4.5.01 Infant Mortality

Context

Bradford's infant mortality rate (IMR) is one of the highest in England and Wales, with between 60 and 70 babies dying every year, which although small in numbers, is still too high compared to other districts with a similar population[1]. An independent Infant Mortality Commission (IMC) was set up in 2004 to investigate why some of the babies born in the Bradford district die during their first year of life. This enabled an in depth analysis to be undertaken on White and Pakistani mothers, where numbers were sufficient to enable significant differences to be detected[2]. In 2006, the Bradford IMC published its report and recommendations and the work of the Commission continues as part of the Every Baby Matters agenda which focuses on ten recommendation areas detailed in the IMC report[2].

Overall, poverty and deprivation amongst families in the district underlies the higher than average infant mortality rate. The report highlighted two populations at higher risk of poor infant health in the District and the diverse risk factors experienced by these populations: Preterm birth, younger teenage parents, smoking, alcohol and non–prescription drugs are greater risk factors for the White population. The risk from dying from congenital anomalies was significantly higher in Pakistani babies compared to White babies and also compared to the region or nationally.

The Born in Bradford study of over 10,000 pregnant women and their children has provided much needed detailed information to tackle infant mortality and health issues in children[3]. Findings from the recent Born in Bradford research highlight environmental influences on health and birth outcomes where pollution has also been identified as a risk factor for low birth weight babies, and greener environments are associated with less risk of small for gestational age. Risk factors during pregnancy and birth outcomes also highlight:

- Binge drinking during pregnancy results in 68% increase in likelihood of child 'small for gestational age';
- Smoking during pregnancy increases the likelihood of having a child 'small for gestational age' and preterm birth;
- A maternal diet high in acrylamide (found in chips and crisps) is associated with lower birth weight and smaller health circumference.

Evidence in the Marmot Review (2010) also states that 'low birth weight in particular is associated with poorer long-term health outcomes and the evidence also suggests that maternal health is related to socioeconomic status'. For both White and Pakistani populations, reducing the number of babies born with extreme and very low birth weight and reducing deprivation would result in a reduction in infant deaths; hence early access to high quality antenatal care is essential for any women in an "at risk" group.

Until recently, there had been a steady increase in the number of births each year, with around 8,500 children being born annually across Bradford district. An increasing proportion of births occur in the South Asian population[3].

Work led by the Every Baby Matters Steering Group to reduce the risk of babies dying during the first year of life continues to support the health of all mothers, infants and children across the district. Reducing infant mortality continues to be a priority work programme for the District and working towards this target is recognised within the Bradford District Partnership, Children's Trust and Children and Young People's Plan, Bradford Health Inequalities Plan and within NHS Bradford and Airedale's Clinical Commissioning Groups for Health Strategy.

National and local targets

Previous national targets associated with infant mortality were:

- PSA target: To reduce inequalities in health outcomes by 10% by 2010, as measured by infant mortality and life expectancy at birth.
- PSA target: Starting with children under one year, by 2010 to reduce by at least 10%, the gap in mortality between the routine and manual group and the population as a whole. The baseline is 1997–1999.
- Previously, the department of health has used infant mortality data in conjunction with other analyses performed by the Office for National Statistics to monitor the Public Service Agreement (PSA) target on infant mortality for England and Wales. Currently, infant mortality continues to take a central role in DH's work on tackling health inequalities within the NHS Outcomes Framework 2012/13.
- Both the NHS Outcomes Framework 2013-14 and the NHS Public Health Frameworks 2013 highlight reducing deaths in babies and young children and both include indicators on infant mortality (Public Health Outcomes Framework, indicator 4.1).

Current targets that are monitored within the Every Baby Matters programme:

- Increase the percentage of mothers who initiate breastfeeding at birth (local target).
- Increase the prevalence of breastfeeding at 6 to 8 weeks from birth.
- Reduce the percentage of women who are smoking at time of delivery.
- Increase the percentage of women who have seen a midwife or an appropriate health care professional for health and social care assessment of needs and risk by 12 weeks of pregnancy.
- Halve the conception rates for teenagers aged 15 to 17 years by 2010 from the 1998 baseline.

