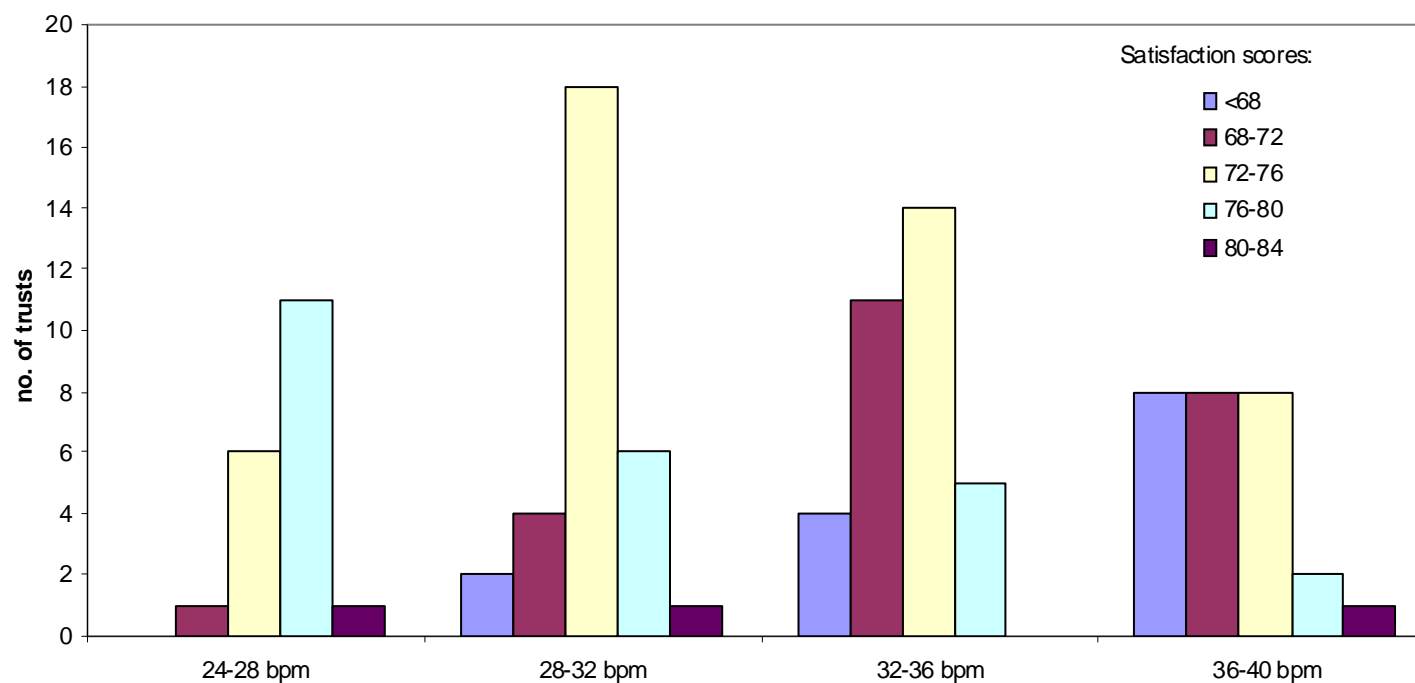# Maternity Matrix Tool

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Background to Matrix Project

- Birth:Midwife ratio used as proxy measure on quality of maternity services

- Office of the Chief Analyst (DH) asked to look at the correlation between birth to midwife ratio with quality, effectiveness and user experience

- Found no strong association with quality and effectiveness but some association with user experience

