An integrated Rapid Health Impact Assessment and Race Impact Assessment of ‘Making It Better, Making it Real’

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Acknowledgements

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Executive Summary

Introduction
This Executive Summary of the integrated rapid Health Impact Assessment (HIA) and Race Impact Assessment (RaIA) of the 'Making it Better, Making it Real' (MiB) consultation proposals summarises the HIA methodology used, the potential health impacts of the MiB proposals and recommendations to enhance the positive and reduce the negative impacts. The HIA/RaIA was undertaken by IMPACT, the International Health Impact Assessment Consortium at the University of Liverpool.

HIA is a policy tool concerned with improving health and reducing health inequalities. It is a systematic process which aims to identify what the health effects of new policy or strategy proposals on a defined group of people might be. It considers which key health determinants, such as health services, transport and economic factors will be affected by the proposals and how these in turn will affect the health and well being of the population, as well as the differential distribution of these impacts. By providing evidence of these potential health impacts to policy makers, it helps to inform their decisions. RaIA, a statutory requirement under the Race Relations (Amendment) Act 2000 defines the differential effects of public services changes, such as health service changes, across a population by race.

The aim of the MiB HIA/RaIA was to undertake an initial assessment (stage 1 HIA) of the health effects of the MiB proposals using a validated generic HIA methodology and to describe the distribution of effects across the population by geographical area, e.g., the Review area, and population sub-groups, e.g., Black and Minority Ethnic (BME) groups.

‘Making it Better’
The MiB consultation document describes proposals for changes to 24 hour in-patient obstetric, neonatal and paediatric services across Greater Manchester, East Cheshire and High Peak, the Review area (section 2). The formal public consultation, which concluded in May 2006, proposed 5 options – 4 options for change and a no change option. Essentially these options proposed reducing the number of consultant-led obstetric, paediatric and special care baby units from 13 to 7 or 8, whilst increasing the number of neonatal intensive care units from 2 to 3. The proposals for changes in secondary care are to be complemented by more services being provided in the community, ‘closer to home’ and reflecting new models of care that are being developed. Following the consultation, a number of alternative options emerged providing a total of 21 options to consider. These have been evaluated by the MiB Team in the same manner as the original consultation options.

The focus of the MiB proposals was changes to 24 hour in-patient obstetric, neonatal and paediatric services; this is also the focus of this stage 1 HIA.

HIA methodology
The HIA methods and procedure used were based on a validated generic HIA methodology (Figure 1) which also accommodates RaIA guidelines (section 3). The process took 45 days.

This HIA is described as a rapid HIA, reflecting the depth of assessment. In this HIA very little new data were collected; existing, accessible data were defined and analysed. From this the evidence was identified and impacts defined.

The policy analysis (section 4) involved the collection and analysis of a range of policy documents to determine the context of the MiB proposals. Relevant secondary data were identified and retrieved from MiB and other sources to develop a profile of the Review area (section 5). Evidence from the literature was also gathered and distilled (section 6). Stakeholder data collected as part of
the consultation process were examined and added to by interviews with organisational stakeholders (section 7). Finally, evidence from all data sources was aggregated, a health impact model was developed showing the association between obstetric, neonatal and paediatric outcomes, health services and other health determinants and the key health impacts of the MiB proposals were characterised in the impact analysis (section 8).

The limitations of the HIA included the timing and scope; ideally the HIA would have been undertaken as the proposals were being developed and would have included an assessment on proposals for community-based services. In addition there were also challenges with data access and quality, as well as the lack of engagement of stakeholders in the HIA.

Figure 1 A Generic HIA Methodology

Findings
The Impact Analysis brought together the evidence from all the data collected from different sources and using different methods. It identifies and characterises the potential impacts of MiB describing:

- **Health impacts** – the health determinants affected and the subsequent effect on health outcomes;
- **Direction of change** – health gain (+) or health loss (-);
- **Scale** – the severity (mortality, morbidity and well-being) and magnitude (size/proportion of the population affected);
- **Likelihood of impact** – definite, probable, possible or speculative based on the strength of the evidence and the number of sources;
- **Latency** – when the impact will occur.

For clarity throughout the report the potential impacts are in bold and the likelihood of an impact is underlined. Definitions of likelihood are as follows:
The HIA makes a number of explicit assumptions concerning the implementation of the MiB proposals for reducing 24 hour in-patient hospital obstetric, neonatal and paediatric care from 13 to 7 or 8 sites across the Review Area, e.g., that consolidation of in-patient services onto a reduced number of sites can be accommodated in terms of physical and staff capacity, however, it is recognized that this poses challenges for some areas of the Network. Similarly it defines the timeframe for completion of these changes as between 2010 and 2015 and describes the likely context during that period, e.g., projected birth rates, fertility patterns, and the distribution of ethnic minority groups. The level of analysis was defined as the Review area.

Based on the available evidence, the MiB proposals will have both positive and negative health impacts on women, babies, children and their families. The most significant positive health impact will potentially result from improvements in the clinical efficiency and effectiveness of care. For mothers, the proposals will possibly reduce the risk of maternal morbidity and death resulting from pregnancy and child birth, particularly during delivery. Those options that provide locally accessible 24 hour care to deprived areas and/or populations with a high proportion of ethnic minority groups will reduce risk in the most vulnerable groups and will contribute to reducing health inequalities. There is the potential for even greater health gains with more ante and post natal care provided in the community. However, the potential gains from the development and implementation of shared models of care, care pathways and clinical guidelines at network level which are under development are also potentially as significant.

For new babies, the main health gain will potentially be from the increase in accessibility to neonatal intensive care (increases from 2 to 3 sites) and greater availability of intensive care cots. It is probable that there will be an increase in survival rates for pre-term (27 weeks plus) or low birth weight babies as a result of this. There is strong evidence that the timely transfer of premature and/or low birth weight babies positively affects their survival rates. As for mothers, whether the proposals will benefit babies most at risk of poor neonatal outcomes, contributing to reducing health inequalities will depend on which option is selected. There is the potential to build on these health gains through community-based care as well as by improving the quality of how care is provided.

For children and their families, it is possible that quality and clinical safety may improve and that the range of treatment regimes available may improve as a result of the consolidation of skills and resources into a smaller number of units. Associated with this it is possible that there will be improved health outcomes for children in need of specialist paediatric in-patient care although it will be difficult in the future to separate out the benefit attributable to service reconfiguration from that resulting from medical advances in a rapidly changing field.

The main negative health impacts are concerned with the reduced physical accessibility of care. A significant minority (between 15.9% and 30.3% across all options and modes) of pregnant women and their families will probably have to travel for longer for in-patient care, but this is unlikely to affect clinical effectiveness for the majority of patients. However, it is assumed that for most women, in-patient care will be an infrequent event, e.g., after delivery. For the majority of these people, increases in journey times will be relatively minor. It is estimated that 1.6% of population have a travel time of up to 50 minutes by private car or taxi to any of the MiB options; this falls within the ‘golden hour’ rule for critical care interventions. It should be noted that exceptions to this may include people with disabilities, and people who have communication or language problems which affect travel. However, although the additional travel time is not predicted to have a
significant effect on physical health for the majority of patients it is **speculated** that there may be negative psychological impacts. Similarly the reduction in patient choice, due to the reduction of hospital sites providing this care, is **speculated** to potentially have a negative impact on psychological well being; people with disabilities and BME groups will have their choice limited most. In addition it is **speculated** that there could be indirect impacts that may particularly affect women and families on low incomes as a result of additional travel costs for in-patient care. PCTs and Trusts need to address this issue.

In addition to women, babies, children and their families, the MiB proposals may have other indirect positive and negative health effects on the Review area population as a whole. These effects relate to a **probable** increase in road traffic to those sites selected for in-patient care. Associated with this is a **probable** decrease in air quality potentially increasing the health risk to populations adjacent to these sites. Overall it is **speculated** that there will be a minor increase in air pollution as a result of localised increase in vehicular transport. This will potentially impact most on groups known to be at risk from poor air quality. Conversely there may be an improvement in air quality in those areas not selected for in-patient care with reductions in road traffic. There is the potential for this health risk to be mitigated against by considering transport solutions during the detailed planning and development processes for the selected sites. Similarly decreases in air quality due to in-patient care and visiting may be off-set by more community-based care for ante and post natal care as more defined proposals are developed for this.

Whilst limited evidence has been accessed, MiB may also **potentially** impact on local economies and indirectly affect the health of the population. For those areas where in-patient hospital care is withdrawn, there may be an overall economic loss in these communities, including loss of employment (NHS and non-NHS), reduced local purchasing and impacts on deprivation. This would most likely affect groups already disadvantaged in the labour market, e.g., people with disabilities or chronic health conditions, low skilled workers, BME groups, lone parents, older people and women. It is **possible** that if sites not selected for in-patient care are in areas of higher deprivations than those that are selected this will potentially impact on the health of the whole populations as well as patients, having a multiple effect and contributing to widening inequalities. The scale of any such impacts should be considered in further work.

It is **probable** that there will be negative impacts on some staff affected by the MiB proposals, e.g., changing the main location of employment. Although it has not been possible to assess the impacts on the NHS workforce, evidence from other studies has shown the negative health impacts associated with perceived ‘job insecurity’ particularly when moving from previously ‘secure’ to ‘insecure’ jobs. However, it is possible to mitigate against these negative impacts by addressing key mediators of these health effects, e.g., decision latitude and participation. PCTs and Trusts will need to address this issue.

**Black and Minority Ethnic Groups**

This section brings together evidence of the potential impacts for ethnic minority populations.

It is recognised that it is unwise always to use aggregated data for the five main ethnic groups of the Census, as this masks heterogeneity between different ethnic groups. Such differences may be based on a mix of elements of ethnicity and the demographic stage of the particular group. When developing local data collection systems, categories should always map back to the Census groups.

There is strong evidence that women from ethnic minority groups are more at risk from maternal death in the UK than their white counterparts (section 6). Black African women were 7 times more likely to die due to complications associated with pregnancy and child birth, whilst women from other ethnic minority groups were 3 times more likely to die. There is also a greater risk of stillbirth or neonatal death with mothers’ ethnicity as follows: Black (2.7-2.8 times greater risk), Asian (1.6-2.0), Chinese and other (1.9).
It is unclear whether this increased risk is directly or indirectly related to ethnicity. For example, evidence from the US indicates economic factors cannot explain the higher risk of death in black versus Hispanic women as they have equivalent socio-economic status (s.6); similarly as family income increases the probability of giving birth to a low birthweight baby decreases markedly for white women, but not for African American women.

There is evidence that women from minority ethnic groups use antenatal services less intensively, with a higher proportion booking late. Late booking was another key risk factor for maternal mortality and morbidity, with 20% of women who died booking in after 22 weeks or missing 4 routine antenatal appointments. Late bookings prevent or delay screening and other diagnostic tests being undertaken which impacts on potential maternal or foetal complications being identified.

There was some evidence from the literature (section 6) that social and cultural barriers between patients and health professionals may contribute to delays in accessing care and less than optimal care, which may in turn impact on maternal and neonatal outcomes. Vulnerable and socially excluded women found it particularly hard to access or maintain access with services and follow-up for those who failed to attend was poor.

Inadequate translation services were seen as a major barrier to accessing services for those who could not speak English. It has been found that in addition to the importance of translation services, BME communities may also experience communication barriers which reduce access to services due to travelling, e.g., if spoken English is a barrier to using public transport, where this is the main travel mode. Where communication is a challenge, service users prefer local services, trusting the more familiar than the unknown, particularly when increased distance presents a greater barrier to access for family and visitors, by virtue of cost, time, childcare arrangements etc.

Associated with communication barriers is the impact that this has on patient choice, whether that is where a patient is treated, by whom or the type of treatment received. A patient who is disadvantaged as a result of communication issues is also disadvantaged in the choices they can make. It has been suggested (section 6) that this may lead to polarisation within health economies with those patients who understand the system express their views and travel, with minimal disruption and cost to their families may be more able to exercise choice.

Communication difficulties have been recognised in the MiB consultation as being of major relevance for some groups, e.g., people with poor literacy and non-English speakers (section 5).

Other barriers to accessing services by different communities include the perception that religious customs are not observed by NHS providers, e.g., providing Halal or Kosher food. Numerous studies across many cultures (section 6) show the value of social support and social networks for maternal health in preparation for and following childbirth; however, this may adversely affect uptake of services, e.g., antenatal care. In addition, different cultures have different rituals associated with pregnancy and childbirth (section 6) with industrialized societies having the least explicit rituals; in some cultures, e.g., the mother and close family are pivotal in antenatal and postnatal care.

International studies of programmes increasing social support to women during and after pregnancy vary in their health outcomes. However, the Central Manchester-led pilot, Race for Health, which provides link workers and providing culturally sensitive services to pregnant women is a potential approach that could be adopted more widely.

Recent summary reports have re-visited the consultation responses. While extensive effort has undoubtedly been made to capture the issues reported by minority and hard to reach groups, their representativeness, balance of responses and completeness of the data, cannot be certain. However, needs and choice featured highly. Examples of issues from the consultation responses from BME groups include:

- Less choice in general and less local choice for the most disadvantaged groups
- Impact on dignity and identity of women of different cultures
• Issues using public transport for non English speaking Bengalis
• Difficulties travelling to more distant neonatal units
• High proportions of deprived or disadvantaged population, lack access to their own transport
• Less trust in services after this consultation

As described above, it is assumed that the geographical distribution of ethnic minority populations will remain fairly constant and cluster predominantly around Central Manchester, Bolton, Oldham and Rochdale. However, the composition of ethnic minority populations may vary with different migration patterns emerging, for example from Eastern Europe. Currently women and babies from ethnic minority groups are:

• At most risk of poor maternal and neonatal outcomes;
• More likely to experience socio-economic deprivation, increasing their overall risk;
• More likely to be a late booking or miss key antenatal appointments, adding to their risk.

Based on the evidence available, and with the caveats about data quality and aggregating data for groups of different ethnicity, the MiB proposals for reorganising 24 hour in-patient care will impact on the health and well-being of women and babies from ethnic minority groups.

These women and babies will **possibly**:

• **Benefit most from the improvements in clinical efficiency and effectiveness, e.g., the provision of more neonatal intensive care sites and cots;**
• **Be one of the groups most adversely affected by difficulties in physically accessing more distant 24 hour in-patient care, e.g. restricting visiting from family and friends;**
• **Have more limitations on the choices they make compared with other population groups, e.g., as a result of communication and language issues.**

However, at this point the MiB proposals do not include details of changes to **how** obstetric and neonatal care will be provided, so it cannot be predicted what the impact on the existing social and cultural barriers to care may be, e.g., enhancing earlier booking and sustained attendance at antenatal clinics. It will be important that this is addressed as models of care develop.

Although generalisations have been made about ethnic minority groups, it is important that the specific needs of different ethnic minority populations, and the risks to these women and their babies during pregnancy and childbirth, are considered separately and not as a single homogenous group.
Recommendations

Data
• Develop a comprehensive dataset, including ethnicity, to inform future planning, implementation and monitoring. It should include for example, paediatric care activity, hospital catchment areas, patient flows, “Near Miss” events and appropriate levels of analysis, e.g., PCT, population groups and projections or forecasts by option.
• Ensure that newly commissioned data is capable of comparison with other profile data.
• Use the profile as a basis for monitoring the impacts of MiB.

Equity
• MiB has an opportunity to reduce health inequalities by making decisions which reduce known risks to the groups most vulnerable to poor maternal, neonatal or paediatric outcomes, e.g., BME groups, people with disabilities, people living in deprived areas or on low incomes. The MiB Joint Committee in reaching its’ decisions should demonstrate explicitly how this will be achieved;
• Conduct an audit of vulnerable groups across the Review area to complement existing data;
• Ensure that future MiB developments, e.g., for community-based care and new clinical guidelines, and are under-pinned by equity principles.

Engagement, communication and information
• Continue to actively engage organisational and community stakeholders using sustainable methods, e.g., in the development of plans for community-based services, new models of care and clinical guidelines;
• Provide support to engage patients and carers, e.g., training, as well as accessible information on MiB and service developments;
• Ensure effective multidisciplinary and inter-team communication and collaboration underpins Network developments.

Right to health
• In coming to its’ decisions, the MiB Joint Committee should demonstrate that it reflects the principles of ‘Right to Health’ as enshrined in the Universal Declaration on Human Rights – accessibility, availability, acceptability and quality.

Quality of care
• As part of implementation, the MiB Team should explicitly demonstrate improvements in clinical efficiency and effectiveness by developing shared models of care, care pathways and clinical guidelines at Network level and across traditional organisational boundaries;
• Support the developments of the clinical network by developments in the strategic organisation of care at Review area level, e.g., flexible, inter-Trust employment terms, accountability frameworks, reporting and governance arrangements.

Accessibility (physical) of care
• Consider how the proposals impact upon people with mobility difficulties and access issues of people with communication or language problems that affect travelling;
• Approaches to ameliorate the negative impacts of reduced accessibility and choice should be considered and acted on as part of the decision-making process, e.g., travel routes and information.

Accessibility (social, cultural acceptability) of care
• Each Acute site retaining 24hr in patient services should develop clinical guidelines and protocols that improve clinical effectiveness and efficiency, ensure these guidelines are culturally and socially sensitive, enhancing access to care.
Black Minority Ethnic Groups

- Enhance data quality based on ethnicity, e.g., by further analysis of existing data (even where incomplete), disaggregating data to constituent ethnic groups, ensuring local data collection systems are capable of comparisons with 2001 Census classifications;
- Ensure that translation and interpretation services are readily available as a matter of routine;
- Ensure vulnerable groups are effectively engaged, their specific needs identified and approaches tailored to their needs are reviewed and implemented or new approaches piloted, e.g., ‘Race for Health’, teen-focused care.

Organisation (availability) of care

- Ensure that decisions that impact on the availability of care within or adjacent to the Review area, and ultimately impact on MiB, are effectively coordinated between health economies;
- Examine how policy tensions, e.g., between Trusts due to competition for services, practice-based commissioning, may influence the Networks developments and develop strategies to limit any negative impacts.

Transport

- Define the scale of the road traffic issues associated with increases in activity for potential in-patient sites;
- Define real travel times and develop a strategy to reduce the impact for ‘travel vulnerable’ groups, e.g., people with disabilities, BME groups;
- Liaise with Transport planners and Passenger Transport Authorities as part of the Local Transport Plan process to define solutions to these issues, e.g., direct bus routes, extended hospital and community transport, ‘dial – a – ride’ schemes;
- PCTs and Trusts to consider transport impacts for patients and staff in their estates and green transport plans.

Economy

- Undertake a detailed analysis of the potential impacts on local economies for different proposal options;
- Engage local economic development units as well as the North-West Development Agency in defining mitigation measures as part of their economic development planning processes.

NHS workforce

- Continue informing and involving clinical and non-clinical staff in the MiB developments;
- Include the assessment of the health effects of the NHS workforce in the further HIA assessment work.

Monitoring and evaluation

- Ensure that both process and impact evaluations are undertaken of the interim HIA.

Further Work

- Commission an in-depth assessment of the health impacts of proposals or scenarios for community-based care;
- Develop quantified estimates of the impacts identified in the interim Report by further development of the care pathways model;
- Engage stakeholders in the further assessment.
1. Introduction

1.1 IMPACT, the International Health Impact Assessment Consortium at the University of Liverpool was commissioned in September 2006 by the Greater Manchester, East Cheshire and High Peak Children, Young People and Families Network to undertake an integrated Health and Race Impact Assessment of the 'Making it Better, Making it Real' (MiB) proposals which were formally consulted on between January and May 2006. Additional options generated from the consultation process were also to be considered in the assessment.

1.2 Health Impact Assessment (HIA) is concerned with improving health and reducing health inequalities. It is a systematic process, which aims to identify what the health effects of a new policy or strategy proposals such as MiB, might be on a particular group of people. HIA can be done at a national, regional, city or even ward level. It considers which key health determinants, such as health services, transport and economic factors will be affected by the proposals and how these will in turn impact on the health and well-being of the population. By providing evidence to policy makers on the potential health effects of these proposals it helps to inform their decisions.

1.3 Race Impact Assessment (RaIA), a statutory requirement under the Race Relations (Amendment) Act 2000 (RRA, 2000), defines the differential effects of public service changes across a population by race.

1.4 The integrated HIA/RaIA is a rapid assessment. It aims to assess the health effects of the MiB proposals using a validated generic HIA methodology and to describe the differential distribution of impacts across the population by geographical area and population sub-groups. In particular, the HIA/RaIA will describe the potential priority impacts on:

- Pregnant women, newborn babies and their families,
- Children with chronic illnesses and their families,
- Black and minority ethnic (BME) groups within these populations.

1.5 This report will describe the scope of the assessment, including the methods and process, the data collected and the evidence defined from these data. The potential health impacts emerging from the analysis of this evidence will then be defined in broad, qualitative terms. Finally, conclusions and recommendations for the Network Board and Joint Committee of Primary Care Trusts (PCTs) will be presented.
2. Summary of ‘Making It Better’

Introduction
2.1 This section describes the MiB proposals.