Relevant strategies and local documents

- Bradford District Every Baby Matters Strategy (2011-2014)
- Good Health and Wellbeing: Strategy to improve health and wellbeing and reduce health inequalities (2013-2017)
- Bradford District Health Inequalities Action Plan (2013-2017)
- A Breastfeeding Strategy for Bradford District (2011 – 2014)
- Bradford District Child Poverty Strategy (2011-2014)
- Bradford District Infant Mortality Commission Report 2006
- Children and Young Peoples Plan 2011–2014 Bradford District
- Bradford District Children and Young People's Health and Lifestyle Survey (2013)
- Bradford District Infant Mortality Commission Report 2006
- Implementation plan for reducing health inequalities in infant mortality: a good practice guide 2007, Department of Health
- Commissioning for Health Strategy 2008–2011, NHS Bradford and Airedale
- Healthy Lives, Brighter Futures 2009, Department of Health, Department of Children Schools and Families

- Health visitors have responded positively to the *Health Visitor Implementation Plan 2011-2015:* A Call to Action published in 2011
- Marmot Review : Fair Society, Healthy Lives
- Public Health Outcomes Framework for England 2013 to 2016
- The NHS Outcomes Framework 2013-14 (Department of Health 2012)
- Born in Bradford Research
- Healthy Minds Strategy

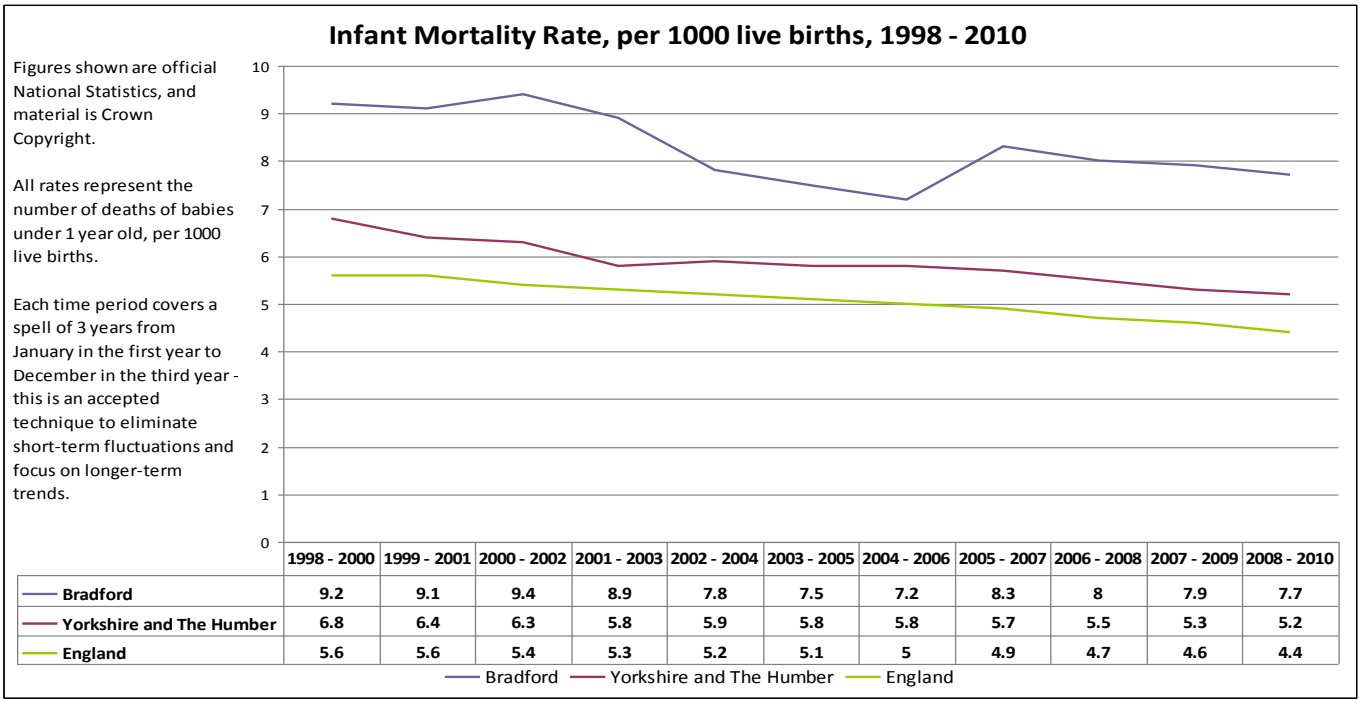
What do the data tell us?

