	FTN Maternity Benchmarking Analysis 2011
Mental health	5.50%	6.20%	0.70%	FTN Maternity Benchmarking Analysis 2011
Genetic / Inherited	0.40%	1.00%	0.60%	Guesstimate
Rhesus D	0.30%	1.00%	0.70%	Guesstimate
Hep B	0.10%	0.30%	0.20%	Health Protection Agency, Migrant Health A Baseline Report 2006
Hep C	0.10%	0.30%	0.20%	Health Protection Agency, Hepatitis C in the UK, 2009
HIV	0.10%	0.20%	0.10%	Health Protection Agency, HIV in Pregnant Women 2009
Substance misuse	0.80%	1.40%	0.60%	FTN Maternity Benchmarking Analysis 2011
DVT/pulm emb in pregnancy			0.003%	http://www.nhs.uk/Conditions/Deep-vein-thrombosis/Pages/Causes.aspx ; http://www.aafp.org/afp/2008/0615/p1709.html
Stillbirth (2009 data)			0.522%	http://www.rcog.org.uk/news/cmace-release-%E2%80%93-stillbirth-and-neonatal-mortality-rates-have-decreased-over-last-decade-says-ne
Neonatal death (2009 data)			0.318%	http://www.rcog.org.uk/news/cmace-release-%E2%80%93-stillbirth-and-neonatal-mortality-rates-have-decreased-over-last-decade-says-ne
Births in prison			0.030%	"200 babies due to be born in prison this year" http://www.prisonreformtrust.org.uk/uploads/documents/Women%20in%20Prison%20August%202010.pdf

¹ Source: Maternity PbR Project, Jan/Feb 2011 data collection

4. Revised Casemix - ANTENATAL - sheets ONSET, AN METHODOLOGY

The information in ONSET adjusts the casemix to determine the proportion of women who are Standard (or Intermediate) at booking and remain Standard (or Intermediate) throughout the pregnancy, and the proportion of those expected to move to a higher resource.

Proportions are developed for

- i. Standard – no development of factors in the pregnancy (57.3%)
- ii. Standard Intern – women allocated to Standard at booking but develop Intermediate factors during the pregnancy (6.0%)
- iii. Standard Intens - women allocated to Standard at booking but develop Intensive factors during the pregnancy (2.3%)
- iv. Intermediate – women allocated to Intermediate at booking and do not develop factors that would move them to Intensive (26.4%)
- v. Intermediate Intens - women allocated to Intermediate at booking but develop Intensive factors during the pregnancy (1.0%)
- vi. Intensive - women allocated to Intensive at booking (7.1%)

STANDARD INTERM

Approximately 9.1% of women develop (or admit to) a factor previously unknown at the booking appointment that would move them to intermediate (CSF, MH, Substance misuse, Hypertension, Genetic, HEP B/C – See ONSET).

Using straight averages, we only need to correct the proportion of those women that were previously in STANDARD, ie

Standard	65.5%	* 9.1%	
So	6.0%		points of the women in Standard

would have costs of intermediate

STANDARD INTENS

Approximately 3.5% of women develop a factor previously unknown at the booking appointment that would move them to intensive (gestational diabetes, multiple pregnancy, HIV, rhesus - See ONSET).

Using straight averages, we need to correct the proportion of those women that were estimated to previously be in STANDARD, ie

Standard	65.5%	* 3.5%	2.3%
So	2.3%		points of the women in Standard

would have costs of intensive

INTERMEDIATE INTENS

Using straight averages, we need to correct the proportion of those women that were estimated to previously be in INTERMEDIATE, ie

Intermediate	27.3%	* 3.5%	1.0%
So	1.0%		points of the women in intermediate

would have costs of intensive

5. Revised Casemix - POSTNATAL - sheets ONSET, PN METHODOLOGY

All of the information gathered in ONSET can be used to adjust the casemix to determine the expected proportion of women in the postnatal phase across Standard, Intermediate and Intensive.