The Proposals
2.2 The public consultation document, ‘Making It Better: Making It Real’ (2006) was the culmination of work over a number of years reviewing local services and in response to national policies seeking to develop and plan appropriate 24 hour inpatient maternity, neonatal and paediatric services as well as care closer to home for the population, initially at least, of Greater Manchester. The geographical coverage of the review (the Review Area) has grown as the Network has become established, with East Cheshire, High Peak and Rossendale now included.

2.3 The need for change had been formalised in 2005, with the endorsement of 75% of those who responded (5000) to the Making It Better discussion document. Five options to be put forward for public consultation (including no change) were developed based on criteria of Safety, Feasibility and Equity. No change describes the current pattern of inpatient provision across 15 hospitals in the area.

2.4 The substantial formal public consultation was carried out between January and May 2006, using a number of methods to capture responses and views. A preferred option (A) was offered, together with three others and no change. Public consultation is not a voting process, with respondents free to express a preference or not. 51% of the responses gave no preference. Options C and D, followed by option A, and were most often supported where a preference was expressed.

2.5 Six further options emerged from the consultation, principally because of concerns about possible reduction in access or service north of the M60.

2.6 A further option was put forward for provision of neonatal intensive care services, which consequently applies to all 10 options, bar the existing situation. There are as a result now twenty one options available, shown in Table 2.1 overleaf.
### Table 2.1 MiB Options

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<td>Tameside</td>
<td>Hope (obs only)</td>
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**Option J:** In all options substitute Wythenshawe for Oldham for the provision of NICU services therefore options will look as above but with following for NICU

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**Notes:**
- NICU: neonatal intensive care unit
- St Mary's: St Mary's Hospital
- Oldham: Oldham Hospital
- Hope: Hope Hospital
3. Methodology

Introduction

3.1 This section describes firstly the methods used to carry out this rapid HIA/RaIA and secondly the limitations of the work.

Methods and procedures

3.2 The assessment was conducted using a validated generic HIA methodology (Figure 3.1)

Figure 3-1 A Generic Model of HIA

[Diagram of a generic model of HIA]

The method was to review existing secondary data collected by the Network Board and where appropriate, collect and view other secondary data.

3.3 Policy analysis of the proposed options for the consultation and associated policy documents was undertaken in order to identify the policy context of the proposals.

3.4 Existing profile data from the consultation documentation were reviewed and requests made for further information, as secondary data reports, for example regarding transport and access, lifestyles and minority ethnic groups. Using these sources and together with information emerging from other work concurrently commissioned by the Children’s Network, but not specifically for the purposes of the H/RaIA, a profile was prepared.

3.5 Brief reviews of relevant evidence from the published literature on the potential relationship between proposed service reconfigurations and health were undertaken. Access to source data
from the consultation and other stakeholder evidence regarding the options was sought and provided in summary reports. Time constraints precluded primary data collection and further stakeholder engagement, but further evidence was gathered from key informants, selected by purposive sampling and obtained by means of semi-structured interviews to ascertain local and national perspectives.

3.6 Impact analysis, including the development of a model to inform future mathematical modelling, was based solely on the evidence available at the time of writing.

3.7 Practical recommendations, where possible evidence based, are made founded on the information available at the time of writing.

**Limitations**

3.8 The major limitation of the assessment was the particularly short timescale in which to undertake this desktop assessment. This is particularly true in this case, constrained to reviewing secondary sources of data and compounded by the wealth of existing material to interrogate. There is always a necessary compromise between brevity and rigour in any study and examination of primary data, a more comprehensive health profile and the opportunity to properly model the extended range of options would have added rigour to the work.

3.9 During the period of the review, East Cheshire PCT joined the consultation exercise. This meant that reports and data were not wholly comparable. Software development and the use of smaller geographic areas for analysis have refined more recent presentation of data, but made analysis over time more challenging. Consistent data formats are important for monitoring purposes and in order to assess any changes in the distribution of the impacts on health. The subsequent emergence of additional options from the consultation responses, bringing the total to twenty one, presents further challenges to data analysis.

3.10 The variety of methods capturing consultation responses provided data for analysis particularly in free text and English, perhaps presenting the views of those best able to communicate in this way. There is evidence that particular efforts were made to engage with hard to reach and minority ethnic groups during the consultation process, but their contributions cannot always be attributed in the data. For these groups, an additional issue was communication and consequent access to services (Broderick, personal communication, 2006).

3.11 The MiB consultation process was extensive and comprehensive in comparison to previous similar exercises. HIA methodology allows stakeholders the opportunity not just to raise issues and identify potential health impacts, but consider how best to enhance or mitigate the impacts these might have on the determinants of their health, prioritise those that are of greatest relevance to them and make appropriate recommendations to decision makers. Undertaking a comprehensive Health Impact Assessment on such a complex service re-configuration, across 13 acute hospital trusts and 17 (now 13) PCTs would be complex and more resource intensive than a rapid or desktop HIA. Such stakeholder engagement is outside the scope of this HIA.
4. Policy analysis

Introduction

4.1 This section presents an analysis of the ‘Making it Better’ (MiB) proposals and associated policy documents, including the additional options proposed following the consultation. The analysis examines the rationale and context of the MiB proposals, the synergy of these proposals with national and international policies and standards for maternity, neonatal and paediatric care, and finally the relationship of the proposals to non-health care policies and strategies, such as transport, employment and economic development.

Analysis of the rationale and context of ‘Making it Better’

4.2 As described in section 2, the MiB proposals present options for change concerning the provision of 24 hour in-patient obstetric, neonatal and paediatric care. Fundamentally the proposed options reduce the number of sites for 24 hour care from 13 to 8 or 7. The rationale driving these proposals is described in the formal consultation document ‘Making it Better, Making it Real’ (Joint Committee of PCTs, 2006) and in the earlier discussion document (Children’s, Young People’s and Families’ Network, 2005). The issues being addressed include:

- Changes in maternal, neonatal and paediatric health needs;
- Developments in healthcare and technologies reducing the need for in-patient hospital care or the length of stay when in-patient care is required;
- Sites potentially not meeting Royal College requirements to maintain clinical competency levels in the future (e.g., more than 2000 deliveries per unit to maintain Specialist Registrar and medical students training);
- A limited supply of experienced clinical staff, spread too thinly across 13 sites;
- A potential increased risk to safety for in-patient care in the future (inexperienced staff, ad hoc ward closures);
- Policy drivers, such as the European Working Time Directive, ‘Every Child Matters’;
- Lack of patient choice.

4.3 The proposals outline developments to services that reflect these changing trends in health needs, new models of care and patient pathways, as well as the development needs of the workforce. In addition to addressing these issues, the proposals seek to:

- Ensure equitable access to services across the Review area based on need;
- Enhance the quality of services;
- Provide services close to home, or at home where possible.

4.4 The national policy context described in the MiB consultation document indicates that the proposals have been developed in broad accordance with these, e.g., MiB shares the same principles of a high quality, integrated, health and social care service as the National Service Framework (NSF) for Children, Young People and Maternity Services (DH, 2004). It is acknowledged that detailed care models and pathways are under development and currently do not necessarily reflect all areas of these policies, e.g., that the normality of pregnancy is recognised and that midwife-led care is promoted (standard 11 of the NSF for maternity services). A national strategy not referred to in the consultation document is ‘Tackling Health Inequalities’ (DH, 2003); a key headline indicator for this strategy is to reduce infant mortality between routine and manual groups and the population as a whole by at least 10% by 2010. In 2005 the infant mortality gap was reported to have widened (DH, 2005). Although equity is a key criteria defined to evaluate the MiB options, it does not define equity in terms of reducing the gap in health outcomes between socioeconomic groups. It would be appropriate for this to be included in the MiB equity criteria definition.
4.5 Since the publication of the MiB proposals there have been a number of other national policies and reports published which are relevant to these. Most notably ‘Our Health, Our Care, Our Say’ (DH, 2006), the White Paper for community health and social care services, emphasises the need for integrated care and more care outside hospitals. Service reconfiguration is recognised as a necessary part of this shift of resources from acute to local settings, with the development of community facilities accessible to all. However, clinical viability and patient demand not financial pressures are defined as the drivers for these changes. The White Paper also describes tools to support the planning (e.g., SHAPE) and consultation of these changes. Significantly, there is emphasis on considering transport and land use needs and engaging the relevant transport and planning authorities in the development of services. Whilst MiB embraces most aspects of the White Paper it would be timely to review the detailed requirements.

4.6 ‘Strengthening Local Services: The Future of the Acute Hospital’ (National Leadership Network Local Hospitals Project, 2006) acknowledges the goals of the White Paper and other drivers for change such as choice and contestability, and defines the future vision of the local NHS hospital. In this it describes obstetric and paediatric care being provided across well-defined accountable networks rather than individual Trusts to allow for greater flexibility. It concedes that the need for Trusts to develop collaborative ventures and networks is in conflict with the need to compete for services in a market-based health economy, but indicates that both skills are required.

4.7 ‘Strengthening Local Services’ defines ‘Design Principles’ to guide commissioners in particular in their decision-making, but emphasises one size does not fit all. The report also refers to Emergency Care Principles; the ability to provide fully-staffed 24/7 critical care is said to be a key determinant providing the range and complexity of emergency services; for key groups such as paediatrics, critical care is said to require networked provision across multiple providers, with local hospitals providing assessment, diagnostics and treatment of sick children in community and ambulatory settings and in-patient care provided depending on the critical mass of staff with the appropriate mix of competencies. This is in close accord with the MiB rationale and proposals. It is important, however, to recognise the tension that exists between current health policies and the potential difficulties in progressing these to successful implementation.

4.8 The Millennium Development Goals (MDGs) (UN, 2000) affirm the international community’s commitment to reduce maternal mortality (MDG 4) and child mortality (MDG 5) by 75% in 2015. In taking this forward the World Health Organisation’s Making Pregnancy Safer (MPS) strategy defines the Integrated Management of Pregnancy and Childbirth (IMPAC) (e.g., WHO, 2006) as a cornerstone to this. At the European level, MPS mission and principles are closely related to the NSF for maternity services, and in turn to MiB; similar to national standards the emphasis is on de-medicalised pregnancy and birth, the use of appropriate technology and evidence-based approaches by multi-disciplinary teams within holistic, family-centred and culturally-sensitive environments. It should be noted that there is concern about progress towards achieving the MDGs even in Europe, with inequalities within and between countries and population groups. MiB will need to ensure that the proposals will contribute to these goals; there are potential implications for this with increasing migration from Eastern Europe.

4.9 In addition to the development of the MiB proposals for women and children, health services across north east Greater Manchester have also been under review as part of the Healthy Futures programme; within this there has been consideration of 24 hour in-patient obstetric, neonatal and paediatric care, in relation to the level of emergency care that may be available on different sites. The impact of decisions from these two consultations is interdependent.

4.10 Similarly the reconfiguration of health services in East Lancashire has decided to move 24 hour in-patient obstetric and neonatal care to Burnley General Hospital from Royal Blackburn Hospital, with potential implications for provision in the north of the MiB review area, particularly Bury and Rochdale. Although details of this reconfiguration programme were not included in the Consultation Document, the implications of these decisions are significant and should be considered by the Joint Committee.
Analysis of the development of ‘Making it Better’

4.11 The Discussion Document and the Consultation Document describe the engagement of patients, the public and clinicians in the development of the vision for women and children’s care, the options for how in-patient hospital services could be organised as well as the criteria on which decisions should be made. The Consultation Document stated that over 22,000 children, young people, parents, carers and staff were involved in 300 separate projects across the Review Area up to July 2005. In the 5 months prior to the formal launch of the options, it is reported that nearly 1,000 workshops and meetings were held in NHS organisations, professional bodies, voluntary groups and Overview and Scrutiny Committees. The drawing up of the options was also defined; this involved 63 clinicians from the affected Trusts being invited to draw up their preferred configuration followed by a workshop with these clinicians and managers to discuss these, and finally an independent analysis of the potential options. A decision-making ‘tree’ describes how decisions are to be made including the criteria to be used by the Joint Committee of PCTs, who make the final decision on what option for 24 hour in-patient obstetric, neonatal and paediatric care will be selected.

4.12 There is evidence indicating that extensive contacts were made in the early part of the ‘Making it Better’ programme, prior to July 2005. It has not been possible to assess the active or sustained participation of NHS (clinical and administrative) and community (patients and the public) stakeholders in the decision-making process, although it is apparent that engagement has been a key element of the programme. It is unclear what engagement was undertaken with Black and Minority Ethnic groups prior to July 2005.

4.13 Although it is recognised that the development of the options for the reconfiguration of services was underway prior to September 2005, this assessment was not in a position to determine the process by which options were selected.

Analysis of ‘Making it Better’ and the non-health care policy environment

4.14 The MiB proposals will directly affect the delivery and location of health services. This will impact on the physical access to services and the employment location of NHS staff (clinical and non-clinical); in turn this will potentially impact on the local economy and also on land use as more services are provided at community facilities.

4.15 MiB has considered some of the implications of service reconfiguration on travel distances and travel times (JMP Consulting, 2006) for different scenarios, but it is not clear whether the transport impacts have been considered in the context of the Greater Manchester and Local Transport Plans; it is important that this analysis is undertaken.

4.16 Although the economic analysis of changes to hospital services is underway (Teamwork, 2006), it is not clear what economic analysis has been undertaken at local or Review Area levels concerning the impact on the wider economy. There is evidence of economic impacts on the local economy resulting from employment and purchasing (Holmes et al, 2006). It is important that potential changes to the economy resulting from MiB are considered as part of the Economic Development Plan cycle at local level and the North-West Development Agency’s Regional Economic Strategy.

4.17 Local planning authorities are in the process of defining land use for the next 10 years in the new Core Strategies (these replace the Unitary Development Plans). It will be important for MiB associated estate strategy and land use needs to be built into regional and local Core Strategies.
Conclusion

4.18 There is general coherence between MiB’s vision and principles and national and international policy. Evidence, e.g., from the financial assessment (Teamwork, 2006), suggests close correlation of the MiB proposals with the requirements of the European Working Time Directive. Although there is a clear commitment to a model of care which shifts care closer to home as described in both the MiB Discussion and Consultation Documents, the MiB Consultation Document was focused on describing specific proposals for hospital-based care; it is recognised that work is underway to further develop these shared models of care and clinical guidelines, e.g., additional models for community-based obstetric care. Although equity is a decision-making criterion for MiB there is no reference to the headline indicator to reduce infant mortality between socioeconomic groups and the potential impact of MiB. In addition it has not been possible to assess how the health and service needs of vulnerable groups, e.g., people of different ethnicity, have been considered within the MiB proposals’ development, although it is acknowledged that an equity analysis of the options has been undertaken, the validity of which is being determined elsewhere. There is a clear interdependence of health service reconfigurations between health economies but there appear to be different decision-making timetables (e.g., Healthy Futures and East Lancashire reconfiguration programmes); it is understood (L.Klein, personal communication, 6 December 2006) that this should be resolved through the documented process.
5. Profile

Introduction
5.1 This section presents a community profile of the Review area. The profile has been developed to assist in understanding the context within which the proposed changes are taking place and identifying local circumstances that could result in some population groups being particularly affected by the changes. It includes information about demography, health status, socio-economic status and other factors that affect health. Data has been gathered from a variety of sources including the 2001 census, the 2004 Indices of Deprivation and Primary Care Trusts (PCTs) within the review area. The North-West Public Health Observatory was also commissioned to provide profiling data for MiB and elements have been incorporated into this profile.

5.2 The HIA has often had to rely on pieces of data collection and analysis work that were commissioned as part of the planning process. Due to changes during the planning and decision making process, these data and analysis are not consistent with regards to geography (PCT, Local Authority, LSOA, Review area etc). Additionally the Review area itself has also changed alongside the number of options. This makes it difficult to compare the different pieces of work and sets of data. There is also a risk that some areas and population groups may have been missed in some of the analysis, which could mean that potential impacts of the options on particular areas or population groups may be overlooked. A particular issue is that data for hospital catchment areas was not available for this HIA. This makes it more difficult to assess the potential impacts of different options on population groups. These points will be explored later.

The review area
5.3 The review area covers 3.1 million people in Greater Manchester, East Cheshire and High Peak areas (see Figure 5-1). When the MiB options were developed the review area covered 17 Primary Care Trusts (PCT). Due to reconfiguration there are now 13 PCTs.
Figure 5-1 The review area
Population and projections

5.4 The age structure of the different local authorities in the review area is important for the planning of maternity and child care services and to assess the impacts of the MiB as it identifies how many people potentially rely on the health service in the area. With regards to maternity service provision population figures alone are not sufficient, the fertility rates in the respective areas also need to be investigated. In general, southern parts of the review area have a higher proportion of elderly people (Figure 5-2) whereas Manchester has the highest proportion of young people and people aged 20-44, which is the main childbearing age group. A more in-depth analysis at a smaller geographical level may reveal further differences between and within communities.

Figure 5-2 Percentage of population in age groups across review area, 2001 (ONS)

Households

5.5 Lone parent and low income households may face particular challenges in accessing health services. In particular single parents experience greater difficulties in accessing transport services (see Table 8-1). North, South and Central Manchester PCTs have the highest percentage of lone parent households with dependent children in the review area (12, 11, and 10% respectively). This is above the North-West average (8%). In contrast values in High Peak and Dales, Rochdale, Eastern Cheshire and Trafford South are lowest (4, 5, 5, and 5 % respectively).
Figure 5-3 Percent of Lone Parent Households with Dependent Children in review area PCTs compared to North-West, 2001 (ONS)

Ethnicity

5.6 Collecting data on ethnicity is a challenge because of the subjective, multifaceted and changing nature of ethnic identification. Haskey et al (2002) noted three aspects of ethnicity that add complexity to the projection of fertility rates:

- self-identity for adults, which is subjective and so likely to change over time;
- ascription of ethnic group for children is made by someone else and;
- the traditional components of fertility, migration and mortality lack ethnic dimension.
5.7 There are a variety of ethnic group classifications in the UK, none of which stand alone. Comparing populations even over a single decade has been shown to be difficult (Afkhami, 2006). It is unwise to rely on the aggregated 5 main ethnic group options of the 2001 Census, as this conceals much heterogeneity between ethnic groups. Where local categorisations are used, they should map back to the full 2001 Census classification (Aspinall and Jacobson, 2006). Dimensions of ethnicity can include:

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<th>Country of birth (CoB)</th>
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<tr>
<td>Language spoken at home</td>
<td>Parents CoB and respondent CoB</td>
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<tr>
<td>Skin colour</td>
<td>National/geographical origin</td>
</tr>
<tr>
<td>Racial group</td>
<td>Religion</td>
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(source: Afkhami, 2006)

5.8 There have been three demographic stages of settlement in the UK:
1. Immigration of pioneers and their reunified families;
2. Family building and children born in the UK;

5.9 Each stage establishes different communities, which may be ethnically diverse at stage 2, where more affluent families and individuals have moved away from these areas where social and family support is plentiful, but housing and health is poor (Afkami, 2006). Country of birth of the mother is now a poor proxy for ethnicity due to immigrant populations reaching the second demographic stage of settlement. (Aspinall and Jacobson, 2004).

5.10 As the ethnic population of the UK matures, subsequent generations and children of mixed relationships will be more difficult to attribute to an ethnic group. This could affect the projection of fertility rates as follows:
- Convergence with UK born white population.
- Cultural retention among some groups, notably Pakistani and Bangladeshi populations.
- Upwardly mobile groups display lower fertility rates
- Divergence, with immigration from higher fertility non UK areas.

(Sporton and White, 2002).

5.11 There are some distinct differences in the ethnic make up of PCTs within the review area (Figure 5-4). Overall the population of the review area is predominantly white. 12 of the 17 review PCTs have over 90% white population ranging from 91% in Burnley, Pendle and Rossendale PCT to 99% in Ashton, Leigh and Wigan PCT and High Peak and Dales PCT. In the 5 PCTs with less than 90% white population this ranges from 69% in Central Manchester PCT to 89% in South Manchester PCT. In general the review area has higher proportions of people identifying themselves as Asian than the England average. However this does range from 15% in Central Manchester to 0.2% in High Peak and Dales PCT. Central Manchester appears to be the most ethnically diverse area with 31% of the population being non-white and large proportions of Asians, Blacks and Chinese. There are some Lower Super Output Areas\(^1\) (LSOA) which have been identified as having predominant non-white ethnic groups (<66% white) (NWPHO, 2006). These areas appear to be clustered around; St Marys, Rochdale, Fairfield, Royal Oldham, Royal Bolton, North Manchester and Tameside Hospitals (Figure 5-5)\(^2\).

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\(^1\) Super Output Areas (SOAs) are a geographic hierarchy introduced in 2004 by the Office for National Statistics. They are designed to improve the reporting of small area statistics in England and Wales and boundaries are intended to remain stable over time. Thus making analysis of trends over time a lot easier. LSOA cover a mean of 1500 population and Middle Super Output Areas (MSOA) a mean of 7200 population.