Infant mortality rates are best understood by examining the average rate over three years; the rate is usually expressed as the number of deaths per 1,000 live births. Bradford district rates are higher than regional and national rates, however, the latest published data shows a reduction in infant mortality rates to 7.5 per 1000 live births which follows a downward trend for the last five years.

Infant Mortality Rates per 1000 live births (3 year rolling data)						
Rate per 1,000 live births	2005-2007	2006-2008	2007-2009	2008-2010	2009-2011	2010-2012
Bradford	8.3	8.0	7.9	7.7	7.5	7.0
Yorkshire and the Humber	5.7	5.5	5.3	5.2	5.2	4.8
England	4.9	4.7	4.6	4.4	4.2	4.3

Notes: rates represent the number of deaths of babies under 1 year old, per 1000 live births. 3 year rolling averages are used - this is a technique used to eliminate short-term fluctuations and focus on longer-term trends. Source: Health and Social Care Information Centre.

Infant mortality Rate per 1000 live births for England, Yorkshire and the Humber and Bradford 3-year rolling averages 1998-2000 to 2008-2010



	1998 - 2000	1999 - 2001	2000 - 2002	2001 - 2003	2002 - 2004	2003 - 2005	2004 - 2006	2005 - 2007	2006 - 2008	2007 - 2009	2008 - 2010
Bradford	9.2	9.1	9.4	8.9	7.8	7.5	7.2	8.3	8	7.9	7.7
Yorkshire and The Humber	6.8	6.4	6.3	5.8	5.9	5.8	5.8	5.7	5.5	5.3	5.2
England	5.6	5.6	5.4	5.3	5.2	5.1	5	4.9	4.7	4.6	4.4

Infant mortality rates are up to double the national rate in deprived areas of Bradford district. Overall the infant mortality rate has reduced since the very high levels in 2000-2002 which initiated the Infant Mortality Commission, but the overall rate remains high and the differences between least and most deprived populations within Bradford district persist.

Infant Mortality Rates per 1,000 live births across Bradford district: 3 year rolling averages 1996-1998 to 2006-2008

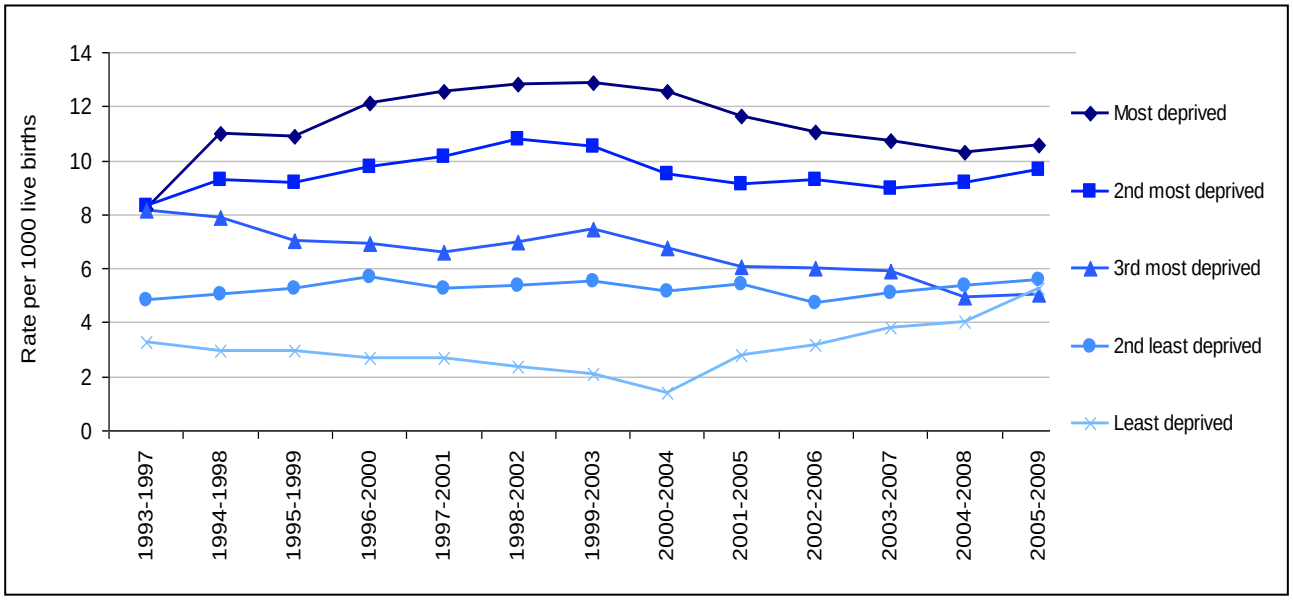
	1997-1999	1998-2000	1999-2001	2000-2002	2001-2003	2002-2004	2003-2005	2004-2006	2005-2007	2006-2008	2007-2009
Bradford	8.4	9.2	9.1	9.4	9.0	7.9	7.6	7.2	8.4	8.2	8.1
England and Wales (2009)	5.8	5.7	5.7	5.5	5.4	5.2	5.2	5.1	5.0	4.8	4.7
Most Deprived Bradford Quintile	10.3	12.2	12.6	14.0	13.0	10.7	9.8	9.3	10.6	10.8	10.2