The information revises the casemix to:

Standard:	64.2%
Intermediate:	35.0%
Intensive:	0.8%

6. Casemix – BIRTHS - sheet BIRTH METHODOLOGY

Source: HES 2009/10 data, PbR HRGs

PbR birth HRGs are split by whether there were complications and comorbidities or not.

Using HES data, we can determine the proportions of caesarean section HRGs that were with complications or comorbidities or without.

The number of births for each category are:

Births with complications or comorbidities	187,741 (28.6%)
Births without complications or comorbidities	469,053 (71.4%)

7. Financial quantum and activity levels - sheets NON BIRTH QUANTUM, QUANTUM, BIRTH METHODOLOGY

The financial quantum of costs / expenditure on maternity services is estimated from a variety of published sources: DH Reference Costs 2009/10, Summarised PCT Financial Accounts 2010/11, DH PbR 2012/13.

The activity levels of PbR care are taken from Hospital Episode Statistics (inpatient care) or Reference Costs (outpatient and community).

Total 2009/10 costs of maternity care from DH Reference Costs was £2.582bn.

Total 2010/11 PCT summarised accounts expenditure on maternity services was £2.532bn.

Combining the reference cost data with the HES-based activity data from which sense-check prices are calculated, the total quantum calculated for each element of the pathway is:

Total inc MFF:	£2.532bn	(£2.34bn exc MFF)
Births inc MFF:	£1.286bn	(£1.19bn exc MFF)
Antenatal inc MFF:	£1.052bn	(£0.97bn exc MFF)
Antenatal inc MFF:	£0.193bn	(£0.18bn exc MFF)

Summary so far

At this point, we know or have estimated the

- Proportion of women allocated to the various casemix levels in antenatal care
- Proportion of women estimated to move casemix levels during pregnancy
- Number of births split by with or without complications or comorbidities
- Proportion of women estimated to each casemix level for postnatal care
- National quantum of funding for each of the three phases – antenatal care, birth, postnatal care.

Any per patient prices will be based on equivalent quantum and activity. Changing birth rates do not impact the amount per person, but will impact on the final quantum paid out.

Cost weights and prices

8. Birth prices - sheet BIRTH METHODOLOGY

The PbR Tariff Calculation Team developed with and without complications prices for two of the HRGs (NZ13 and NZ14) caesarean sections.

This allowed both the total quantum of cost and the total activity across all birth HRGs to be split by with or without complications or comorbidities. CNST uplift to be added (c£5 per birth).

	Activity	Quantum (£)	Price
All births w cc	187,741	474,961,623	£ 2,530
All births wo cc	469,053	714,955,609	£ 1,524
Total	656,794	1,189,917,232	

9. Antenatal Prices - sheets RELATIVITIES, AN METHODOLOGY

From the PbR Maternity Pathway collection undertaken in May-August 2011, costs were collected against factors and characteristics, and relative cost differentials have been calculated using the Standard cost as the base at each Trust.

	COST WEIGHT	PROPORTION
STANDARD	100%	57.3%
INTERMEDIATE	179%	26.4%
INTENSIVE	304%	7.1%
STANDARD INTERM	179%	6.0%
STANDARD INTENS	304%	2.3%
INTERMEDIATE INTENS	304%	1.0%

By applying weights to the population of maternities (estimated as the number of births uplifted by 1.9% = 669,273) and applying those weights to the quantum of £0.967bn exc MFF, a cost weight of £985 is the base.

By applying this base to the various casemix levels, prices are calculated as:

Standard:	£1,126 exc MFF
Intermediate:	£1,803 exc MFF
Intensive:	£3,000 exc MFF

10. Postnatal Prices

- sheets RELATIVITIES, PN METHODOLOGY

Cost weighting information can be calculated from the PbR Maternity Pathway collection undertaken in May-August 2011, applied to the casemix proportions and the population of postnatal care activity (same as the number of births – 656,794), and a base cost can be calculated to produce prices.

	Proportion	Weight	Price
Standard:	64.2%	100%	£243 exc MFF
Intermediate:	35.0%	126%	£307 exc MFF
Intensive:	0.8%	339%	£825 exc MFF