\(^2\) It should be noted that it is not possible to identify the actual proportion of these ethnic groups within the LSOA’s identified as being predominantly non-white.
Figure 5-4 Percentage of ethnic minority groups in PCTs within the review area, 2001 (ONS)

- Central Manchester PCT
- Rochdale PCT
- North Manchester PCT
- Trafford North PCT
- Bolton PCT
- South Manchester PCT
- Bury PCT
- Burnley, Pendle and Rossendale PCT
- Tameside and Glossop PCT
- Trafford South PCT
- Stockport PCT
- Salford PCT
- Heywood and Middleton PCT
- Ashton, Leigh and Wigan PCT
- High Peak and Dales PCT
- England
- North West

Legend:
- Chinese or other ethnic group
- Black or black British
- Asian or Asian British
- Mixed

%
5.12 Analysis by lifestyle group was carried out using the People & Places (P&P) geodemographic classification. P&P groups people into a series of clusters based on them having similar characteristics (Wood et al. 2006). An analysis of the review area by the NWPHO (2006) showed that some groups have characteristics that make them particularly vulnerable to potential impacts resulting in changes to services. For example, ‘Multicultural Centres, Disadvantaged Households’ and Urban Challenge’ area have:

- significantly higher general fertility rates than the rest of the review area (87, 73, 70 respectively) compared with review area average (57);
- higher rates of low birthweight babies (<2.5kg) (124, 102, 110 respectively) compared with an average of 83 in the review area
- higher rates of infant and child mortality (111, 80 and 97 respectively) compared with an average of 59 in review area.

For more detailed information see NWPHO (2006)
5.13 Figure 5-6 shows the P&P classification by LSOA within the review area. This map can be used to identify areas within the review area that have populations that may be particularly vulnerable to impacts resulting from the different options. For example, around Rochdale, Royal Bolton, Royal Oldham St Marys and Tameside Hospitals there appear to be high proportions of 'Multicultural Centres'.

Figure 5-6 P² People & Places © lifestyle classification by LSOA

However it should be noted that the size of LSOA is determined by population and not geography. Consequently LSOAs in rural areas, which are less densely populated, are bigger in size than those in densely populated central city areas. Maps which do not clearly show the boundaries between LSOA are therefore difficult to interpret.
Deprivation

5.14 Both individual and neighbourhood deprivation increases the risk of poor general and mental health (Stafford, 2003). Within the review area there are large differences in levels of deprivation. For example 72% of LSOAs in Manchester local authority are in the ‘most’ deprived national deprivation quintile compared to 3% in Macclesfield (Figure 5-7).

Figure 5-7 Percentage of Lower Super Output Areas in the ‘most’ deprived quintile nationally by review area local authority (Wood et al, 2005)
Infant and child mortality

5.15 The infant mortality rate (IMR) is the number of newborns dying under a year of age divided by the number of live births during the year; the child mortality rate is the number of children (0-14) dying per 100,000 population of that age group. Infant and child (0-14) mortality rates vary across the review area. The most deprived areas have significantly higher infant and child mortality rates and infant and child mortality rates in the most deprived quintile (83, 3) are more than twice compared to those in the least deprived quintile (NWPHO, 2006). There are also differences
between PNWEG areas\textsuperscript{4}. White areas have lower than average rates than the review area (55, 60). Due to low numbers in Indian, Bangladeshi, Black and Chinese PNWEG areas rates should be viewed with caution. Pakistani PNWG areas do however have significantly higher rates than the review area overall (110 (95\% CI= 93-127) and 60 (95\% CI= 57-63) respectively).

5.16 Compared to developing countries IMRs are low in western countries. Due to the small numbers at PCT and local authority level IMRs can fluctuate considerably from one year to another and confidence intervals are accordingly large. Consequently it is difficult to make comparisons between areas within the review area as illustrated in Figure 5-10. The only significant difference between PCTs in the Review Area is at the extreme ends of the scale with Eastern Cheshire and Trafford South having lower IMRs than the review area average and Burnley, Pendle and Rossendale PCT and North Manchester PCT having significantly higher rates.

\textsuperscript{4} Predominant Non-White Ethnic Groups (PNWEG) have been derived by identifying the LSOAs where the White population comprises less than 66\% of the overall population and assigning these to the predominant non-White ethnic group within each of the respective LSOAs
Figure 5-9 Infant and child mortality by MSOA, 2001-2005
Population projections

5.17 The population of 0-14 year olds within the review area is expected to steadily decrease from 530,000 (2005) to 511,000 in 2012 (see Figure 5-11). There is then estimated to be a gradual increase peaking at 528,000 in 2026. The population projections for females of child bearing age (15-44) are expected to follow a slightly different pattern; current projections estimate that numbers will peak in 2007 at 610,000, steadily decrease to 587,000 in 2018 and then gradually increase to 599,000 in 2024 and then decrease again (see Figure 5-12). However it is very difficult to project populations for two decades in advance, because the proportion of migration in and out of communities is very difficult to estimate in advance. These figures are only estimates and need to be treated with care.
5.18 The actual and projected number of births within the review area is also very important for maternity services planning. Table 5-1 gives an overview of future estimated numbers of births within the review area. The numbers of births within local authorities in the review area are expected to decline during the next couple of decades (ONS). However, these figures are based
on 2003 population projections and updated projections based on the latest, 2004 population projections, may differ slightly.

Table 5-1 Actual and projected number of births within Local Authorities in the review area

<table>
<thead>
<tr>
<th>Number of Births</th>
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<th>2005</th>
<th>2010</th>
<th>2020</th>
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<td>Bolton</td>
<td>3498</td>
<td>3,576</td>
<td>3200</td>
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<td>3000</td>
</tr>
<tr>
<td>Bury</td>
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<td>2200</td>
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</tr>
<tr>
<td>Manchester</td>
<td>6111</td>
<td>6,707</td>
<td>6300</td>
<td>6400</td>
<td>6300</td>
</tr>
<tr>
<td>Oldham</td>
<td>3117</td>
<td>3,200</td>
<td>3000</td>
<td>3100</td>
<td>3000</td>
</tr>
<tr>
<td>Rochdale</td>
<td>2917</td>
<td>2,853</td>
<td>2700</td>
<td>2600</td>
<td>2500</td>
</tr>
<tr>
<td>Salford</td>
<td>2862</td>
<td>2,915</td>
<td>2700</td>
<td>2800</td>
<td>2700</td>
</tr>
<tr>
<td>Stockport</td>
<td>3323</td>
<td>3,151</td>
<td>2900</td>
<td>3000</td>
<td>2900</td>
</tr>
<tr>
<td>Tameside</td>
<td>2832</td>
<td>2,533</td>
<td>2500</td>
<td>2500</td>
<td>2400</td>
</tr>
<tr>
<td>Trafford</td>
<td>2534</td>
<td>2,631</td>
<td>2600</td>
<td>2700</td>
<td>2700</td>
</tr>
<tr>
<td>Wigan</td>
<td>3808</td>
<td>3,695</td>
<td>3300</td>
<td>3300</td>
<td>3100</td>
</tr>
<tr>
<td>Greater Manchester</td>
<td>33257</td>
<td>33544</td>
<td>31300</td>
<td>31800</td>
<td>30700</td>
</tr>
</tbody>
</table>


Fertility rates

5.19 The general fertility rate (GFR) is defined as the number of live births per thousand females aged 15-44. Alongside population figures and projections GFR is essential for planning of maternity services. Projections of GFR suggest that the general fertility rates will remain fairly constant over the next couple of decades (Harwood, 2005). The GFR in the review area is 57 which is slightly above the GFR for the Northwest (56) and that of England (55). Oldham and Rochdale PCTs have the highest GFR within the review area (69) and South Manchester PCT has the lowest (48) (Figure 5-13).
Areas within the Review Area with higher percentages of women within the most deprived quintile are more likely to have higher general fertility rates (69 per 100 females) compared to the other quintiles (49-50 per 1000 females) (NWPHO, 2006). The percentage of LSOA within the most deprived quintile within Local Authorities in the review area ranges from 3% in Macclesfield to 72% in Manchester (see Figure 5-7). There are also differences between areas with differing predominant ethnic groups (see Figure 5-6). The GFR in predominantly white areas is 55 which is just below the average for the whole area. In comparison areas with Chinese as the predominant non white ethnic group (PNWEG) have very low fertility rates (14) whereas Bangladeshi PNWEG areas have high fertility rates (130). In general PNWEG areas with the exception of Chinese have significantly higher GFR than other areas.

**Birth weight**

Low birth weight is a major cause of infant mortality in developed countries (Stevens-Simon and Orleans 1999) and low birth weight infants are at increased risk for certain illnesses later in life. Infants weighing less than 2,500 g are approximately 20 times more likely to die than heavier babies (Kramer 1987). Women living in areas with high levels of deprivation are more likely to have low birth weight babies (LBW) (NWPHO, 2006). Birth weight also varies across ethnic groups. Within the review area Indian PNWEG areas have significantly higher than average low birth weight babies (143 compared with 85 for the review area). Pakistani, Bangledeshi and Black PNWEG areas also have significantly higher rates of low birthweight babies (122, 114 and 107 respectively) whereas Chinese PNWEG areas have lower rates of LBW than the rest of the review area. It should be noted that research suggests that some ethnic groups have naturally lower birth weight babies and that babies that are normal birth weight for that ethnic group but lower than average weight compared to overall birth weights do not necessarily suffer from the same level of low birth weight associated problems (Vangen et al 2002). This means that it is important to also consider low birth weight relative to ethnicity.

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5.20 Areas within the Review Area with higher percentages of women within the most deprived quintile are more likely to have higher general fertility rates (69 per 100 females) compared to the other quintiles (49-50 per 1000 females) (NWPHO, 2006). The percentage of LSOA within the most deprived quintile within Local Authorities in the review area ranges from 3% in Macclesfield to 72% in Manchester (see Figure 5-7). There are also differences between areas with differing predominant ethnic groups (see Figure 5-6). The GFR in predominantly white areas is 55 which is just below the average for the whole area. In comparison areas with Chinese as the predominant non white ethnic group (PNWEG) have very low fertility rates (14) whereas Bangladeshi PNWEG areas have high fertility rates (130). In general PNWEG areas with the exception of Chinese have significantly higher GFR than other areas.

5.21 Low birth weight is a major cause of infant mortality in developed countries (Stevens-Simon and Orleans 1999) and low birth weight infants are at increased risk for certain illnesses later in life. Infants weighing less than 2,500 g are approximately 20 times more likely to die than heavier babies (Kramer 1987). Women living in areas with high levels of deprivation are more likely to have low birth weight babies (LBW) (NWPHO, 2006). Birth weight also varies across ethnic groups. Within the review area Indian PNWEG areas have significantly higher than average low birth weight babies (143 compared with 85 for the review area). Pakistani, Bangledeshi and Black PNWEG areas also have significantly higher rates of low birthweight babies (122, 114 and 107 respectively) whereas Chinese PNWEG areas have lower rates of LBW than the rest of the review area. It should be noted that research suggests that some ethnic groups have naturally lower birth weight babies and that babies that are normal birth weight for that ethnic group but lower than average weight compared to overall birth weights do not necessarily suffer from the same level of low birth weight associated problems (Vangen et al 2002). This means that it is important to also consider low birth weight relative to ethnicity.
Figure 5-14 low birth weight babies (< 2.5 kg) by MSOA, 2000-2005 (NWPHO)
Health service access and care

Home birth

5.22 The rate for home birth in the review area (1.5%) is slightly below the England rate (2.23%).

Table 5-2 Home and hospital births across the review area 2004/05

<table>
<thead>
<tr>
<th>Trust</th>
<th>Total</th>
<th>Hospital Births</th>
<th>Home Births</th>
<th>% Home Births</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bolton Hospital NHS Trust</td>
<td>4224</td>
<td>4159</td>
<td>53</td>
<td>1.25%</td>
</tr>
<tr>
<td>East Cheshire NHS Trust</td>
<td>1953</td>
<td>1930</td>
<td>23</td>
<td>1.18%</td>
</tr>
<tr>
<td>Fairfield General Hospital</td>
<td>2442</td>
<td>2410</td>
<td>21</td>
<td>0.86%</td>
</tr>
<tr>
<td>St Mary's Hospital for Women and Children</td>
<td>4844</td>
<td>4787</td>
<td>57</td>
<td>1.18%</td>
</tr>
<tr>
<td>North Manchester General Hospital</td>
<td>2587</td>
<td>2503</td>
<td>61</td>
<td>2.36%</td>
</tr>
<tr>
<td>Rochdale Infirmary</td>
<td>2127</td>
<td>2098</td>
<td>27</td>
<td>1.27%</td>
</tr>
<tr>
<td>Royal Oldham Hospital</td>
<td>3100</td>
<td>3003</td>
<td>94</td>
<td>3.03%</td>
</tr>
<tr>
<td>Salford Royal Hospital NHS Trust</td>
<td>2680</td>
<td>2657</td>
<td>3</td>
<td>0.11%</td>
</tr>
<tr>
<td>South Manchester University Hospital NHS Trust</td>
<td>2923</td>
<td>2891</td>
<td>31</td>
<td>1.06%</td>
</tr>
<tr>
<td>Stockport NHS Foundation Trust</td>
<td>3452</td>
<td>3339</td>
<td>94</td>
<td>2.72%</td>
</tr>
<tr>
<td>Tameside &amp; Glossop Acute Services</td>
<td>2446</td>
<td>2391</td>
<td>34</td>
<td>1.39%</td>
</tr>
<tr>
<td>Trafford Healthcare NHS Trust</td>
<td>1467</td>
<td>1425</td>
<td>35</td>
<td>2.39%</td>
</tr>
<tr>
<td>Wrightington, Wigan and Leigh NHS Trust</td>
<td>2927</td>
<td>2865</td>
<td>38</td>
<td>1.30%</td>
</tr>
<tr>
<td>Total</td>
<td>37029</td>
<td>36458</td>
<td>571</td>
<td>1.54%</td>
</tr>
</tbody>
</table>

Employment

5.23 Employment is a major determinant of health and MiB will potentially impact on numbers, location and types of jobs in hospitals and community based services. Unemployment levels within the review area range from 3% in Macclesfield to 9% in Manchester.
5.24 The National Health Service (NHS) is the largest employer in Western Europe and the largest employer of ethnic minority workers in Britain (Culley, 2001). The proportion of NHS employees who identify themselves as belonging to ethnic minority groups is much higher than the proportion of the ethnic minority population within the general population (40%, 7%) (See Figure 5-16). Changes in employment resulting from MiB could impact on the health and well-being of employees, their families and local communities.

5.25 Data on NHS employment within the review area was not available for the HIA, however it is understood that this is contained in the final Teamwork Report (Klein, personal communication, 6th December 2006). However an earlier financial report did identify the number of additional doctors and nurses required, without detailing changes in locations and numbers of staff by option or any information on non-clinical staff.
Figure 5-16 NHS workforce from ethnic minority population compared to general population by region, Sept 2004 (DH Workforce survey)
Transport

5.26 Transport policies are recognised as having inequitable effects on minorities ‘often restricting their ability to access social and economic opportunities, including job opportunities, education, health care services… and other places’ (Sánchez et al 2003). The following data shows the percentages of populations affected by the reconfiguration options A to I. This summary data provides an indication of the differential impacts of the options. However, the number of people affected should also be considered, together with the severity of effect in terms of the length of delays to journeys and the characteristics of the populations affected.

Table 5-3 Changes in travel time by public transport for scenarios A to I by percentage of population affected – Peak Time

<table>
<thead>
<tr>
<th>Option</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>Fa</th>
<th>Fb</th>
<th>G</th>
<th>Ha</th>
<th>Hb</th>
<th>I</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Change</td>
<td>79.1</td>
<td>71</td>
<td>75.2</td>
<td>75.3</td>
<td>76.1</td>
<td>75.4</td>
<td>72.3</td>
<td>75.4</td>
<td>75.9</td>
<td>69.7</td>
</tr>
<tr>
<td>Change</td>
<td><strong>20.9</strong></td>
<td><strong>29</strong></td>
<td><strong>24.8</strong></td>
<td><strong>24.7</strong></td>
<td><strong>23.9</strong></td>
<td><strong>24.6</strong></td>
<td><strong>27.7</strong></td>
<td><strong>24.6</strong></td>
<td><strong>24.1</strong></td>
<td><strong>30.3</strong></td>
</tr>
<tr>
<td>Extra 10 mins</td>
<td>9.5</td>
<td>12.4</td>
<td>10.7</td>
<td>11.2</td>
<td>12.4</td>
<td>12.6</td>
<td>13.6</td>
<td>9.9</td>
<td>10.9</td>
<td>13</td>
</tr>
<tr>
<td>Extra 20 mins</td>
<td>6.8</td>
<td>10.2</td>
<td>8.2</td>
<td>9.5</td>
<td>6.7</td>
<td>7</td>
<td>8.5</td>
<td>8.7</td>
<td>7.6</td>
<td>10.3</td>
</tr>
<tr>
<td>Extra 30 mins</td>
<td>2.3</td>
<td>3.3</td>
<td>2.8</td>
<td>2.7</td>
<td>2.3</td>
<td>2.5</td>
<td>2.4</td>
<td>3</td>
<td>2.9</td>
<td>4.4</td>
</tr>
<tr>
<td>Extra 40 mins</td>
<td>0.5</td>
<td>0.6</td>
<td>0.6</td>
<td>0.2</td>
<td>0.4</td>
<td>0.4</td>
<td>0.5</td>
<td>0.5</td>
<td>0.5</td>
<td>0.3</td>
</tr>
<tr>
<td>Extra 50 mins</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
<td>1.2</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
<td>0</td>
</tr>
<tr>
<td>Now more than 60 mins</td>
<td>1.7</td>
<td>2.5</td>
<td>2.5</td>
<td>0</td>
<td>1.9</td>
<td>2</td>
<td>2.7</td>
<td>2.4</td>
<td>2.1</td>
<td>1.7</td>
</tr>
</tbody>
</table>

Source: adapted from JMP Consulting (2006)

5.27 Figures highlighted in red have the least percentage impact on journey times for single time periods.

Table 5-4 Changes in travel time by public transport for scenarios A to I by percentage of population affected – Off Peak

<table>
<thead>
<tr>
<th>Option</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>Fa</th>
<th>Fb</th>
<th>G</th>
<th>Ha</th>
<th>Hb</th>
<th>I</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Change</td>
<td>79.4</td>
<td>72</td>
<td>77.6</td>
<td>75.4</td>
<td>77.5</td>
<td>78.2</td>
<td>75.9</td>
<td>77.5</td>
<td>77.7</td>
<td>73.9</td>
</tr>
<tr>
<td>Change</td>
<td><strong>20.6</strong></td>
<td><strong>28</strong></td>
<td><strong>22.4</strong></td>
<td><strong>24.6</strong></td>
<td><strong>22.5</strong></td>
<td><strong>21.8</strong></td>
<td><strong>24.1</strong></td>
<td><strong>24.6</strong></td>
<td><strong>22.3</strong></td>
<td><strong>26.1</strong></td>
</tr>
<tr>
<td>Extra 10 mins</td>
<td>7</td>
<td>10.5</td>
<td>8</td>
<td>10.1</td>
<td>10</td>
<td>8.9</td>
<td>10.7</td>
<td>9.9</td>
<td>9.1</td>
<td>12</td>
</tr>
<tr>
<td>Extra 20 mins</td>
<td>6.4</td>
<td>9.4</td>
<td>7.4</td>
<td>9.2</td>
<td>6.2</td>
<td>6.9</td>
<td>7.2</td>
<td>7.7</td>
<td>7.1</td>
<td>8.3</td>
</tr>
<tr>
<td>Extra 30 mins</td>
<td>3.3</td>
<td>3.8</td>
<td>2.8</td>
<td>3.3</td>
<td>2.5</td>
<td>2.2</td>
<td>2</td>
<td>2.7</td>
<td>2.4</td>
<td>3</td>
</tr>
<tr>
<td>Extra 40 mins</td>
<td>0.6</td>
<td>0.6</td>
<td>0.6</td>
<td>0.2</td>
<td>0.5</td>
<td>0.5</td>
<td>0.5</td>
<td>0.5</td>
<td>0.5</td>
<td>0.5</td>
</tr>
<tr>
<td>Extra 50 mins</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
<td>1.5</td>
<td>3</td>
<td>3.1</td>
<td>3.3</td>
<td>3.5</td>
<td>2.8</td>
<td>2</td>
</tr>
</tbody>
</table>

Source: adapted from JMP Consulting (2006)

Table 5-5 Changes in travel time by car for scenarios A to I by percentage of population affected – Peak Time