- Work underway to look at developing matrix to support provider service design

Metrics

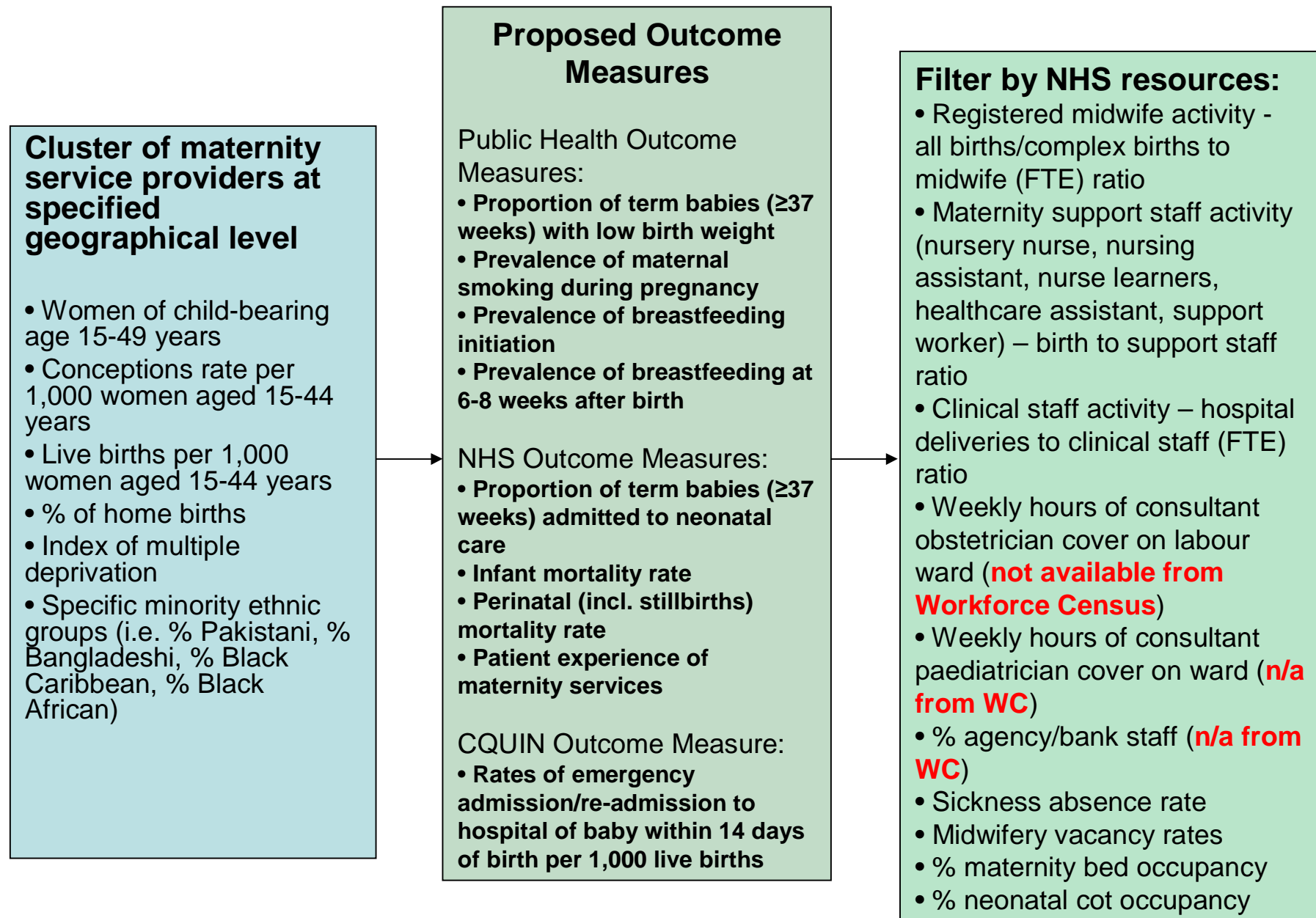**Distribution of overall satisfaction by births per midwife (bpm) ratio - England, 2007**

Sources: HES, Healthcare Commission

Workforce Directorate – ……..

Purpose of Tool

- ## Benchmarking tool
  - Enables providers to assess themselves against similar providers
  - Links into NHS outcomes that NHS CB will be held accountable for and potentially public health outcomes that Director of Public Health will be accountable for

- ## To aid providers in identifying gaps in resources used for provision of services for entire maternity care pathway
  - Helps providers within 'clusters' to compare outcomes and identify improvements in level and utilisation of resources (e.g. skill mix and mobilisation of teams)

- ## Could aid the development of maternity networks by bringing in providers with the right expertise for different parts of the care pathway for a given geographic area

Current Model Design

Cluster of maternity service providers at specified geographical level

• Women of child-bearing age 15-49 years
• Conceptions rate per 1,000 women aged 15-44 years
• Live births per 1,000 women aged 15-44 years
• % of home births
• Index of multiple deprivation
• Specific minority ethnic groups (i.e. % Pakistani, % Bangladeshi, % Black Caribbean, % Black African)

Proposed Outcome Measures

Public Health Outcome Measures:
• **Proportion of term babies (≥37 weeks) with low birth weight**
• **Prevalence of maternal smoking during pregnancy**
• **Prevalence of breastfeeding initiation**
• **Prevalence of breastfeeding at 6-8 weeks after birth**

NHS Outcome Measures:
• **Proportion of term babies (≥37 weeks) admitted to neonatal care**
• **Infant mortality rate**
• **Perinatal (incl. stillbirths) mortality rate**
• **Patient experience of maternity services**

CQUIN Outcome Measure:
• **Rates of emergency admission/re-admission to hospital of baby within 14 days of birth per 1,000 live births**

Filter by NHS resources:
• Registered midwife activity - all births/complex births to midwife (FTE) ratio
• Maternity support staff activity (nursery nurse, nursing assistant, nurse learners, healthcare assistant, support worker) – birth to support staff ratio
• Clinical staff activity – hospital deliveries to clinical staff (FTE) ratio
• Weekly hours of consultant obstetrician cover on labour ward (**not available from Workforce Census**)
• Weekly hours of consultant paediatrician cover on ward (**n/a from WC**)
• % agency/bank staff (**n/a from WC**)
• Sickness absence rate
• Midwifery vacancy rates
• % maternity bed occupancy
• % neonatal cot occupancy

Relationship between NHS resources and outcomes: an example

What is the outcome?