<table>
<thead>
<tr>
<th>Option</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>Fa</th>
<th>Fb</th>
<th>G</th>
<th>Ha</th>
<th>Hb</th>
<th>I</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Change</td>
<td>78.3</td>
<td>71.5</td>
<td>77.4</td>
<td>76.2</td>
<td>79.6</td>
<td>77.3</td>
<td>78.8</td>
<td>77.5</td>
<td>75.9</td>
<td>73.8</td>
</tr>
<tr>
<td>Change</td>
<td><strong>22.7</strong></td>
<td><strong>28.5</strong></td>
<td><strong>22.6</strong></td>
<td><strong>23.8</strong></td>
<td><strong>20.4</strong></td>
<td><strong>22.7</strong></td>
<td><strong>21.2</strong></td>
<td><strong>22.5</strong></td>
<td><strong>24.1</strong></td>
<td><strong>26.2</strong></td>
</tr>
<tr>
<td>Extra 10 mins</td>
<td>16</td>
<td>21.7</td>
<td>16.6</td>
<td>21</td>
<td>15.4</td>
<td>17.3</td>
<td>15.9</td>
<td>16.4</td>
<td>18.3</td>
<td>21.3</td>
</tr>
<tr>
<td>Extra 20 mins</td>
<td>4.5</td>
<td>5.5</td>
<td>4.8</td>
<td>2.9</td>
<td>3.7</td>
<td>4.2</td>
<td>4</td>
<td>4.8</td>
<td>4.5</td>
<td>4.9</td>
</tr>
<tr>
<td>Extra 30 mins</td>
<td>1.3</td>
<td>1.3</td>
<td>1.3</td>
<td>0</td>
<td>1.3</td>
<td>1.3</td>
<td>1.3</td>
<td>1.3</td>
<td>1.3</td>
<td>0</td>
</tr>
</tbody>
</table>

Source: adapted from JMP Consulting (2006)
Table 5-6 Changes in travel time by car for scenarios A to I by percentage of population affected – Off Peak

<table>
<thead>
<tr>
<th>Option</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>Fa</th>
<th>Fb</th>
<th>G</th>
<th>Ha</th>
<th>Hb</th>
<th>I</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Change</td>
<td>82.1</td>
<td>75.7</td>
<td>80.7</td>
<td>80.5</td>
<td>84.1</td>
<td>81.1</td>
<td>83.9</td>
<td>81.2</td>
<td>79.8</td>
<td>77.2</td>
</tr>
<tr>
<td>Change</td>
<td>17.9</td>
<td>24.3</td>
<td>19.3</td>
<td>19.5</td>
<td>15.9</td>
<td>18.9</td>
<td>16.1</td>
<td>18.8</td>
<td>20.2</td>
<td>22.8</td>
</tr>
<tr>
<td>Extra 10 mins</td>
<td>16.3</td>
<td>22.6</td>
<td>17.6</td>
<td>19.5</td>
<td>14.3</td>
<td>17.3</td>
<td>14.5</td>
<td>17.2</td>
<td>18.6</td>
<td>22.3</td>
</tr>
<tr>
<td>Extra 20 mins</td>
<td>1.7</td>
<td>1.7</td>
<td>1.7</td>
<td>0</td>
<td>1.6</td>
<td>1.6</td>
<td>1.6</td>
<td>1.6</td>
<td>1.6</td>
<td>0.5</td>
</tr>
</tbody>
</table>

Source: adapted from JMP Consulting (2006)

5.28 An analysis of the full data presented by JMP considering percentage and number of people affected, and the severity of effect for both public transport and car users, indicates that option D is likely to have the least impact on journey times, followed by option I and option Fa. However, these figures do not demonstrate the distribution of effects in relation to the characteristics of the populations affected; the impacts of increased journey times and related costs may be more severe on disadvantaged groups. Figures do not cover weekend travel times. Sunday public transport services are limited.
6. Evidence from the literature

Introduction

6.1 This section presents evidence from the scientific literature and publications (e.g., clinical audits, guidelines) concerning models of care for maternity, neonatal and paediatric services and their impact on maternal, neonatal and paediatric outcomes. In addition, evidence of the health experience of ethnic minorities and the potential effects of the service changes on them was examined. Databases at the Cochrane Centre, the Centre for Reviews and Dissemination, York, the World Health Organisation (international and Europe), the Confidential Enquiry into Maternal and Child Health, the Confidential Enquiry into Stillbirth and Deaths in Infancy, Royal College of Obstetricians and Gynaecologists, Royal College of Midwives and the Department of Health were searched. Priority was given to 'reviews of reviews' and systematic reviews. It should be noted that the limitations of the HIA, particularly the relatively short reporting requirements, prohibited a comprehensive literature search.

Maternity services and maternal health and well-being

6.2 Maternal mortality (a measure of the risk of death associated with each pregnancy) in developed countries such as the UK has reduced significantly over the last 20 years or so. In 2000 in the UK the maternal mortality ratio was 11 deaths per 100,000 live births, compared with 10 in Poland, 14 in the USA and 58 in Romania (WHO, 2005). However this is not the case across the world or even Europe with mortality rates in some parts of Eastern Europe increasing between 1995 and 2002 (WHO, 2005).

6.3 Nearly two thirds of maternal deaths in developed countries are due to a limited range of direct causes (Khan et al, 2006):

- Hypertension (pre-eclampsia/eclampsia)
- Embolism
- Haemorrhage
- Abortion
- Ectopic pregnancy
- Sepsis (infection)
- Other direct causes

6.4 Direct causes of maternal deaths are those due to pregnancy and childbirth. Indirect causes of death are deaths due to pre-existing conditions, such as congenital heart disease, which may be aggravated by pregnancy. In the UK, ‘Why Mothers Die, 2000-2002’, the Confidential Enquiry into Maternal and Child Health (CEMACH, 2004), recorded 391 maternal deaths for the triennium, a mortality ratio of 13.1 per 100,000 births: 106 (27%) direct, 155 (40%) indirect, 36 (9%) coincidental (causes unrelated to pregnancy) and 94 (24%) late (6 weeks to a year after delivery). There was an increase in direct deaths due to haemorrhage and those associated with anaesthesia. The most common cause of indirect deaths in the UK, and the largest cause of maternal deaths overall, was due to psychiatric illness.

6.5 The risk of maternal death is highest at the intrapartum (labour and delivery) and immediate post partum period (up to the 42nd day after birth). Between 11% and 17% of maternal deaths happen during childbirth itself and between 50% and 71% in the postpartum period, usually within the first 24 hours of birth (WHO, 2005).

6.6 There are a number of risk factors that may play a part in maternal deaths in the UK according to CEMACH (2004):
- Social disadvantage – women were 20 times more likely to die if they were from a family where both partners are unemployed; 3 times more likely if a single mother;
- Poor communities – women from the most deprived areas had a 45% greater risk of dying compared with women from more affluent areas;
- Ethnic minority groups – women from ethnic minority groups were 3 times more likely to die than white women;
- Black African women – especially new asylum seekers/refugees were 7 times more likely to die than white women and had major problems accessing health care;
- Late booking or poor attendance – 20% of women who died from direct or indirect causes booked for maternity care after 22 weeks of gestation or had missed 4 routine antenatal visits;
- Obesity – 35% of all women who died were obese;
- Domestic violence – 14% of all women who died had previously reported being subject to violence at home;
- Substance misuse – 8% of all women who died were substance misusers.

6.7 It is important to recognise these risk factors and conditions, although it is unclear whether they affect maternal outcomes directly or if they operate through subtle and indirect pathways. It has been suggested that differences in risk may relate to the population sub-group, e.g., ethnicity, race, whereas others are specific to individuals (Kunst & Houweling, 2001 in Rosmans et al, 2006). In the USA, economic factors cannot explain the higher risk of death in black versus Hispanic women as they have equivalent poverty status (Hoyert et al, 2000 in Rosmans et al, 2006). Another U.S. study (Colen, C.G. et al, 2006) showed that while the probability of giving birth to a low birthweight baby decreases markedly with increases in adult family income for white women who were poor as children, the same does not hold true for their black counterparts. Similarly, immigrant women in England and Wales who died of maternal causes were more likely to come from higher income families compared with non-immigrant women who died from these causes (Ibison et al, 1996 in Rosmans et al, 2006).

6.8 Some studies have identified the quality of clinical care as a causal factor (e.g., Freedman et al, 2005). As stated in the 2005 World Health Report, ‘Make Every Mother and Child Count’ (WHO, 2005):

‘Most of the deaths and disabilities attributable to childbirth are avoidable, because the medical solutions are well known. The challenge that remains is therefore not technological but strategic and organizational.’

6.9 CEMACH (2004) revealed that although there were some outstanding examples of medical and midwifery care in the face of overwhelming complications, over half of those who died in the UK had ‘some aspect of sub-standard clinical care’ and as such their deaths may have been avoidable. The causes of substandard care had not changed from previous CEMACH reports: failures in diagnoses, failures of treatment or to refer to a senior colleague, and lack of communication or teamwork both within the obstetric and midwifery teams and in multidisciplinary team working.

6.10 Specific issues identified included clinical information, which may have affected the outcome, not being passed from the general practitioner to midwifery or obstetric services at booking, or shared between consultants in other specialities, including accident and emergency staff, and the obstetric team. Misdiagnosis of pregnant women with severe complications by accident and emergency staff, including underestimating the degree of urgency and not liaising with maternity colleagues, were other failures. A new area of concern defined in the 2004 report was a failure of some staff to recognise and act on the common signs of critical illness not necessarily related to obstetric practice, e.g., pyrexia and/or rapid pulse. Even women known to be at higher risk of complications were delivered in isolated maternity units without access to blood banks, intensive care, diagnostics or skilled anaesthetic back up.

6.11 There was some evidence (CEMACH, 2004; Ronsmans et al, 2006) that social and cultural barriers between patients and health professionals may contribute to delays in and less optimal
standard care. Vulnerable and socially excluded women found it particularly hard to access or maintain access with services and follow-up for those who failed to attend was poor. Inadequate translation services for those who could not speak English were a recurrent theme (CEMACH, 2004). There is evidence that women from minority ethnic groups use antenatal services less intensively, with a higher proportion (often Asian) booking late. This has had implications for screening and other diagnostic tests being undertaken enabling potential maternal or foetal complications to be identified, e.g., South Asian women may be considerably less likely than their white counterparts to receive prenatal testing for haemoglobin disorders and Downs syndrome than white women and indeed might be less likely to be offered testing (Aspinall and Jacobson, 2004).

6.12 Recommendations for the planning of maternity services from CEMACH (2004) to reduce the risk of maternal mortality and morbidity focussed on:

- Maternity services for all – equitable, flexible care particularly for the vulnerable and hard to reach;
- Antenatal care – increasing the awareness of the importance of antenatal care, risk assessment at booking;
- Multidisciplinary care - for women at high risk, social or clinical;
- Comprehensive essential obstetric care – for women identified at risk of developing clinical problems, referral protocols for women who develop complications in pregnancy or childbirth;
- Dedicated obstetric anaesthesia – at all comprehensive obstetric-led care units;
- Specialist perinatal mental health services – for women identified at risk of serious postpartum mental illness;
- Information – on support for women.

6.13 Apart from women who die from complications of pregnancy and childbirth, many more suffer disabilities, e.g., from obstetric fistula, physical morbidity and poor mental health, such as maternal depression. Even less is known about these morbidities than maternal deaths. Waterstone et al (2001) reported a severe maternal morbidity rate of 12 per 1000 births and a severe morbidity to mortality ratio of 118:1 in the South East of England. It has been argued (Pattinson & Hall, 2003) that ‘Near miss’ audits would help to reduce morbidity and mortality by identifying system failures in the ‘clinical insult-systemic inflammatory response-organ dysfunction-organ failure-death’ continuum that may be more reliable than maternal mortality data alone; ‘Near misses’ are those women with organ dysfunction and organ failure who survive. Depression associated with pregnancy and up to a year after childbirth can be as high as 20% in some countries and has many causes. It has been estimated (WHO, 2001) that 15-20% of depressive patients end their lives by committing suicide.

6.14 Campbell and Graham (2006) indicate that there is enough evidence about how to reduce maternal mortality, the packages of interventions that are needed to do this and the ‘means of distribution’ e.g., midwife-led units, obstetric-led care. Koblinsky et al (1999) defined 4 models of delivery care:

| Model 1 | Home delivery by a non-professional, e.g., birth attendant; |
| Model 2 | Home delivery by a health professional; |
| Model 3 | Basic essential obstetric care with a health professional at a care facility, e.g., health centre; |
| Model 4 | Comprehensive essential obstetric care by health professionals at hospital facility. |

6.15 Model 1 has been shown not to be effective in reducing maternal mortality ratios (MMR) below 100. The MMR for Model 2 in the Netherlands decreased from 60 to 12 between 1955 and 1970. Model 3 includes all essential obstetric functions except surgery, anaesthesia and blood transfusion; the MMR for Malaysia (1996) was 43 and in Sri Lanka was 30. Finally Model 4, the model adopted in Northern and Western Europe, Australia, New Zealand, Japan and the USA., with a typical MMR of under 10 per 100,000. Evidence from these countries suggests that low
maternity mortality can be achieved with different health professional complements; in Sweden and
the UK midwives predominantly fill this role whereas in the USA, hospital care is largely provided
by obstetricians. The availability of comprehensive essential obstetric care, however, does not
guarantee low maternal mortality; e.g. Romania’s MMR reached 180 in the mid-1980s and Mexico
City had a rate of 114 in 1988. Over-medicalisation, poor diagnosis and inappropriate interventions
were some of the issues identified.

6.16 The safety and effectiveness of Model 3 (standalone midwife-led units) and Model 4 (hospital
based obstetric-led care) for intrapartum care have been compared in a review (Muhu &
Fischbacher, 2004). This showed maternal and neonatal morbidity (with the exception of perineal
tears) and mortality were generally rare in both midwife and obstetrician-led units. The rate of
women transferred to a hospital was 4-36% of cases, the highest rate at antenatal. The rate of
neonatal transfer was 4% which compared with admission to intensive care for neonates born in
hospital. Pethidine was used less in midwife-led units and the rate of Caesarean section was
lower. However, from the available data the authors were unable to conclude whether free-
standing midwife-led units were more or less safe or effective than hospital based obstetric-led
care.

6.17 A randomised control trial (RCT) of the effects of antenatal day care for women with three
medical complications in pregnancy was compared with traditional in-patient hospital care (Turnbull
et al, 2004). The day care was a deinstitutionalised environment (sitting room, dining area and
assessment beds) where tests were conducted on admission of women with designated disorders
(high blood pressure, proteinuria, indication of nervous system irritability or organ dysfunction,
foetal compromise) and reviewed within 3 hours; most women were discharged with no overnight
stay. The RCT reported no significant differences in maternal outcomes (complications in
antenatal, intrapartum and postnatal periods) or perinatal outcomes (Apgar scores less than or
equal to 7 at 1 and 5 minutes, neonatal deaths, complications resuscitation, days gestation, mean
weight, admission to NICU and LOS, discharges with mother). General satisfaction was higher for
the day-care group and maintained 7 weeks after delivery although there were no differences in
Edinburgh postnatal depression scores. The economic costs were slightly greater for the day care
but this was not significant. The results from the trial indicate they may be generalisable to
other settings and also other common slowly progressing medical complications.

6.18 There is some evidence for the effectiveness of care tailored to high risk groups such as
teenagers. Interdisciplinary teen-focused care as opposed to adult-focused care, for high-risk
pregnant adolescents yielded positive health outcomes for mothers (antenatal and post natal care,
lower intervention rates during delivery), and babies (higher birth weight, longer gestational age at
delivery), as well as positive social outcomes (enrolled in family support programmes) (Bensussen
& Saewyc, 2001). However the study design suggests caution in generalisation to other groups.

6.19 It should be noted that there are social and economic effects associated with poor maternal
health following childbirth. Wolfe and Hill (1995) showed that poor maternal health reduced labour-
market participation, wage rates and potential earnings. Some complications arising from
childbirth, e.g. obstetric fistula, have been shown to have potential severe social impacts including
divorce in some cultures (WHO, 2005). Maternal health also impacts on their children’s normal
development. Numerous studies across many cultures (WHO, 2006) show the value of social
support and social networks for maternal health in preparation for and following childbirth, although
this may adversely affect uptake of, e.g. antenatal care.

Neonatal services and neonatal health and well-being

6.20 Neonatal mortality rates (NMR), infant deaths under 28 days following birth, in the UK for
babies have fallen over the last 50 years or so; in 2000 the NMR was 4 per 1,000 live births in
2000 (WHO, 2005); this rate remained constant in 2001, 2002 and 2003 (CEMACH, 2005). The
total number of neonatal deaths in 2004 was 2257. However this is largely due to the fall in death
rates from low weight babies less than 1500 grams (g) due to advances in medical technology and
expertise in neonatal care; the NMR for babies over 2500 g has remained fairly constant. The NMR
in the UK compares favourably with e.g., USA (5), Poland (11) and Romania (9) but less so with e.g., Australia (3), France (2), Finland (2) and Sweden (2).

6.21 Stillbirth rates have also fallen over the last 50 years, but remain the main contributor to perinatal (stillbirth and neonatal) death. Between 2000 and 2003 the rate was at 5 per 1,000 live births (CEMACH, 2005). There were 3791 stillbirths in 2004.

6.22 The biggest cause of neonatal death was immaturity; nearly half of reported neonatal deaths in 2004 were due to this. Other major causes include:

- Congenital anomaly – 22.4%
- Intrapartum causes – 10.9%
- Infection – 6.8%
- Other specific causes – 7.1%

6.23 For stillbirths congenital anomalies (15.1%), antepartum haemorrhage (10%) and death from intrapartum causes (7.3%) are the main causes of death. Other causes relate to maternal conditions, e.g., pre-eclampsia (3.5%) and maternal disorder (4.8%). Just over half of the deaths however are unexplained antepartum deaths.

6.24 Maternal risk factors (CEMACH, 2006) associated with perinatal death includes:

- Maternal age – increased risk associated with very young mothers and those of older ages;
- Ethnicity – Black (2.7-2.8 times greater risk than White counterparts), Asian (1.6-2.0), Chinese and other (1.9);
- Deprivation – over a third of deaths were born to mothers resident in the most deprived quintile;
- Multiple births – neonatal death rates were 20.1 for multiple births compared with 4, stillbirth death rates were 17.1 compared with 5.

6.25 The highest levels of smoking among women of reproductive age were in Black Caribbean and Irish groups, but low in the Indian, Pakistani and Bangladeshi and Chinese groups. Very high rates of chewing tobacco and high rates of paan have been reported for Bangladeshi women (Aspinall and Jacobson, 2004). In the absence of robust data, pregnant women from ethnic minority groups are reported to be less likely to smoke (Aspinal & Jacobson, 2004) at booking.

6.26 There are also certain characteristics of the baby that are associated with higher rates of perinatal mortality:

- Birth weight - two-thirds of stillbirths and 70% of neonatal deaths less than 2,500 g, one third stillbirths and nearly 50% less than 1,000 g;
- Gestational age – over 70% of neonatal deaths were born before 37 weeks, three-quarters of stillbirths were delivered after 28 weeks.

6.27 There was also considerable geographical variation in perinatal rates with the North-West having a lower stillbirth rate than the rest of England, Wales & Northern Ireland, but a slightly higher neonatal rate. There were also variations by Strategic Health Authority area and Trust, with Greater Manchester having higher stillbirth and neonatal rates, but Cheshire and Merseyside having lower rates. However no allowance was made for the distribution of risk factors in these areas or patient populations.

6.28 The Confidential Enquiry into Stillbirths and Deaths in Infancy (CEDSI) (1999) noted that in over 400 stillbirths in 1996-1997 45% care had been suboptimal. Concerns regarding the quality of risk assessment antenatally and the management of foetal well-being were recurring themes. In this recent Report, particular attention was drawn a greater burden of perinatal death associated with mothers living in socially disadvantaged areas or for babies born to mothers of Black, Asian or other ethnicity (CEMACH, 2006).
6.29 A comparison of standards of care in England with 10 European countries in the EuroNatal study (CSDI, 2001) showed a range in the proportion of perinatal deaths that may or are likely to have been affected by suboptimal care from 31.9% (Finland) to 53.5% (England). It highlighted the common issues of management of the growth restricted baby and smoking cessation.

6.30 Project 27/28 studied the survival rates of babies born between 27 and 28 weeks’ gestation from 1998 to 2000 (CSDI, 2003). At this gestational age most babies are expected to survive; differences in survival rates were investigated to reveal how standards and models of care may contribute to this. During this period 3522 babies were born at 27/28 weeks with 286 born in the North-West.

6.31 Of the 294 maternity units, 77 had NICU that received routine referrals, 71 had a NICU that treated its in-house babies, 36 had no NICU and transferred some babies, and 110 had no NICU that transferred all babies. One had a NICU but no maternity unit. Nearly a quarter of the maternity units had less than 1,000 deliveries annually. These accounted for 2.4% of all deliveries in 1998, and 0.2% of 27/28 weeks’ gestation. There were 94 maternity units who reported delivering 0-10 27/28 week babies and 78 who reported none over 2 years. There were 31 NICUs who cared for less than 11 babies in the study period. Early scan information (20 weeks) was available for only 78.6% of mothers; this was much higher in the Northwest (88%). Most babies were delivered in a labour ward (3495; 99.2%). Of the 27 who were not, 21 were born at home, 3 in transit, 1 in theatre and 1 in accident and emergency. The majority of these (91%) delivered at a hospital with a NICU.

6.32 Following delivery 854 babies (24.2%) were transferred to another unit at least once within 28 days, and 238 (6.8%) were transferred within the first 24 hours. Babies in multiple births were less likely to be transferred. There was also significant regional variation in transfer with the North-West transferring more (30.1% in 28 days, 8.4% in 24 hours) than the national average.

6.33 In total 421 (12%) babies died in the first 28 days. The age of death ranged from 1.2 minutes to 28 days with the majority of deaths (71%) occurring in 7 days and 31 (7%) in the first 24 hours. The study showed that at 28 days there was an 88% survival rate. The mean survival rate for the Northwest was 87.7%; these were adjusted for birthweight, gender and gestation, but not for other factors.

6.34 Survival rates showed little difference between multiple births (86-100%) and singletons (88.4%) and hospital type the baby was delivered at (NICU, 88-89% or non-NICU, 87-89%). However, there were differences according to the gender of the baby. Female babies had higher survival rates (90%) than males (86%). Similarly survival rates increased significantly as birthweight for gestation increased, and as birthweight increased. Foetal well-being assessments were more frequent with babies who survived (26% compared with 18%). Babies with a breech presentation had a lower survival rate (84.5%) compared with cephalic presentations (89.4%). Cephalic, vaginal deliveries (spontaneous and assisted) had higher survival rates (91.7% and 91.2%) than those delivered by caesarean section (87.3%). However breech presentations delivered by section had higher survival rates (86.5% compared with 77.4%).

6.35 The survival rates of babies not transferred within 28 days was 86.2% compared with 93.7% for babies who were transferred; trend analysis shows significant increase in survival rate with the greater number of transfers. Those babies transferred within 24 hours had a survival rate of 87.8%. There was no correlation between the number of babies treated or the number of intensive care days undertaken by units and an increase in survival rates; this supports the EPIcure study (Costeloe et al, 2000). A systematic review on activity volumes and health care outcomes also concluded that volumes are not useful predictors of outcomes for individual hospitals or physicians (Halm et al, 2002). However there is also evidence from a USA. study that the larger a unit, the lower the neonatal mortality rates, although the difference in care systems may explain this in part (Phibbs et al, 1996).

6.36 The study made both clinical and organisational recommendations to contribute to increasing survival rates for premature babies:
• National guidelines and standards for in-utero and ex-utero transfers – including indications, personnel, equipment, documentation, clinical governance, training;
• Consultant neonatologist supervision for first 24 hours;
• Communication – between obstetric, midwifery and neonatal units and with mother;
• Record keeping – standardise birth, resuscitation details; care plan updated on each consultant contact.

6.37 Some of the Project 27/28 findings were supported by a study evaluating the efficiency of neonatal intensive care in Australia; in particular the survival rates of low birthweight babies was 61.1% for babies 500-749 g and 83.2% for babies 750-999 g (Doyle, 2004).

6.38 It has been argued (Martines et al, 2005; Darmstadt et al, 2005) that all health systems need to develop evidence-based cost-effective neonatal packages of interventions in family, primary and 24/7 hospital or facility based settings. Estimates suggest a potential 23-52% reduction in neonatal deaths.

6.39 There is an increased risk for those babies born small of developing cerebral palsy (DH, 2003). This condition may also be associated with learning disabilities and restricted mobility, and has implications for continuing care.

**Paediatric services and child health and well-being**

6.40 The health status of children has, in general, improved substantially over the last hundred years, with a reduction in childhood mortality matching that of the adult population. This has been due to a combination of factors, including improved social and environmental conditions such as better nutrition, sanitation and housing standards, and the introduction of universal immunisation for most of the more common infectious diseases. In the 1930s, half of all child deaths were caused by one of five infectious diseases - pneumonia, tuberculosis, diphtheria, measles and pertussis. By the 1990s, these causes accounted for only one in 150 deaths (Donaldson and Donaldson, 1993).

6.41 Today, injury and poisoning account for around a third of all deaths of children aged between one and fourteen years and cancers, particularly leukaemia in older children, making up a substantial proportion of the remainder. However, notable inequalities persist between different social groups, with the mortality rate of boys from social class five being double that of boys in social class one. The differences are most marked for accidents and respiratory diseases, both of which are closely related to the environmental conditions in which children grow up.

6.42 Children from more disadvantaged material backgrounds are also more susceptible to illness during childhood. In most cases, child development is monitored routinely through health visiting services, child health clinics and the school health service and the most common complaints, such as respiratory disease and gastrointestinal disorders, can be dealt with in primary care. Other, more serious conditions such as asthma, diabetes, epilepsy, coeliac disease and cystic fibrosis, however, need specialist acute care. In addition, there is a small group of children with chronic medical conditions such as those caused by congenital abnormalities (the most common of which are neural tube defects and Down’s syndrome) and cancers who require ongoing provision.

**Causes of ill health**

**Congenital abnormalities**

6.43 From 1989 to 2001 the number and rate of live births notified with congenital abnormalities fell from 177.4 per 10,000 to 114 per 10,000. The highest notification rates were seen in mothers aged 40 years and older (152 per 10,000 births in 2001), with the second highest rates in teenage mothers (125 per 10,000).
6.44 Although more babies with Down’s syndrome are born to younger mothers, the notification rates are highest for older women – 3 per 10,000 births to mothers aged 20 to 24 years, 13 per 10,000 at ages 35 to 39 years and 38 per 10,000 in mothers aged 40 years and over.

6.45 The highest rates of all congenital abnormalities were for babies weighing less than 2 kg and the lowest amongst babies weighing 3.5 kg and over. Multiple pregnancy also plays a part, with 111 per 10,000 twins being affected compared with 102 per 10,000 for singletons (ONS, 2006).

**Childhood cancers**

6.46 Although cancer is very rare in children, there were c.1,400 new cases diagnosed in Great Britain in 2000 and cancer accounted for around a fifth of all deaths in children aged between one and fourteen years. A third of all childhood cancers are leukaemias and a quarter are brain and spinal tumours, although different types of cancer tend to occur at different ages. It is more common amongst boys than girls and, against the trend of most other causes of mortality and morbidity, the incidence of all cancers is more common amongst children in higher socio-economic groups, particularly in early childhood. Higher rates of lymphomas and some other cancers, however, have been seen in children of Asian ethnicity. Although the incidence of childhood cancers has changed little over the past 40 years, survival rates have improved markedly as a result of medical advances so that the five year survival rate in the mid-1990s was almost 75% for all cancers and over 50% for most sites. The five year survival rate for leukaemia, the most common cause, was over 80%.

6.47 This trend also applies to longer term survival. In 1971 less than one in ten of those who had suffered childhood cancer survived to the age of thirty years compared with almost half in 2000 (ONS, 2006).

**Longstanding illness and disability**

6.48 The proportion of children with a longstanding illness or disability appears to show a rising trend since the early 1990s although the patterns of illness are changing. Between 1990 and 1998 learning disabilities were the most common condition amongst severely disabled children and adolescents whilst by 2000, autistic spectrum disorders and behavioural disorders had become more prominent and the most common medical condition was asthma, accounting for 42% of all cases.

6.49 Rates of severe disability are more common amongst boys (11 per 10,000 boys compared with 5 per 10,000 girls aged under 20 years in 2000). There is a similar inequality for mild disability but the gap is much smaller (1,900 per 10,000 boys and 1,700 per 10,000 girls). In terms of socio-economic group, the highest prevalence rates for both mild and severe disability are amongst the more disadvantaged groups (ONS, 2006).

**Asthma and allergies**

6.50 International comparisons show that, in the mid 1990s, children aged 12 to 14 years in Great Britain had some of the highest rates of asthma, eczema and hay fever in Europe. The reasons for this are unknown but these conditions, here as elsewhere, remain some of the most common chronic diseases of childhood. In 1996, over a fifth of all children aged 2 to 15 years in England had been diagnosed with asthma, 24% with eczema and 9% with hay fever and, as noted above, asthma accounted for close to half of all cases of long term illness or disability in children.

6.51 During the 1970s and 1980s the incidence of acute asthma attacks diagnosed by a GP rose markedly and this was matched by a dramatic increase in hospital admissions for asthma which had begun with a trebling of rates amongst 0 to 4 year olds and a doubling of the rates for 5 to 14
year olds from 1962 to 1969. In recent years, however, perhaps as a result of better management in primary care, both the incidence of acute asthma attacks and hospital admission rates for asthma have declined. In the 1990s hospital admission rates fell by 52% amongst children aged under 5 years and by 45% in children aged 5 to 14 years. In 2000, the rates for these two age groups stood at 48 and 16 per 10,000 children respectively.

6.52 The incidence of hay fever amongst children shows a similar pattern to asthma, with increasing rates up to the early 1990s and a subsequent decline. However, in recent years, GP weekly consultation rates have risen again and, in 2000, the rate was 21 per 100,000 children aged under 5 years and 56 per 100,000 children aged 5 to 14 years. Similarly, there was an increase in hospital admission rates for other allergic conditions - urticaria, food allergy and anaphylactic shock - in children aged under 15 years during the period 1990 to 2000.

6.53 Prevalence rates for both asthma and hay fever are more common amongst younger children in more disadvantaged socio-economic groups whilst the opposite is true for eczema rates (ONS, 2006).

**Infectious diseases**

6.54 Better socio-environmental conditions and the introduction of vaccination programmes over the last century have led to a marked decline in infectious diseases which were common in childhood for earlier generations. This in turn has led to marked improvements in childhood mortality and morbidity rates. However there has been a recent upward trend in infection rates that could reflect reduced uptake in MMR vaccination. As a result, there is evidence that rates of infectious diseases such as measles are, again, on the increase.

6.55 Immunisation rates have remained steady for other vaccines such as that for pertussis (94%) while for the meningococcal C conjugate vaccine (MCC), an uptake rate of 85% resulted in an 80% reduction in the incidence of meningococcal meningitis group C within the first 18 months of the vaccination programme.

6.56 The appearance of relatively new infectious diseases, such as HIV, poses different challenges as there is, as yet, no vaccine. From 1985 to 2001 over 1,000 children under 14 years of age were diagnosed with HIV in the United Kingdom and, of these, 27% have died. In the early years two thirds of children acquired their infection from their mother and most of the remainder were infected through blood factor treatment for haemophilia. More recently, almost all new infections in children are acquired from their mother (ONS, 2006).

**Sexual health**

6.57 Young people, particularly young women aged under 20 years are most likely to be affected by sexually transmitted infections (STIs) and this raises issues of treatment and care not only for the young women themselves but for the children of teenagers. The number of newly diagnosed STIs in England, Wales and Northern Ireland doubled between 1991 and 2001 from almost 670,000 to over 1,330,000.

6.58 In line with this overall trend, the rate of chlamydia trachomatis which, if untreated, is associated with pelvic inflammatory disease and infertility, rose in young women aged under 20 years and the highest rates were in 16 to 19 year olds (1,035 per 100,000 females in 2001). Similarly, the incidence of genital warts rose by over 15% and almost a third of females diagnosed with this condition in 2001 were aged under 20 years (680 per 100,000 females) (ONS, 2006).

**Mental health**
The term “mental illness” can encompass a wide range of conditions from mild depression and anxiety to severe psychiatric disorder, but however it is defined - or, perhaps more importantly, however mental health is defined - it is important to recognise that mental health and well-being is essential in enabling individuals and societies to function effectively.

Diagnosed rates of emotional, conduct, hyperkinetic and other less common disorders taken together are generally higher amongst boys than girls across all age groups. For example, 11.4% of boys aged 5 to 15 years suffered from one of these conditions compared with 7.6% of girls of the same age, although the prevalence of emotional disorders (anxiety and depression) was similar in both boys and girls. With the exception of hyperkinetic disorders, the prevalence rates increased from childhood to adolescence.

A strong link has been reported between mental disorder and rates of smoking, drinking and cannabis use amongst children aged 11 to 15 years in Great Britain. Over 40% of those who smoked regularly were assessed to have a mental disorder compared with around 10% overall, although it should be noted that the reasons for this correlation are unclear and may be co-dependent.

There is also a close correlation between social class and diagnosed mental disorder in children, with 14% of those in social class five being affected compared with 5% of those in social class one. The highest rate (21%) is found in children in families where no parent has ever been employed.

In addition, psychiatric disorders share many of the same risk factors as those for youth crime. Youth offenders, together with looked after children and homeless children, are often most at risk of mental ill health (ONS, 2006).

**Obesity**

Childhood obesity now threatens to become a problem of the future as the number of overweight and obese children grows, putting them at increased risk of cardiovascular diseases, diabetes and some cancers in later life. Obesity is a key risk factor for type 2 diabetes in children and young people (as well as adults); the incidence of type 2 diabetes in children and adolescents has been increasing over recent years. Once detected, it can usually be managed effectively in primary care. However, infections increase a child’s risk of diabetic ketoacidois and need careful management; similarly, hormonal changes during puberty can also increase insulin resistance (Copeland et al, 2005; Khan, 2000). There is evidence that the prevalence of obesity is increasing, with girls a little worse than boys. This is often related to poor nutrition and a lack of adequate physical exercise. There is also evidence that overweight children are more likely to suffer from psychological problems (Edmunds et al., 2001) and that being overweight in childhood substantially increases the risk of adult obesity (Whitaker et al., 1997).

As well as gender differences, there are also differences between ethnic groups. Boys of Indian and Pakistani descent were more likely to be overweight than boys in the population as a whole and the same was true for obesity in girls from Afro-Caribbean and Pakistani communities (ONS, 2006).

**Service provision**

**Primary care**

The majority of children remain relatively healthy with their health care needs being addressed through well-established health visiting, child health and school health services. These offer a programme of physical examinations, neonatal screening, vision and hearing tests and monitoring of growth and development.
6.67 There is a consensus that community child health services should be provided close to home in order to be accessible to all on a regular basis. It is likely, however, that the problems of access to primary care encountered by some sectors of society in general are replicated in terms of access to child health services and to GP services sought on behalf of children by their parents.

6.68 Equity was a founding principle of the NHS (Ross, 1952) and is central to current government policy (DH, 1997; DSS, 1998), yet the inverse care law is still in evidence, with those most in need of services often experiencing the least satisfactory access. The most marked differences are between socio-economic groups but there are also differentials in access associated with ethnicity. For example, Bangladeshi women may experience additional inequalities in access to primary care (Benzeval and Judge, 1996) which may be partly related to the availability of female GPs and other ethnic groups show a lower out-patient attendance rate than would be expected, given what is known about their likely levels of need (Goddard and Smith, 1998).

6.69 People from minority ethnic groups may be less likely to be referred to secondary and tertiary care and there is evidence that in these sectors, as in primary care, they may not receive the same quality of care as the ethnic majority. The differences may be due in part to communication difficulties. For example, there is evidence that some south Asian women and parts of the Chinese community may find it difficult to communicate with their GP and there may be cultural differences which make western diagnostic approaches inappropriate in some cases (Nazroo, 1997; Rudat, 1994). As indicated above, women from some ethnic minority groups, notably those of Pakistani and Bangladeshi origin, generally prefer to consult with female doctors, ideally from the same minority ethnic background as themselves. Given the relatively high rates of conditions such as diabetes and haemoglobinopathies and the younger demographic structure of many ethnic minority groups, the provision of sensitive maternal and child health services is of particular importance (Acheson, 1998).

6.70 The same is true for those from more disadvantaged socio-economic backgrounds, on the basis of higher levels of need and slower rates of the adoption of “healthier” behaviours. For example, in addition to - or because of - the differential distribution of risk factors or health determinants, children from manual households are more likely to report long term illness than those from non-manual households and wide socio-demographic differences can be seen with regard to breastfeeding, with rates of 84% in non-manual groups compared with 64% in manual groups (ONS, 2006).

**Secondary and tertiary care**

6.71 For a small number of children more specialised, hospital based care is necessary for acute or ongoing illnesses. In 1999 specialist paediatric inpatient units in England each served, on average, 46,000 children and adolescents. This varied from less than 40,000 children and adolescents per unit in North and Yorkshire region to 58,000 children and adolescents per unit in Trent region. In the North-West region, there were just over 40,000 children and adolescents per unit.

6.72 In terms of beds, the provision of acute paediatric and neonatal facilities decreased slightly from 13.2 per 10,000 population in 1997 to 12.4 per 10,000 in 2000. Over the same period occupancy rates were between 61 to 63% although admission rates had started to rise - from 85 per 1,000 children aged under 5 years in 1990 to 100 per 1,000 in 1997 and from 17 per 10,000 children aged 5 to 14 years in 1990 to 170 per 10,000 in 1997.

6.73 Specialist paediatric services accounted for only a proportion of these admissions. For example, in 1999 to 2000, 73% of inpatient emergency surgical admissions of children aged under 16 years were to trauma and orthopaedics and 68% of emergency surgical admissions of children aged 16 to 18 years were to plastics (ONS, 2006).

**Paediatric intensive care**
6.74 Paediatric intensive care is a low volume, high cost specialty dependent on the availability of highly trained and skilled staff and specialist equipment. It has been argued that critically ill children have a changing range of illness and pathophysiology from early infancy to adolescence which is different from that of critically ill adults (Ratcliffe, 1998), although there is no clear consensus on this amongst experts. There is, however, evidence that larger numbers of children in the UK are receiving or are expected to receive paediatric intensive care and that centralisation of services in large, high volume units offers the best return for limited resources (Pearson, 2002).

6.75 Studies examining different models of care found that:

- The mortality rate is lower amongst children admitted to specialist paediatric intensive care units than amongst those admitted to mixed adult and paediatric units in non-tertiary hospitals.
- It has been suggested that there may be around 450 excess deaths each year in the UK which are probably due to failings in the quality of paediatric intensive care (Pearson, Shann et al., 1997).
- Caring for the most seriously ill children in tertiary paediatric intensive care units could improve their chance of survival (Pollack et al., 1991).
- Centralisation has in some places been associated with reductions in mortality rates (Pearson, Barry et al., 2001).

6.76 Set against these potential advantages, there are some concerns about:

- Transport and the need to ensure that patient well-being and safety is not compromised by a move, sometimes over long distances, to a centralised unit. While the transfer of a critically ill child is inherently risky, the risks can be reduced substantially by the involvement of a specialised paediatric retrieval team (Britto et al., 1995).
- Suitably trained staff are a scarce resource and recruitment and retention remains may be exacerbated by centralisation. (Pearson, 2002).
7. Evidence from stakeholders and key informants

Introduction

7.1 Due to the time constraints of this HIA stakeholder involvement has been limited to expert interviews. In order to gain an understanding of issues that stakeholders have identified that are determinants of health or health outcomes, a thematic analysis of potential health impacts identified in consultation documents was carried out. Based on the information available it is not possible to identify to what extent the issues identified relate to specific stakeholder groups.

7.2 There has been extensive public and professional consultation carried out over several years. A formal public consultation was carried out on the original 5 options between 12th January and 12th May 2006. This consultation received a total of 50,278 written responses representing 195,418 individuals (Tribal 2006). The results of the formal consultation were analysed and reported on (Tribal 2006). A separate piece of work interpreting the main themes that were identified in the report has also been recently completed (C. Broderick, personal communication, November 2006).

7.3 There were no limitations on who could respond to the consultation and it appears that consultation with specific groups was carried out on an opportunistic basis. This means that the results of the consultation reflect the comments of the most articulate groups. For example, East Cheshire has the highest number of standard response forms and second highest level of group engagement feedback which was attributed to the “PCT and health economy consultation team undertook a major proactive consultation exercise due to the significant interest shown by the population locally and also to address a concurrent consultation exercise on other acute services provide in East Cheshire”.

7.4 Stakeholder evidence can be particularly valuable in identifying specific local issues that may result in or affect health impacts. Although the purpose of the consultation exercise was not to identify potential impacts, the analysis of the consultation responses can be used to provide an overview of the issues identified by stakeholders. They can then be categorised as potential health impacts that these issues may cause.

7.5 The thematic analysis of the consultation report was carried out using a tool consisting of comprehensive lists of population groups and of known determinants of physical and mental health and well-being. Particular focus was given to identifying issues relating to the priority stakeholder groups and key themes identified during the scoping stage of the HIA. This analysis has been limited to identifying which themes were referred to in consultation documents and identifying issues that could be followed up on in further work.
7.6 The qualitative analysis of the responses to the formal consultation coded responses into 25 categories that were grouped into 5 themes. Determinants of health and population groups that may be potentially affected by these issues have been identified using a screening tool.