Proportion of term babies admitted to neonatal care

What are the possible reasons for this?

1) Antenatal booking and plan of care (e.g. failure to recognise risk of preterm birth, a safety issue if inappropriate place of birth was chosen.)

2) Quality of antenatal care (e.g. failure to detect intrauterine growth restriction, a safety issue if resulting in failure to investigate or intervene or inadequate monitoring in labour)

3) Safety of care in labour (e.g. competent fetal heart monitoring including interpretation of CTG, safe and appropriate use of Syntocinon to augment labour and avoid fetal hypoxia)

4) Failure to ensure safe care through the presence of an experienced midwife (shift co-ordinator) for each shift on the labour ward and to ensure there is a sufficiently experienced obstetrician immediately available to attend all complicated births and increase the safety for mother and baby.

5) Inappropriate planning of elective caesarean section before 39 weeks (increasing the risk of respiratory distress)

What is the resource issue?

- Lack of experience

- Lack of training on safety issue during labour?

- Inadequate staff coverage on labour ward

What are the quality checks for this?

Number of antenatal checks per maternity

- ?

- Daily coverage (hours) of Midwife (Grade 7) on labour ward
- Weekly hours of Consultant Obstetrician cover on labour ward
- Weekly hours of Consultant Paediatrician on ward

Prototype to show concept

		SOCIO-ECONOMIC FACTORS								How different?	OUTCOMES		
	Choose Trust:	Index of Multiple Deprivation 2007	% unemployment (aged 16+) 2006	Population density (number of persons per hectare) 2001	% ethnic minority	Average number of weeks pregnant when women are first seen (HCC data)	Percentage of women younger than 19	Percentage of women older than 35	% women who are smokers when they book		% women not receiving NICE # scans	Maternal Morbidity 5-good, 1-poor	Women's satisfaction with overall care (% satisfied or very satisfied)
RXC	EAST SUSSEX HOSPITALS NHS TRUST	19.5	5.2%	10.9	1.0%	6.9	4.7%	22.2%	17.5%	0.00%	14.8%	3	73.6%
	Similar Trusts (i.e. which other Trusts are most similar in terms of socio-economic factors?):												
RWJ	STOCKPORT NHS FOUNDATION TRUST	19.5	4.0%	20.0	2.7%	7.3	4.3%	21.2%	16.0%	1.20%	17.4%	4	79.2%
RJR	COUNTESS OF CHESTER HOSPITAL NHS FOUNDATION TRUST	19.0	4.0%	8.7	1.9%	7.3	3.8%	23.2%	23.3%	1.58%	21.9%	4	74.9%
RM4	TRAFFORD HEALTHCARE NHS TRUST	20.9	3.9%	20.9	6.2%	7.4	4.2%	21.7%	18.8%	1.65%	17.1%	4	72.5%
RVY	SOUTHPORT AND ORMSKIRK HOSPITAL NHS TRUST	26.4	5.8%	14.8	1.9%	7.0	4.0%	21.0%	18.8%	1.68%	21.2%	5	74.6%
RAJ	SOUTHEND UNIVERSITY HOSPITAL NHS FOUNDATION TRUST	16.7	4.7%	24.7	1.7%	7.1	3.6%	20.2%	13.9%	1.93%	13.8%	3	75.6%
RN7	DARTFORD AND GRAVESHAM NHS TRUST	14.3	5.4%	8.6	3.0%	7.1	3.9%	17.0%	17.7%	2.01%	12.0%	4	71.9%
RPR	ROYAL WEST SUSSEX NHS TRUST	12.9	4.1%	11.2	1.9%	7.3	3.0%	24.4%	15.2%	2.16%	15.0%	5	77.6%
5PP	CAMBRIDGESHIRE PCT	13.6	5.2%	6.2	2.7%	7.5	3.7%	19.8%	12.2%	2.30%	Missing data	Missing data	Missing data
RQW	THE PRINCESS ALEXANDRA HOSPITAL NHS TRUST	14.0	4.0%	10.3	3.1%	7.1	2.4%	21.7%	13.1%	2.32%	28.6%	3	74.9%
RXH	BRIGHTON AND SUSSEX UNIVERSITY HOSPITALS NHS TRUST	19.7	5.6%	19.8	2.2%	7.0	2.7%	259.5%	13.3%	2.40%	19.9%	3	70.7%

Next stage

- Additional sources of information to feed into tool

- Development of outcome measures and how these relate to resources

- Feedback from potential users on their requirements to assist development work

- Host and management of tool

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