Table 7-1 Categories and themes for qualitative analysis from stakeholder consultation responses

<table>
<thead>
<tr>
<th></th>
<th>Health determinant</th>
<th>Population</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>EQUITY</strong></td>
<td></td>
</tr>
</tbody>
</table>
| 24| Equity, deprivation, disadvantage, rural areas | • Inequality  
   |                             | • Deprivation  
   |                             | • Already disadvantaged groups  
   |                             | • BME groups  
   |                             | • Rural areas |
|  | **ACCESSIBILITY**           |                                                 |
| 1 | Distance and/or time to travel to services (inc. congestion, road networks) | • Stress and anxiety  
   |                             | • Cost  
   |                             | • Risk to physical health  
   |                             | • Physical environment  
   |                             | • Access  
   |                             | • Rural areas  
   |                             | • Residents of areas furthest away from services  
   |                             | • People without access to private transport  
   |                             | • Children with chronic illness and their families  
   |                             | • Pregnant women  
   |                             | • People living in poverty  
   |                             | • People with mobility problems  
   |                             | • Populations that don’t have skills to access the services |
| 2 | Lack of transport (inc Public transport access, transport costs) | • Stress  
   |                             | • Cost  
   |                             | • Risk to physical health  
   |                             | • Access  
   |                             | • Rural areas  
   |                             | • Residents of areas furthest away from services  
   |                             | • People without access to private transport  
   |                             | • Children with chronic illness and their families  
   |                             | • Pregnant women  
   |                             | • People living in poverty  
   |                             | • People with mobility problems  
   |                             | • Populations that don’t have skills to access the services |
| 3 | Parking for staff, patients and visitors | • Cost  
   |                             | • Stress  
   |                             | • Access  
   |                             | • Noise, Air Quality  
   |                             | • Staff  
   |                             | • Patients  
   |                             | • Visitors  
   |                             | • Children with chronic illness and their families  
   |                             | • People living in poverty  
<p>|                             | • People with mobility problems |</p>
<table>
<thead>
<tr>
<th></th>
<th>Accommodation needs of parents/carers</th>
<th>Cost</th>
<th>Stress</th>
<th>Access</th>
<th>Employment (parents)</th>
<th>Parents/ carers</th>
<th>Siblings of sick children</th>
<th>People living in poverty</th>
<th>People with mobility problems</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>Access (includes easy access, good waiting times, accessible for visitors etc.)</td>
<td>Stress</td>
<td>Participation</td>
<td>Control</td>
<td>Access</td>
<td>Parents/ carers</td>
<td>Children with chronic illness and their families</td>
<td>Pregnant women</td>
<td>People with mobility problems</td>
</tr>
</tbody>
</table>

**NEEDS/CHOICE**

<table>
<thead>
<tr>
<th></th>
<th>Local (Meet local needs, provide local care, provide/retain local services, provides a vital/visible service, covers a wide area, community,)</th>
<th>Social capital</th>
<th>Local economy</th>
<th>Employment</th>
<th>Transport</th>
<th>Access</th>
<th>Communities around hospitals</th>
<th>Staff</th>
</tr>
</thead>
<tbody>
<tr>
<td>19</td>
<td>Choice (More/Lack of Patient Choice)</td>
<td>Control</td>
<td>Participation</td>
<td>Access</td>
<td>Physical health</td>
<td>Children with chronic illness and their families</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>Needs of children with special/complex needs</td>
<td>Physical health</td>
<td>Children with chronic illness and their families</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**FEASIBILITY/IMPLEMENTATION**

<table>
<thead>
<tr>
<th></th>
<th>Workforce Issues (i.e. staff recruitment and retention, loss of skills, morale)</th>
<th>Employment</th>
<th>Stress and anxiety</th>
<th>Loss of skills base</th>
<th>Type of employment</th>
<th>Local economy</th>
<th>Staff</th>
<th>BME groups</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>Closing hospitals, loss/lack of services</td>
<td>Employment</td>
<td>Local economy</td>
<td>Community identity</td>
<td>Community</td>
<td>Stress and anxiety</td>
<td>Communities around hospitals</td>
<td>Staff</td>
</tr>
<tr>
<td>7</td>
<td>Service continuation during change</td>
<td>Stress and anxiety</td>
<td>Risk of accidents/mistakes</td>
<td>Patients and their families</td>
<td>Children with chronic illness and their families</td>
<td>Staff</td>
<td>Emergency services</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Effect of changes on other services (knock on effect)</td>
<td>Employment</td>
<td>Local economy</td>
<td>Community identity</td>
<td>Availability of health services</td>
<td>Staff</td>
<td>Local communities</td>
<td>Patients</td>
</tr>
<tr>
<td>9</td>
<td>Finance (i.e. cost cutting, financial viability)</td>
<td>Employment</td>
<td>Community identity</td>
<td>Access to services</td>
<td>Staff</td>
<td>Local community</td>
<td>Patients</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Capacity (in new units and/or previous facilities)</td>
<td>Risk to physical health stress</td>
<td>Patients</td>
<td>Staff</td>
<td>Patients</td>
<td>Staff</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Service reconfiguration (implementation, costs of change, lack of confidence in change)</td>
<td>Stress and anxiety</td>
<td>Participation</td>
<td>Control</td>
<td>Staff</td>
<td>Patients and families</td>
<td>Other service providers</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**SAFETY/QUALITY**

|   | Risk (of Death/put at risk and inc. Safety of mothers/carers and children travelling to and between services, transfers) | Risk to physical health stress and anxiety | Patients and their families | Children with chronic illness and their families | Pregnant women |
| 12 | Improvements (in care/current care/facilities) | • Risk to physical health | • Patients and their families  
   • Children with chronic illness and their families  
   • Pregnant women |
| 13 | Appropriate service (provides best/good service, good reputation) | • Risk to physical health  
   • Control  
   • Community identity | • Patients and their families  
   • Children with chronic illness and their families  
   • Pregnant women |

**CONSULTATION PROCESS**

| 15 | Consultation methods, lack of information | • Participation  
   • Control | • Public within review area  
   • Outside review area but affected  
   • Staff  
   • Patients |
| 17 | Criteria (Limited, unclear, biased or change suggested) | • Participation  
   • Control | • Public within review area  
   • Outside review area but affected  
   • Staff  
   • Patients |

**THE MODEL**

| 16 | Model of care flawed (i.e. inaccurate stats/info, Manchester Centric models/Options, make things worse) | • Risk to physical health  
   • Stress and anxiety | • All |
| 18 | No change | • Risk to physical health  
   • Community pride  
   • Stress and anxiety | • Patients and families  
   • Staff  
   • Local communities |

**PERSONAL/EMOTIONAL ISSUES**

| 23 | Emotional attachment to existing services (i.e. my baby was born there, no more Salfordians) | • Community identity  
   • Participation | • Local communities  
   • Patients and their families  
   • Children with chronic illness and their families  
   • Pregnant women and their families |
| 25 | Other (inc. environment, stress, patient and public involvement, patient centred, regeneration if not covered by 19, political pressure, infrastructure, bigger not always better, poor reputations etc). | • Increase in waste in areas where new hospitals are built, impact on waste disposal in certain areas  
   • Stress and anxiety  
   • Control and participation | • All |

7.7 In addition to the identified categories the report gives examples of potential impacts on health determinants and sometimes health outcomes;  
• Risk of missing vulnerable groups who may be lost within averages over large geographic areas/populations.  
• Access was identified as being a particular issue for;  
  o People with disabilities  
  o Different cultures
- Special care infants
- Breast feeding and bonding.

- Social environmental and economic impacts.
- Increasing multiple births due to fertility treatments.
- Mothers in early stages of labour are often advised to go home and return later which may cause a potential problem for patients that have to travel long distances.
- Inequalities
  - Some Muslim women cited the need for local services to preserve dignity.
  - Some Bengalis who cannot speak or read or write English are unable to travel on public transport.
  - Some Jewish women choose to have a Doula in Labour. They also commented that they would not be able to travel far on a Friday evening or Saturday daytime as they cannot use motorised transport at these times.

- Transport
  - driving after caesarian. Difficulty in attending check ups
  - “the last bus from Congleton to Manchester leaves in the late afternoon” (page 86)

- The need to take into account the community profile of catchment areas when planning services. For example;
  - Macclesfield tends to have older mothers in the maternity unit.

- Local communities
  - People’s decision on where to live is affected by local facilities.

- Staff
  - “There is ample evidence that when services move the nursing staff do not necessarily move with the unit” (British Association of Perinatal Medicine).

7.8 Professional key informants also noted the areas highlighted in table 5 as being of importance, but not solely for those from disadvantaged and hard to reach groups, although the effects are differential. Existing capacity and service issues already constrain choice variably across the review area. The informants stated that impacts on service users are well understood, particularly for minority groups and those for whom English is not their first language. They see the challenge lying in maintaining cultural sensitivity and choice while seeking to achieve an appropriate balance between developing sufficient capacity to provide services closer to home in the future, while delivering high quality specialised care for those who need it. The consultation brought focus and the opportunity provided by the Network to work together is valued as highly important in achieving this.

7.9 The thematic analysis of the consultation report indicates that the main determinants of health reported are:

- **Stress and anxiety** – potentially caused by, for example, increased travel times, access and costs of parking, potential difficulties in accessing services, the impact of downsizing of hospitals on local communities, changes to staff, perceived risks to child and maternal health.
- **Financial impacts** – negative financial impacts caused by increased travel costs, accommodation for parents and family, parking costs, impact on local communities where services are cut.
- **Risks to physical health** – reduced risks through centralisation of services, potential increased risk because of increased distances.
- **Access to services** – Caused by transport, potentially increased need for accommodation for families of patients, loss of local services.
- **Employment** – impact on employment in communities where services are being cut, potential loss of employment to staff unwilling or unable to change location, difficulty for families of patients to maintain employment.
- **Participation and control** – potential changes in choice in accessing services, perception of lack of influence over decision making, consultation process
- **Local community** – impact on social capital, community identity (no more babies in Salford etc), pride and local economy in communities where services will be cut.
7.10 Population groups that are most likely to be affected are patients and their families, staff, BME groups and local communities where services are cut. The potential differential impacts on population groups appear to be a strong theme in the consultation responses (e.g. ethnic minority groups and outlying communities).
8. Impact analysis

Introduction

8.1 This section brings together the evidence from all the data collected from different sources and using different methods; the report section that evidence is drawn from will be identified in the text. It identifies and characterises the potential impacts of MiB describing:

- **Health impacts** – the health determinants affected and the subsequent effect on health outcomes;
- **Direction of change** – health gain (+) or health loss (-);
- **Scale** – the severity (mortality, morbidity and well-being) and magnitude (size/proportion of the population affected);
- **Likelihood of impact** – definite, probable, possible or speculative based on the strength of the evidence and the number of sources;
- **Latency** – when the impact will occur.

For clarity throughout the report the potential impacts are in bold and the likelihood of an impact is underlined. Definitions of likelihood are as follows:

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speculative</td>
<td>may or may not happen; no direct evidence to support;</td>
</tr>
<tr>
<td>Possible</td>
<td>more likely to happen than not; direct evidence but from limited sources;</td>
</tr>
<tr>
<td>Probable</td>
<td>very likely to happen; direct strong evidence from a range of data sources collected using different methods;</td>
</tr>
<tr>
<td>Definite</td>
<td>will happen; overwhelming, strong evidence from a range of data sources collected using different methods.</td>
</tr>
</tbody>
</table>

8.2 The level of analysis will focus on the Review area. In addition the analysis will describe the potential impacts on different population sub-groups with a particular emphasis on BME groups.

Assumptions

8.3 The MiB consultation document has focused on changes to the provision of 24 hour in-patient obstetric, neonatal and paediatric care; this is also the focus of this interim assessment. However the MiB discussion document also described a general model of care which included making more services available ‘closer to home’; the potential impacts of e.g., providing more antenatal and post natal care in home and community settings will be commented on.

8.4 It is recognised however that a key objective of these proposals is to confer more choice to patients on where and how they and their families are treated; this builds uncertainty into predicting impacts.

8.5 Associated with the changes in catchment areas, there will also be significant changes in the volume of activity on the selected hospital sites. It is assumed that this additional demand can be accommodated in terms of physical capacity (e.g., beds, wards) and staff capacity (e.g., midwives, consultants). However, it is recognised that this poses challenges for some areas of the Network.

8.6 A key predicted impact will be on the travel times for patients. It is assumed that public transport will not be used by patients in emergencies.

8.7 The timeframe for the completion of the changes is assumed to be between 2010 and 2015.
Health Impact Model for Maternal and Neonatal Health

8.8 There is strong evidence that suboptimal care is a contributory factor in maternal and perinatal deaths (section 6); it is estimated that over half the deaths of mothers and babies may or are likely to have been affected by poor care. The care issues identified included failures in diagnosis, treatment, referral to senior colleagues or other sites, poor communication or teamwork both within obstetrics and midwifery, and between obstetrics teams, primary care and specialist colleagues. These failures occur at ante partum, intrapartum and post partum stages.

8.9 Although less is known about the effect of poor care on morbidity, it is likely that the quality of care also contributes to this. ‘Near miss’ audits may contribute to the understanding of system failures. The impact of the quality of care on maternal mental health and well-being also needs to be considered; particularly as psychiatric illness is the main cause of maternal mortality (section 6).

8.10 There are various policies and programmes (sections 4, 6) independent of MiB that are designed to improve clinical care standards for mothers, babies and children. Similarly Royal College requirements for education and training focus on developing and maintaining competencies in clinical practice. In addition, risk management including clinical governance is an important NHS Board responsibility which is still likely to be a requirement, as all Trusts move to Foundation Trust status by 2008.

8.11 However as health economies move to providing care on a Network basis (s.4) it will be important to have established shared models of care, patient pathways, and practice guidelines/clinical protocols.

8.12 In addition to the influence of national and local policy, clinical efficiency and effectiveness is also affected by the organisation of health care, the timely access to care and the social and cultural appropriateness of this care, as well as the skills, attitudes and behaviour of staff (s.6).

8.13 In order to develop a common understanding of the potential care pathway and to identify points within the pathway that MiB (potentially) impacts on the process a Care Pathway was developed. This has been adapted from the Scottish Maternity Services Framework (2001)
Pregnancy identified by Mother

Does not take up A/N care

Pregnancy confirmed by NHS GP/Midwife

Low Risk Pregnancy
- Midwife led
- GP led
- Combined/other options

High Risk Pregnancy
- Consultant only care
- Shared A/N care - Consultant plus Midwife/GP

Risk factors develop during pregnancy

Labour
- Home without midwife
- Hospital (no NICU)
- Hospital (NICU)

Home with midwife
- Midwife led centre
- Hospital (no NICU)
- Hospital (NICU)

Home with private midwife
- Private Hospital
- NHS Hospital (NICU)

Selects private care

Referred to A/N booking including risk assessment*

* A/N care plan according to NICE Guidelines

+ Potential movement between care pathways

- Potential Transfer
8.14 There are a number of potential pathways through which MiB might impact on health. A structural model, developed by Fehr (2001) can be used to illustrate the different factors and how they are connected and influence each other (Figure 8-1).

8.15 Fehr (2001) developed a structural model for environmental exposures based on the DPSEEA model (Corvalan et al. 1996) mainly used by WHO. Even though originally developed in an environmental context this model proves highly adaptable to different settings and contexts. Fehr’s model consists of the following 9 dimensions:

1. Region
2. Human population- demographic description including vulnerable groups
3. Development dynamic (driving forces) including socio-economic factors, employment situation and globalisation
4. Influence/effect of pressures and reduction in pressures on the environment.
5. State of the physical environment including available resources and pollution
6. State of social environment including supportive as well as stressful functions
7. Structures and processes of the health system
8. Human exposure to noxious agents and supportive factors

8.16 This structural model allows for the explicit incorporation of more distal determinants of health or 'determinants of determinants' such as elements of the social environment. In addition to providing a structured way of considering the different factors that play a role in the relationship between MiB and health this model includes the possibility to identify causal relationships.

8.17 Based on relationships between MiB and health identified in literature and information from stakeholders and project partners we have used the adapted version of the structural model to create our own model of the relationships between MiB and health (Figure 8-2). This model of determinants of maternal and neonatal clinical care, and the impact this has on maternal and neonatal health and well-being, provides a basis for our understanding of MiB and health and has been applied to the Review Area in the analysis of the impacts of the MiB proposals.
Figure 8-2 Structural model of MiB and health

**Region:** Greater Manchester, East Cheshire, High Peak and Dales

**Driving Forces**
- National level policy
- International policy
- National level targets
- Guidelines
- Demographic change
- Economic situation
- Globalisation

**Pressure**
- MiB
- Location of A/N & P/N care and delivery
- Care provider
- Quality of care
- Quantity of care

**Physical environment**
- Transport related pollution
- Location of care and delivery
- Mothers residence and surrounding environment

**Human population**
- Ethnicity
- Age
- Disability
- Health status
- High/low risk pregnancy

**Action (options)**
- Risk assessment
- Communication
- Integrated care strategy
- Information collection, analysis and monitoring
- Training

**Social environment**
- Language
- Medical culture
- Mother/Family’s culture
- Family situation
- Education/knowledge
- Socio economic situation
- Employment

**Health/ quality of life**
- Mortality (mother/baby)
- Physical and mental well-being

**Human exposure**
- Stress
- Control (choice)
- Cost
- Transfer
- Pregnancy related risk factors
- Transport related risk factors
- Health care

**Supply system**
- Midwife led units
- Hospital
- General practitioners
- Public transport
- Private transport
- Child care
Impacts at Review Area level

Context

8.18 Projections for births in Greater Manchester (section 5) indicate a steady fall over the next 20 years or so. By 2010 it is projected that there will 31,300 births, over 10% less than in 2004/2005. However with only 7 or 8 units there could be an average increase in deliveries of 62% to 86% at these sites (section 5).

8.19 There has been a trend in developed countries for women to have children at a later age; in the UK between 1990 and 2000 the mean age of women at the birth of their first child rose from 27.3 years to 29.1 years reflecting trends from the last 40 years (Harper, 2003). Whilst there are obvious biological limits to how long this trend continues it is assumed that this trend will continue during the specified time period and that this will also be the experience in the Review area. Associated with this trend to delay motherhood, it is also assumed that there will be a decrease in fertility which may have implications for in-vitro fertilisation interventions, especially since these are now available in the NHS.

8.20 It is assumed that the geographical distribution of ethnic minority populations will remain fairly constant and cluster predominantly around Central Manchester, Bolton, Oldham and Rochdale; however the composition of ethnic populations may vary with different migration patterns emerging, e.g., from Eastern Europe. Population projections (section 5) suggest a reduction in women of reproductive age over the next 10 years or so. However with the increase in economic migration nationally there may be a slight increase in the relative proportion of these women (15-44 years) from minority groups within the Review area population.

8.21 Whilst deprivation overall is likely to decrease with continued economic growth, it is unclear whether there will be significant differences in the distribution of deprivation, i.e., the current most deprived areas will still be the most deprived areas in 2010.

8.22 Population projections for children aged up to 14 years show a fall until around 2012, when it is expected that numbers will start to rise. If current incidence and prevalence rates for conditions requiring specialist paediatric services remain constant and medical technologies and treatments either remain the same or are unchanging in terms of the volume of care which needs to be provided, it should be expected that there will be a concomitant rise in the need for paediatric beds. However, given a great deal of uncertainty about the nature and scale of medical advances which might be expected in the future, it is difficult to make meaningful predictions.
Impacts on health care

Quality and safety of care

8.23 From the evidence (sections 4, 6, 7) it is possible that the MiB proposals will directly improve the quality and safety of clinical care. It is possible that women and babies from BME groups, socially disadvantaged groups, older and very young women will potentially benefit most from the improvements in clinical efficiency and effectiveness.

This is based on the following analysis:

8.24 Collectively it is possible that increases in training, reduction in clinical working hours and ward closures may contribute to increases in clinical efficiency and effectiveness. There is some evidence to suggest that there may be more opportunities for the training of clinical staff in the new staff complements. In addition, with the implementation of the European Working Time Directive (EWTD) in 2009 clinicians will be working fewer hours (section 4). There is also anecdotal evidence that new staff complements will be less likely to be adversely affected by staff absences, reducing the frequency of ward closures, unsafe staffing levels and locum cover.

8.25 With the proposed increase in the availability of neonatal intensive care cots, it is probable that there will be an increase in clinical efficiency as more premature babies are treated within the Review area. There is strong evidence that the timely transfer of premature and/or low weight babies to specialist care, either on or off site, positively affects their survival rates (section 6). This is already current practice across the Review Area.

8.26 It is possible that the development of larger in-patient care units with increased volumes of activity will not impact on clinical efficiency and effectiveness. There is contradictory evidence that the organisation of care affects the neonatal survival rates of premature and/or low weight babies. Strong evidence from UK studies shows no correlation between the numbers of babies treated or the number of intensive care days undertaken by units and an increase in survival rates (section 6). However there is also evidence from a USA. study that the larger a unit, the lower the neonatal mortality rates, although the difference in care systems may explain this in part (section 6).

8.27 By 2010, it is possible that the developments in shared models of care and other shared guidelines will have a direct impact on improving clinical efficiency and effectiveness for both in-patient and out-patient hospital care at ante partum, intra partum and post partum stages. There is evidence (section 4) of the need to develop multi-hospital networks with multi-disciplinary teams providing flexible care across traditional organisational boundaries. This has implications for terms of employment, accountability, training, and governance, shared models of care, care pathways and clinical guidelines. In addition there is some evidence (section 6) that the process of reconfiguring services does not always improve clinical care. Whilst work (L. Edwards, personal communication, 9th November 2006) to develop shared models of care is underway, this is very much at its infancy.

8.28 There is contradictory stakeholder evidence from the consultation responses (section 7). Some community stakeholders fear an increased risk to the quality and safety of care for mothers and babies, particularly in emergencies with increased travel times to emergency care or with transfers to other sites; whilst other stakeholders perceive potential improvements in quality of care.

8.29 Although not described in detail within the MiB consultation proposals, there is some evidence concerning the clinical effectiveness of providing care in community settings as opposed to traditional hospital based care. For example, antenatal day care for women with common, slowly progressing medical complications was found to be as clinically effective as opposed to in-patient care (section 6). Similarly, care tailored to high risk groups, e.g., adolescents, has also been shown to be more clinically effective and efficient (section 6).
Physical and cultural accessibility to care

8.30 From the evidence (sections 5, 6, 7) it is probable that the MiB proposals will reduce the physical accessibility to in-patient care for a significant minority, although this may not affect clinical effectiveness. It is probable that people on lower incomes, with physical disabilities, or communication or language difficulties affecting travel, as well as those living in rural areas will be most disadvantaged by the reduction in physical access. It cannot be predicted if the MiB proposals will impact on the social and cultural barriers that prevent access care, as details of how obstetric care is to be delivered to mothers, babies and children are not included. It is probable that women who come from deprived communities, are very young and/or come from BME groups will remain most disadvantaged in accessing care without changes in how care is delivered.

This is based on the following analysis:

8.31 A significant minority (15.9%-30.3% across all options and transport modes) of pregnant women will probably have to travel for longer for in-patient care, but it is unlikely to affect clinical effectiveness for the majority of patients. However, it is assumed that for most women, in-patient care will be an infrequent event, for example, after delivery. For the majority of these people, increases in journey times will be relatively minor (section 6). It is estimated that 1.6% of population have a travel time of up to 50 minutes by private car or taxi to any of the MiB options (section 5); this falls within the “golden hour” rule for critical care interventions. It is also estimated that 10-15% of pregnancies may develop unpredicted complications needing emergency care (sections 5, 6). Lengthy travel times may be particularly stressful for the mother and possibly the baby in these circumstances. For routine care such as ante natal appointments it is understood that there will be no change in travel time.

8.32 Evidence from stakeholders indicates that the MiB proposals will probably reduce the physical accessibility to in-patient care (section 7). In addition, it was speculated that there could be indirect impacts on family and friends on low incomes as a result of additional cost incurred for fares, fuel and parking. Stakeholders also identified impacts on mental well-being. At those sites selected for in-patient care, there will be a probable increase in road traffic. Associated with this is a probable decrease in air quality potentially increasing the health risk to populations adjacent to these sites. Conversely, there may be improvements in air quality in those areas not selected for in-patient care, with reductions in road traffic.

8.33 The potential health gains of MiB will be enhanced with development and implementation of shared models of care, care pathways and clinical guidelines at Network level; this is in its’ early stages. There is evidence that shows how services are provided impacts on access to or maintaining access to these services. Socially and culturally insensitive services or services that are delivered by staff with inappropriate attitudes place barriers between patients and health professionals and may contribute to delays in and less than optimal care (section 6). Vulnerable and socially excluded women find it particularly hard to access or maintain access with services and follow-up was poor, e.g., late booking and low antenatal care uptake by Asian women. In addition there is evidence from the literature regarding inadequate translation services.

8.34 A shift in the provision of hospital based services, e.g., ante natal care, to community settings would probably have a positive impact on reducing the distance and travel times for women; in addition as described above care based in the community as opposed to traditional in-patient care would contribute to increasing physical accessibility even further.
Organisation of care

8.35 The proposals for the Review area will see 24 hour obstetric and paediatric care reduce from 13 sites to 7 or 8 sites; 3 sites will also have NICU facilities, an increase of 1 site (section 2). There will be definite and significant changes in the catchment areas of these sites as they absorb patients from sites that are closing; in addition the patient flows within and between sites, and potentially to primary care, will also change. Conversely there will be a cessation of in-patient care at non-selected sites; it is speculated that this may affect the viability of some hospitals (sections 5, 7). The people most affected will include women and families who would normally access in-patient care from the sites which no longer provide it.

This is based on the following:

8.36 It is highly probable that the implementation of the MiB proposals will see a significant increase in activity levels for in-patient obstetric and neonatal care for the selected sites in the Review area (section 5); it is possible that this will not impact on clinical efficiency and effectiveness (section 6) (as above).

8.37 Stakeholder evidence (section 7) speculated that the removal of in-patient obstetric and paediatric care may impact on the viability of some hospitals, particularly smaller hospitals. The impact of the withdrawal of other secondary and acute services in these circumstances was also described.

8.38 It is probable that there will be a reduction in the choice of care for women (sections 4, 5, 6, 7). Stakeholder evidence (section 7) suggests that patient choice will be reduced by removing in-patient care at some sites. In addition the proposals provided no alternative models of obstetric care for women to consider or for existing care to be provided in different settings. It was also unclear how patient choice would be affected by patient risk, e.g., will a pregnant woman assessed as high risk be able to choose to have a home birth?

8.39 There is evidence (section 4) that the strategic organisation of care is being driven by national and international policy, e.g., health, employment, with influence from professional groups. However, there appears to be some prioritisation between these e.g., supply related policies (EWTD), followed by quality and safety, choice and access, and finally equity. The development of a plural, market-based health economy will create tensions between NHS Trusts who on the one hand must compete with each other (and the private sector) for providing elective services, whilst on the other hand work in collaboration and deliver services across organisational boundaries. Although it is acknowledged that competitive and non-competitive services are being discretely separated (section 4), there is still the potential and probable impact that there will be delays in the development and agreement of shared care models, detailed patient pathways and clinical guidelines/ protocols.

8.40 It is also possible that with the development of these clinical networks, there may be impacts on accountability and governance. Networks are not constituted NHS organisations held to account by NHS Trust Boards; clear reporting requirements and decision-making processes need to be developed beyond this consultation. Similarly, clear lines of accountability between employing organisations, individual employees and the Networks need to be agreed as new ways of working are developed.
Impacts on non-health care determinants

**Transport**

8.41 As discussed above, changes to the location of in patient hospital care will definitely increase journey distances and probably increase travel times by all modes of transport (section 5) for a significant minority (between 15.9% and 30.3% across all options and modes) of the population. The increases will vary in accordance with the reconfiguration option selected. It is also possible that the additional activity at the selected sites will increase road traffic to and from those sites with an associated increase in road traffic related air and noise pollution. Conversely, sites not selected for in-patient care will have reduced road traffic related air and noise pollution. It will be important to assess potential increases in road traffic volume in Transport Impact Assessment of selected sites, and the impact on any Air Quality Management Areas, as well as ensuring travel solutions are included in the Local Transport Plans.

8.42 Increasing journey times will increase exposure to the health damaging factors of transport including road traffic accidents, pollution, noise, stress and anxiety and danger (THSG, 2000). This will possibly have a negative impact on health (McLennan et al 2003, Schaeffer et al., 1988).

<table>
<thead>
<tr>
<th>Patients, parents, carers and visitors</th>
<th>Staff</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reduced accessibility to services will increase the need of patients to travel greater distances leading to greater costs of taxis, public and private transport</td>
<td>Increased distances to work and therefore increased costs for taxis, public and private transport</td>
</tr>
<tr>
<td>Increased costs of staying overnight or local to the hospital – when parents stay in the hospital they still incur additional costs</td>
<td>Increased commuting times may decrease people’s availability for work and therefore the opportunity to earn</td>
</tr>
<tr>
<td>Increased costs of childcare resulting from time lost to travel</td>
<td>Increased costs of childcare resulting from time lost to travel</td>
</tr>
<tr>
<td>Reduced accessibility of services may increase the need of visitors to travel greater distances leading to greater costs of taxis, public and private transport</td>
<td>Increased commuting times may contribute to higher level of morbidity and lower levels of work performance (Schaeffer et al., 1988).</td>
</tr>
<tr>
<td>Increased journey times may decrease people’s availability for work and therefore the opportunity to earn. This is particularly significant to those with existing limitations such as childcare or limiting long term illnesses or disabilities who are already disadvantaged. Difficulties in accessing hospitals may mean reduced levels of support from family and friends of patients</td>
<td>The increased costs (time and money) of travel to work, together with other negative economic impacts, may make employment unviable for certain staff members.</td>
</tr>
<tr>
<td>Increased exposure to risks to health associated with transport</td>
<td>Increased exposure to risks to health associated with transport</td>
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8.43 Increased journey times and associated costs will possibly act as a barrier to accessing other health promoting factors and services (THSG, 2000). There may be potentially significant economic impacts to patients, parents, carers, visitors and staff of increased journey times and reduced accessibility of services. The NHS travel costs scheme will incur some of the increased
costs. However, cultural, language and literacy problems will prevent some disadvantaged groups from reclaiming costs. Staff groups most likely to be affected are: voluntary workers, lower paid workers, part-time workers, workers with children, workers with limiting long term illness or disability. Already disadvantaged groups will experience disproportionate effects of increased journey times. These groups include people from ethnic minorities, limiting long term illness or disability or low incomes, the unemployed and single parents.

Local economy

8.44 Based on the evidence accessed, it is possible that there may be a positive impact on those local economies where 24 hour in-patient care is selected and a negative impact on those local economies where 24 hour in-patient care is withdrawn; although routine services will be retained on most sites there may be an overall economic loss resulting from lower employment (NHS and non-NHS) and purchasing (NHS organisation, staff, patients, visitors) levels. It has not been possible to assess the scale of this. Although there is an economic analysis on changes to hospital services, there was no evidence available on the economic impacts on the wider economy. Should there be a potential threat to the viability of a hospital, this will probably have a significant impact on the local economy.

8.45 The health care industry is an important contributor to the economy, especially to that of the area surrounding health institutions (Everd et al, 2004). Hospitals play a vital role in the economic stability and growth of the local community (Vaughan et al, 1994) through the people they employ, the impact of hospital spending, the effects of employee spending and the taxes they pay.

8.46 The direct financial implications of unit closures are considered within the financial assessments conducted by Teamwork Management Services Ltd (2006). Indirect effects of the withdrawal of 24 hour care could include:

- Threat to the viability of the hospital and other hospital services
- The health of the local economy including local businesses and the local labour market
- Economic effects on individual staff members (as above)
- Economic effects on patients and visitors (as above)

8.47 The remit of this HIA does not extend to the quantification of economic and employment costs within local economies. However, Community Economic Impact Analyses (CEIA) does provide methods of estimating the cost of the loss of a business/service to a local area by the development of a multiplier that relates to the number of pounds spent within a business/ service to the number of pounds spent within the local economy (Cowan et al, 2005). A similar multiplier is used to calculate the number of local employees affected in relation to the number of on site employees. This method may be useful in considering the wider economic impacts.

Employment

8.48 It was not possible to assess the impacts of the MiB proposals on employment on NHS (clinical and non-clinical) and non-NHS staff in detail. However it is clear that the proposals will probably have negative impacts on some staff affected by the MiB proposals, e.g. changing the main location of employment. In addition, there is likely to be an impact on the style of working, e.g., more multidisciplinary teams, networked across the Review area. It is inappropriate to speculate about impacts on NHS staff numbers, but some stakeholders have expressed concerns that there will be a direct and indirect negative impact on employment in the NHS.

8.49 Impacts on local employment are also likely to be affected if the economy is adversely affected by the MiB proposals. It is probable that groups most disadvantaged in the labour market will be affected most, e.g. people with disabilities or chronic conditions, low skilled workers, BME groups, lone parents, older people and women. It is possible that if sites not selected for in-patient care are in areas of higher deprivation than those that are selected, this will potentially impact on the health of the whole population as well as patients, having a multiple effect and contributing to widening inequalities.
Impacts on health and well-being

Maternal

8.50 This section looks at how the effects of the MiB proposals on the health determinants described above will impact on the health and well-being of women. It looks at the potential burden of health risk within the female population (15-44 years) and whether the changes in health determinants from the implementation of the proposals will add to or reduce this.

8.51 Crude estimates indicate that there is the potential of 4 maternal deaths in Greater Manchester in 2010 (there were no data provided on birth projections at Review area level). As such the risk of maternal mortality is very low. It is also estimated that 376 women in Greater Manchester will experience some form of morbidity in 2010 associated with pregnancy and childbirth.

8.52 However, the level of risk of maternal mortality and morbidity may be slightly greater than this due to a potentially greater proportion of older women becoming mothers, multiple births (due to increased IVF treatment) and a greater proportion of women from ethnic minorities. Although there may be lower levels of deprivation across the Review area, the differential distribution of deprivation is likely to remain; this may reduce the health risk in more affluent communities but is less likely to reduce health risk in poorer communities (relative deprivation is a key health determinant). Overall however, the risk of maternal mortality and morbidity remains low.

8.53 With the possible increase in clinical efficiency and effectiveness due to:

- increased training opportunities for clinical staff;
- reduced working hours for clinical staff;
- reduced unsafe staffing levels;
- reduced ward closures;
- reduced locum cover;
- increased system efficiency with shared models of care, patient pathways, clinical protocols;

there is a possible reduction in risk of maternal death and morbidity due to the proposals.

8.54 The probable increase in travel time and definite increase in distance for a significant minority of women as a result of reduced physical accessibility to in-patient care is not likely to affect the timely access to clinical care, and as such, the MiB proposals are not likely to increase the risk of maternal death or morbidity. However, based on stakeholders’ responses, the perceptions of patients and the population at large do not share this assessment (the difference between perceived risk and actual risk). As such, it is probable that without this shared view, the psychological health and well-being of pregnant women may be detrimentally affected (fear of the ‘what if?’ scenario), particularly women identified at risk, who develop complications or need emergency care. In addition, psychological health may also be compromised if pregnant women need prolonged in-patient care that may separate them from family and friends; the implications for long-term psychological ill health should not be ignored particularly since maternal death from psychiatric illness is the biggest cause.

8.55 The associated cost burden for patients, families and friends travelling to more distant sites will also be affected; it is speculated that for people on low income the additional travel costs could represent an increased burden on their family income and may contribute to additional psychological stress.

8.56 The potential health gains of MiB will be enhanced with development and implementation of shared models of care, care pathways and clinical guidelines at Network level; this is in its’ early
stages. As such, women from deprived communities, single mothers and women from BME communities will benefit most from these developments.

8.57 There will be a probable reduction in patient choice for in-patient care within the Review area due to fewer sites being available to choose from; in addition there are no additional models of obstetric care within the proposals. However routine care, e.g., is expected to remain unchanged. It is speculated that there could be a slight increased risk to psychological health and well-being to a small minority of women as a result of reduced control in health decision-making.

8.58 Although it is possible that the Network will have defined agreed models of care etc by 2010, it is also possible that there may be tension within the local health economy due to policy conflicts and/or financial circumstances which impede progress. If the proposal changes are introduced before these are agreed and ideally piloted, there will be an added risk built into the system which ultimately will increase risk to patient care. Without adequate governance systems, these risks may not be detected in a timely fashion.

**Neonatal**

8.59 Crude estimates for the number of neonatal deaths indicate that there is the potential of 125 neonatal deaths in Greater Manchester in 2010. In addition, 157 stillbirths are estimated in Greater Manchester in 2010.

8.60 The level of risk of neonatal death and stillbirths is likely to be slightly greater than this, however, due to the same factors identified above for mothers.

8.61 There is a possible reduction in neonatal death and stillbirths associated with the potential improvements in clinical effectiveness and efficiency with MiB as described above for mothers.

8.62 It is probable that there will be improved survival rates for preterm (27 weeks plus) or low birth weight babies with the increase in both the accessibility (3 sites as opposed to 2) and availability (more cots) of neonatal intensive care cots with MiB.

8.63 The reduction in the number of sites providing in-patient neonatal care and the probable increase in travel times is not assessed as adversely impacting on the effectiveness of critical care interventions and increasing the risk to neonatal survival. Similarly, there is a possible reduction in risk of perinatal death with the timely and appropriate transfer to specialist care.

8.64 However, as for mothers, without changes in how care is provided so that it is both socially and culturally acceptable, the risks associated with not identifying foetal complications such as poor growth, with late bookings, late screenings, poor ante natal attendance will remain at the same level.

8.65 There is also likely to be no change in perinatal risk associated with the development of larger neonatal units.

8.66 Finally as for mothers, as described above, there may be risks built into the system due to wider health policy impacts and delays in agreeing shared clinical practice guidelines, such as transfer protocols, which may possibly increase risk to neonatal care.
Children

8.67 The potential impacts of the proposals to reduce the number of twenty four hour specialist paediatric in-patient sites from 13 to 8 or 7 have been assessed in relation to the quality and safety of clinical care for children and in terms of equity, and particularly accessibility issues, for their families.

8.68 It is probable that there will be no change in the range of services provided or in their clinical safety. Furthermore, it is possible that quality and clinical safety may improve and that the range of treatment regimes available may improve as a result of the consolidation of skills and resources into a smaller number of units.

8.69 It is therefore possible that there will be improved health outcomes for children in need of specialist paediatric in-patient care although it will be difficult in the future to separate out the benefit attributable to service reconfiguration from that resulting from medical advances in a rapidly changing field.

8.70 However, these potential benefits are dependent of other factors, for example:

- It is certain that the volume of work in terms of the number of children passing through each unit will increase and that occupancy rates will rise as a result of the reconfiguration.
- It is also possible that a greater demand for services will be created as a result of changed perceptions and expectations. This may put increased pressure on staff, although occupancy rates in some units are currently relatively low so that there is probably spare capacity. This presents a number of challenges for the reconfiguration to ensure that capacity, and skills, are not lost during the period of change;
- It is perhaps worth noting that population projections show the number of children in the region falling over the next five or six years so that, if incidence and prevalence rates remain constant, there may be an introductory “period of grace”.
- It is possible that the reduction in the number of units will lead to difficulties in the recruitment and retention of the pool of specialist staff, particularly nursing staff, who are available and willing to travel to other locations, whether because of travel times, emotional attachments to their existing workplaces or other factors.
- It is unlikely that longer transfer times to a smaller number of units will have adverse health outcomes provided that there are specialist paediatric retrieval teams available to assist with transfers.
- The potential benefits in terms of health outcomes are also dependent on ensuring that there are good quality community based services to ensure support for those children with long term conditions in order to prevent the need for hospital admission. This is, in any case, good practice but it will be increasingly important with the reduction of the number of units across the region.

8.71 Unrelated directly to the reconfiguration but relevant to it is the implementation of current, often incompatible, NHS policies such as “Commissioning a Patient led NHS” and “Payment by Results”. The former will require careful consideration of how practice based commissioning groups can engage with the newly reconfigured units whilst the latter will increase the need for a strong network which is able to influence service development and ensure that there are shared models of care and quality standards across the region.

8.72 Whilst there is potential for improved health outcomes for seriously ill children, the potential impacts on their families may be less positive. It is likely that there will be a reduction in the proportion of families with a specialist paediatric in-patient unit very close to home although this will not necessarily result in a reduction in “choice”.

8.73 It is probable, however, that this will impact differentially on various population groups. Regardless of whether the incidence of chronic diseases requiring hospitalisation varies between
groups, there will almost certainly be more children from disadvantaged groups in need. This is because the most disadvantaged groups tend to have the highest fertility rates, more exposure to risk factors for some chronic diseases such as asthma and poorer access to primary and preventative care. The most vulnerable groups are also much less likely than others to have access to a car and are often on low incomes so that it may be difficult for parents from these groups to visit their children in hospital. It is probable that this will have a negative impact on their health and on the health of their family as a whole.

8.74 These inequitable effects are likely to hit hardest in the north of the region where there are high concentrations of vulnerable groups.

Population

8.75 The concentration of in-patient care onto 7 or 8 sites will probably increase road traffic to and from selected sites quite significantly; there will be a probable and associated decrease in air quality around these sites which will potentially increase the health risk to populations adjacent to these areas. However, those sites that are not selected will have an associated reduction in activity and road traffic. Population groups known to be at most risk from poor air quality include people with existing respiratory conditions, children, pregnant women and older people.

8.76 In addition to probable site-specific increases in air pollution due to road traffic, if there is an average increase in the distance travelled by patients, family and friends across the Review area, it is speculated that there will be a minor increase in air pollution as a result of localised increase in vehicular transport.

8.77 The potential impacts of the MiB changes on local economies will also impact on the health risk of the population. For those communities where in-patient hospital care is not available adverse impacts on the local economy will potentially reduce employment and increase deprivation. This would increase the health risk to these communities, particularly the most vulnerable groups such as low skilled workers. It is probable that there would not be a Review area wide impact on the economy; however, it is possible that if sites not selected for in-patient care are in areas of higher deprivation than those that are selected this will potentially impact on the health of the whole population, as well as patients, having a multiple effect and contribute to widening inequalities.
Black and ethnic minority groups

8.78 There is strong evidence that women from ethnic minority groups are more at risk from maternal death in the UK than their white counterparts (section 6). Black African women were 7 times more likely to die due to complications associated with pregnancy and child birth, whilst women from other ethnic minority groups were 3 times more likely to die. There is also a greater risk of stillbirth or neonatal death with mothers’ ethnicity as follows: Black (2.7-2.8 times greater risk), Asian (1.6-2.0), Chinese and other (1.9).

8.79 It is unclear whether this increased risk is directly or indirectly related to ethnicity. For example, evidence from the US indicates economic factors cannot explain the higher risk of death in black versus Hispanic women as they have equivalent socio-economic status (s.6); similarly as family income increases the probability of giving birth to a low birthweight baby decreases markedly for white women, but not for African American women.

8.80 There is evidence that women from ethnic minority groups use antenatal services less intensively, with a higher proportion booking late. Late booking was another key risk factor for maternal mortality and morbidity, with 20% of women who died booking in after 22 weeks or missing 4 routine antenatal appointments. Late bookings prevent or delay screening and other diagnostic tests being undertaken which impacts on potential maternal or foetal complications being identified.

8.81 There was some evidence from the literature (section 6) that social and cultural barriers between patients and health professionals may contribute to delays in accessing care and less than optimal care, which may in turn impact on maternal and neonatal outcomes. Vulnerable and socially excluded women found it particularly hard to access or maintain access with services and follow-up for those who failed to attend was poor.

8.82 Inadequate translation services were seen as a major barrier to accessing services for those who could not speak English. Winters (2006) noted that in addition to the importance of translation services, BME communities may also experience communication barriers which reduce access to services due to travelling, e.g., if spoken English is a barrier to using public transport, where this is the main travel mode. Where communication is a challenge, service users prefer local services, trusting the more familiar than the unknown, particularly when increased distance presents a greater barrier to access for family and visitors, by virtue of cost, time, childcare arrangements etc.

8.83 Associated with communication barriers is the impact that this has on patient choice, whether that is where a patient is treated, by whom or the type of treatment received. A patient who is disadvantaged as a result of communication issues is also disadvantaged in the choices they can make. It has been suggested (section 6) that this may lead to polarisation within health economies with those patients who understand the system and are therefore able to express their views and travel, with minimal disruption and cost to their families, may be more able to exercise choice.

8.84 Communication difficulties have been recognised in the MiB consultation as being of major relevance for some groups, e.g., people with poor literacy and non-English speakers (section 5).

8.85 Other barriers to accessing services by different communities include the perception that religious customs are not observed by NHS providers, e.g., providing Halal or Kosher food. Numerous studies across many cultures (section 6) show the value of social support and social networks for maternal health in preparation for and following childbirth; however, this may adversely affect uptake of services, e.g., antenatal care. In addition, different cultures have different rituals associated with pregnancy and childbirth (section 6) with industrialised societies having the least explicit rituals; in some cultures, e.g., the mother and close family are pivotal in antenatal and postnatal care.

8.86 International studies of programmes increasing social support to women during and after pregnancy vary in their health outcomes. However, the Central Manchester-led pilot, Race for
Health, which provides link workers and culturally sensitive services to pregnant women is a potential approach that could be adopted more widely (Aspinall & Jacobson, 2006).

8.87 Recent summary reports (Broderick, 2006a, b) have re-visited the consultation responses. While extensive effort has undoubtedly been made to capture the issues reported by minority and hard to reach groups, their representativeness, balance of responses and completeness of the data, cannot be certain. However, needs and choice featured highly. Examples of issues from the consultation responses from BME groups include:

- Less choice in general and less local choice for the most disadvantaged groups
- Impact on dignity and identity of women of different cultures
- Issues using public transport for non English speaking Bengalis
- Difficulties travelling to more distant neonatal units
- High proportions of deprived or disadvantaged population, lack access to their own transport
- Less trust in services after this consultation

8.88 As described above, it is assumed that the distribution of ethnic minority populations will remain fairly constant and cluster predominantly around Central Manchester, Bolton, Oldham and Rochdale. Currently women and babies from ethnic minority groups are:

- At most risk of poor maternal and neonatal outcomes;
- More likely to experience socio-economic deprivation, increasing their overall risk;
- More likely to be a late booking or miss key antenatal appointments, adding to their risk.

8.89 Based on the evidence available, and with the caveats about data quality and aggregating data for groups of different ethnicity, the MiB proposals for reorganizing 24 hour in-patient care will impact on the health and well-being of women and babies from ethnic minority groups.

**These women and babies will possibly:**

- Benefit most from the improvements in clinical efficiency and effectiveness, e.g., the provision of more neonatal intensive care sites and cots;
- Be one of the groups most adversely affected by difficulties in physically accessing more distant 24 hour in-patient care, e.g., restricting visiting from family and friends;
- Have more limitations on the choices they make compared with other population groups, e.g., as a result of communication and language issues.

8.90 However, at this point the MiB proposals do not include details of changes to how obstetric and neonatal care will be provided, so it cannot be predicted what the impact on the existing social and cultural barriers to care may be, e.g., enhancing earlier booking and sustained attendance at antenatal clinics. It will be important that this is addressed as models of care develop.

8.91 Although generalisations have been made about ethnic minority groups, it is important that the specific needs of different ethnic minority populations, and the risks to these women and their babies during pregnancy and childbirth, are considered separately and not as a single homogenous group.

8.92 It is recognised that it is unwise always to use aggregated data for the five main ethnic groups of the Census, as this masks heterogeneity between different ethnic groups. Such differences may be based on a mix of elements of ethnicity and the demographic stage of the particular group. When developing local data collection systems, categories should always map back to the Census groups.
People with Disabilities

8.93 It is estimated (Labour Force Survey, 2004) that approximately 12% (1.1 million) of parents in Britain are disabled, i.e., have some long term disability or illness which has an adverse effect on their ability to undertake normal daily activities; this includes physical and mental impairment. This group of parents is protected under community care legislation and/or the Disability Discrimination Acts, 1995 and 2005. Within this group are parents with learning disabilities; it has been estimated that 17% of learning disabled people are parents although these estimates should be viewed with some caution due to definition difficulties (previous estimates ranged from 26,000 to 250,000 learning disabled parents). It is anticipated that as more learning disabled parents lead more normal lives, a larger proportion will become parents (Morris & Waters, 2006). There is also a significant proportion of parents with moderate to severe mental health support needs ranging from 450,000 to 1.7 million in Britain; estimates here should also be treated with caution.

8.94 A wider group of parents who have support needs above the general population, but who don't meet the 'permanent/long term' and/or 'substantial' classification include parents with alcohol or substance misuse problems. It is estimated that currently 1% of babies are born to mothers with drug misuse problems and equivalent proportion to mothers with alcohol problems; this is reported to have increased over the last 5 years.

8.95 By the end of 2004, 6,286 babies were born to HIV-infected women in the UK, a six-fold increase since 1997 (RCOG, 2005). Although there are stark contrasts in regional HIV prevalence with 45 per 10,000 in London and 16 per 10,000 outside London, this is rapidly changing. The prevalence also varies with ethnicity as follows: Black African (4.4%), Black Caribbean (0.3%), White (0.07%) and Indian/Pakistani/Bangladeshi (0.03%).

8.96 There is often overlap between these different population and service user groups. For example, many service users have a dual diagnosis of substance and/or alcohol misuse and mental illness; disability and illness are also associated with mental health problems. In addition to this, disabled people are twice as likely to live in low income households, and are four times more likely to be unemployed or economically inactive (at the same age and with the same qualification) than non-disabled people.

8.97 As parents, disabled people have direct experience of discriminatory attitudes from the public and professionals, e.g., harassment or bullying of learning disabled parents, as well as perceptions that they may be stigmatized, e.g., for being HIV positive, or that they may have their baby taken from them, e.g., for having substance misuse or mental health problems. For many parents this has prevented them accessing heath or social care in a timely fashion.

8.98 There is a paucity of evidence on the support needs of parents with different disabilities; most evidence refers to the relationship with services. Similarly there is very little evidence on the experiences in pregnancy and childbirth of disabled parents. Some mothers have reported very positive experiences with some health care professionals going out of their way to make appropriate adjustments to the services and environment; however these have often been in response to unplanned whilst for other mothers the environment provided added to feelings of dependence and disability during labour and afterwards. Other challenges include the need for better communication between obstetrics and other specialist care e.g., psychiatric teams; this is particularly important to the health of disabled pregnant women and their babies.


8.100 To summarise this evidence:
• Disabled pregnant women and their babies are at greater risk of poor outcomes than non-disabled women;
• Disabled parents are more likely to experience socio-economic deprivation than non-disabled parents, adding to their risk;
• Disabled pregnant women are more likely not to access services due to the fear of negative attitudes from professionals, adding to their risk;
• Effective communication between obstetrics and other specialist teams is important to maternal and neonatal health outcomes;
• Disabled pregnant women do not always receive ‘reasonable adjustments’ to the treatment and care that they receive that ensures it is of the same quality as a non-disabled person;

8.101 Based on this evidence, the MiB proposals for reorganizing 24 hour in-patient care will potentially have positive and negative impacts on the health and well-being of disabled women and their babies.

These disabled women and their babies will possibly:

• Benefit most from the improvements in clinical efficiency and effectiveness, e.g., the provision of more neonatal intensive care sites and cots;
• Be one of the groups most adversely affected by difficulties in physically accessing more distant 24 hour in-patient care;
• Restrict choice more than for non-disabled women.

8.102 The MiB proposals do not at this stage include details of changes in how obstetric and neonatal care will be provided and this is where the key health gains for disabled women are anticipated.
9. Conclusion and recommendations

Conclusion

9.1 Desk-based or rapid assessments involve collecting and analysing mainly existing, accessible data with the impacts described in broad, qualitative terms; the limitations of these assessments reflect the necessary trade off between brevity and rigour. This is also the case for this integrated HIA/RaIA where the assessment was reliant on what data were already available of appropriate quality and comparability; very little new data were collected. With less appropriate, comparable data there is less strong evidence of impacts; similarly, the degree of certainty with which impacts could be predicted as well as the scale of the impact (proportion of the population affected and its severity) is reduced.

9.2 Another limitation of this assessment was the scope and timing. The focus of this HIA was to assess the potential health effects of the ‘Making it Better’ proposals for 24 hour in-patient hospital obstetric, neonatal and paediatric care on patients at Review area level. However it is recognised that this is only a part of the overall development plans for women’s, babies’ and children’s services across the Review area. The timing of the assessment prohibited stakeholder engagement at this stage and limited data collection and analysis. The final or stage 2 HIA will enable a broader assessment of the potential impacts of proposals to provide more ‘care closer to home’, developing quantified estimates of some of these impacts as well as engaging stakeholders in determining the impacts.

9.3 However, in spite of these caveats it is still clear that the ‘Making it Better’ proposals for reducing 24 hour in-patient hospital obstetric, neonatal and paediatric care from 13 to 7 or 8 sites across the Review area will have both positive and negative health impacts on women, babies, children and their families.

9.4 The most significant positive health impact will potentially result from improvements in the clinical efficiency and effectiveness of care. For mothers, the proposals will possibly reduce the risk of maternal morbidity and death resulting from pregnancy and child birth, particularly during delivery. Those options that provide locally accessible 24 hour care to deprived areas and/or populations with a high proportion of ethnic minority groups will reduce risk in the most vulnerable groups and will contribute to reducing health inequalities. There is the potential for even greater health gains with more ante and post natal care provided in the community. However, the potential gains from the development and implementation of shared models of care, care pathways and clinical guidelines at network level which are under development are also potentially significant.

9.5 For new babies, the main health gain will potentially be from the increase in accessibility to neonatal intensive care (increases from 2 to 3 sites) and greater availability of intensive care cots. It is probable that there will be an increase in survival rates for pre-term (27 weeks plus) or low birth weight babies as a result of this. There is strong evidence that the timely transfer of premature and/or low birth weight babies positively affects their survival rates. As for mothers, whether the proposals will benefit babies most at risk of poor neonatal outcomes, contributing to reducing health inequalities will depend on which option is selected. There is the potential to build on these health gains through community-based care as well as by improving the quality of how care is provided.

9.6 For children and their families, it is possible that quality and clinical safety may improve and that the range of treatment regimes available may improve as a result of the consolidation of skills and resources into a smaller number of units. Associated with this it is possible that there will be improved health outcomes for children in need of specialist paediatric in-patient care although it will be difficult in the future to separate out the benefit attributable to service reconfiguration from that resulting from medical advances in a rapidly changing field.
9.7 The main negative health impacts are concerned with the reduced physical accessibility of care. A significant minority (between 15.9% and 30.3% across all options and modes) of pregnant women and their families will probably have to travel for longer for in-patient care, but this is unlikely to affect clinical effectiveness for the majority of patients. However, it is assumed that for most women, in-patient care will be an infrequent event, e.g. after delivery. For the majority of these people, increases in journey times will be relatively minor. It is estimated that 1.6% of population have a travel time of up to 50 minutes by private car or taxi to any of the MiB options; this falls within the ‘golden hour’ rule for critical care interventions. It should be noted that exceptions to this may include people with disabilities, and people who have communication or language problems which affect travel. However, although the additional travel time is not predicted to have a significant effect on physical health for the majority of patients it is speculated that there may be negative psychological impacts. Similarly the reduction in patient choice, due to the reduction of hospital sites providing this care, is speculated to potentially have a negative impact on psychological well being; people with disabilities and BME groups will have their choice limited most. In addition it is speculated that there could be indirect impacts that may particularly affect women and families on low incomes as a result of additional travel costs for in-patient care. PCTs and Trusts need to address this issue.

9.8 In addition to women, babies, children and their families, the MiB proposals may have other indirect positive and negative health effects on the Review area population as a whole. These effects relate to a probable increase in road traffic to those sites selected for in-patient care. Associated with this is a probable decrease in air quality potentially increasing the health risk to populations adjacent to these sites. Overall it is speculated that there will be a minor increase in air pollution as a result of localised increase in vehicular transport. This will potentially impact most on groups known to be at risk from poor air quality. Conversely there may be an improvement in air quality in those areas not selected for in-patient care with reductions in road traffic. There is the potential for this health risk to be mitigated against by considering transport solutions during the detailed planning and development processes for the selected sites. Similarly decreases in air quality due to in-patient care and visiting may be off-set by more community-based care for ante and post natal care as more defined proposals are developed for this.

9.9 Whilst limited evidence has been accessed, MiB may also potentially impact on local economies and indirectly affect the health of the population. For those areas where in-patient hospital care is withdrawn, there may be an overall economic loss in these communities, including loss of employment (NHS and non-NHS), reduced local purchasing and impacts on deprivation. This would most likely affect groups already disadvantaged in the labour market, e.g., people with disabilities or chronic health conditions, low skilled workers, BME groups, lone parents, older people and women. It is possible that if sites not selected for in-patient care are in areas of higher deprivations than those that are selected this will potentially impact on the health of the whole populations as well as patients, having a multiple effect and contributing to widening inequalities. The scale of any such impacts should be considered in further work.

9.10 It is probable that there will be negative impacts on some staff affected by the MiB proposals, e.g., changing the main location of employment. Although it has not been possible to assess the impacts on the NHS workforce, evidence from other studies has shown the negative health impacts associated with perceived ‘job insecurity’ particularly when moving from previously ‘secure’ to ‘insecure’ jobs. However, it is possible to mitigate against these negative impacts by addressing key mediators of these health effects, e.g., decision latitude and participation. PCTs and Trusts will need to address this issue.
Recommendations

Data
- Develop a comprehensive dataset, including ethnicity, to inform future planning, implementation and monitoring. It should include for example, paediatric care activity, hospital catchment areas, patient flows, “Near Miss” events and appropriate levels of analysis, e.g., PCT, population groups and projections or forecasts by option.
- Ensure that newly commissioned data is capable of comparison with other profile data.
- Use the profile as a basis for monitoring the impacts of MiB.

Equity
- MiB has an opportunity to reduce health inequalities by making decisions which reduce known risks to the groups most vulnerable to poor maternal, neonatal or paediatric outcomes, e.g., BME groups, people with disabilities, people living in deprived areas or on low incomes. The MiB Joint Committee in reaching its’ decisions should demonstrate explicitly how this will be achieved;
- Conduct an audit of vulnerable groups across the Review area to complement existing data;
- Ensure that future MiB developments, e.g., for community-based care and new clinical guidelines, and are under-pinned by equity principles.

Engagement, communication and information
- Continue to actively engage organisational and community stakeholders using sustainable methods, e.g., in the development of plans for community-based services, new models of care and clinical guidelines;
- Provide support to engage patients and carers, e.g., training, as well as accessible information on MiB and service developments;
- Ensure effective multidisciplinary and inter-team communication and collaboration underpins Network developments.

Right to health
- In coming to its’ decisions, the MiB Joint Committee should demonstrate that it reflects the principles of ‘Right to Health’ as enshrined in the Universal Declaration on Human Rights – accessibility, availability, acceptability and quality.

Quality of care
- As part of implementation, the MiB Team should explicitly demonstrate improvements in clinical efficiency and effectiveness by developing shared models of care, care pathways and clinical guidelines at Network level and across traditional organisational boundaries;
- Support the developments of the clinical network by developments in the strategic organisation of care at Review area level, e.g., flexible, inter-Trust employment terms, accountability frameworks, reporting and governance arrangements.

Accessibility (physical) of care
- Consider how the proposals impact upon people with mobility difficulties and access issues of people with communication or language problems that affect traveling.
- Approaches to ameliorate the negative impacts of reduced accessibility and choice should be considered and acted on as part of the decision-making process, e.g, travel routes and information.

Accessibility (social, cultural acceptability) of care
- Each Acute site retaining 24hr in patient services should develop clinical guidelines and protocols that improves clinical effectiveness and efficiency, ensure these guidelines are culturally and socially sensitive, enhancing access to care.
Black Minority Ethnic Groups

- Enhance data quality based on ethnicity, e.g., by further analysis of existing data (even where incomplete), disaggregating data to constituent ethnic groups, ensuring local data collection systems are capable of comparisons with 2001 Census classifications;
- Ensure that translation and interpretation services are readily available as a matter of routine;
- Ensure vulnerable groups are effectively engaged, their specific needs identified and approaches tailored to their needs are reviewed and implemented or new approaches piloted, e.g., ‘Race for Health’, teen-focused care.

Organisation (availability) of care

- Ensure that decisions that impact on the availability of care within or adjacent to the Review area, and ultimately impact on MiB, are effectively coordinated between health economies;
- Examine how policy tensions, e.g., between Trusts due to competition for services, practice-based commissioning, may influence the Networks developments and develop strategies to limit any negative impacts.

Transport

- Define the scale of the road traffic issues associated with increases in activity for potential in-patient sites;
- Define real travel times and develop a strategy to reduce the impact for ‘travel vulnerable’ groups, e.g., people with disabilities, BME groups;
- Liaise with Transport planners and Passenger Transport Authorities as part of the Local Transport Plan process to define solutions to these issues, e.g., direct bus routes, extended hospital and community transport, ‘dial – a – ride’ schemes;
- PCTs and Trusts to consider transport impacts for patients and staff in their estates and green transport plans.

Economy

- Undertake a detailed analysis of the potential impacts on local economies for different proposal options;
- Engage local economic development units as well as the North-West Development Agency in defining mitigation measures as part of their economic development planning processes;

NHS workforce

- Continue informing and involving clinical and non-clinical staff in the MiB developments;
- Include the assessment of the health effects of the NHS workforce in the further HIA assessment work.

Monitoring and evaluation

- Ensure that both process and impact evaluations are undertaken of the interim HIA.

Further Work

- Commission an in-depth assessment of the health impacts of proposals or scenarios for community-based care;
- Develop quantified estimates of the impacts identified in the interim Report by further development of the care pathways model;
- Engage stakeholders in the further assessment.
10. Evaluation

10.1 Evaluation is an important part of Health Impact Assessment, both of the assessment process and the report recommendations. Process evaluation of the HIA assessment, for those undertaking the assessment and engaged in it, is essential for lessons to be learned that can improve efficiency and also contribute further to the robustness of the methodology.

10.2 Timely process evaluation of this interim report will be undertaken, following delivery of the report, using a mutually agreed method. For commissioners, it is essential that a clear pathway for the evaluation of the HIA report be developed. This is important in mapping out how the recommendations of the HIA Report will be monitored and implemented (by when and by whom) and the anticipated outcomes (changes in differential distribution) measured. Work on developing suitable indicators and measures and a framework for reporting back needs to be undertaken and put in place prior to implementation. Report monitoring and impact and outcome evaluation is a burgeoning area of methodological interest in HIA. Developing robust systems to assist the Children’s, Families’ and Young Peoples’ Network could be mutually beneficial.
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