Source: Public Health Analysis Team, NHS Bradford and Airedale, based on ONS data

Inequalities in infant mortality by deprivation 2008 – 2011 indicate that over this 4 year period, 59% of babies born in the CBMDC area were born in the 20% most deprived areas of England. The infant mortality rate in the most deprived areas is more than 3.5 times that of the least deprived areas. Over a four-year period, the relatively small numbers mean the figures are not statistically robust – HOWEVER, they confirm longer-term analysis.

Infant mortality rates in the most deprived quintile of Bradford are compared below to those in Bradford district and to the England and Wales rates; this reveals a consistently higher infant mortality rate amongst families in the most deprived quintile of Bradford district.

Infant Mortality Rate by Quintiles of Deprivation in Bradford 1993-1997 to 2005-2009



The Child Death Overview Panel Report (CDOP) for 2008-2010 showed that of the deaths in infants under 1 year of age that had been fully reviewed:

- 41% -due to chromosomal, genetic and congenital anomalies
- 27% -due to perinatal/neonatal events
- 19% -due to chronic medical conditions
- 13% -due to other conditions

CDOP Executive Summary to Bradford Safeguarding Board 2008-2010

It is to be noted that not all deaths have been reviewed for the period April 2008-March 2010 (47% of all deaths under 18 years had been reviewed at April 2010). However, the CDOP report for 2011-12 will include, for the first time since CDOP started, a full years cohort of children of all ages under 18 years who have died and been fully reviewed.

Infant Mortality by locality in Bradford

There are three Wards in Bradford with significantly higher Infant mortality rates compared to that of the whole of Bradford:

- Little Horton
- City
- Bradford Moor

There are further eight Wards with a higher than average for Bradford:

- Keighley Central
- Windhill and Wrose
- Toller
- Tong
- Manningham
- Eccleshill
- Great Horton
- Bowling and Barkerend

Source: Public Health Analysis Team, NHS Bradford and Airedale

What do our stakeholders tell us?

Health visitors have responded positively to the *Health Visitor Implementation Plan 2011-2015: A Call to Action* published in 2011. Areas where health visiting can impact include Domain 1: Preventing people from dying prematurely where reducing infant mortality and neonatal mortality & stillbirths is priority. Integrating services within early years and Children Centres so health visiting and midwifery services are provided within community settings has been identified as an important approach to targeting inequalities early and improving access to appropriate services. An integrated care pathway has now been developed between midwifery, health visiting and early year's services which will ensure that health and Early Years services operate in a cohesive and effective way to support women and young children in areas of greatest need.

Following discussions with our stakeholders, health performance targets for Children's Centres now include immunisations, breastfeeding, obesity and infant mortality and will support partnership working to target inequalities in maternal and child health.

Partnership between VCS, Health, Local Authority, and other key partners resulted in a successful application for Better Start lottery funding which focused on pregnancy and children age 0 to 3. Having successfully completed initial stages of the Better Start bid has led to consultation with key stakeholders which will inform the way in which services should be delivered to meet the needs of our diverse communities, including workforce development plans.

Future needs and gaps in provision

The Report of the Bradford District Infant Mortality Commission[2] (BDIMC) provided important insights to the major causes of infant death in Bradford. From this enquiry we know that Bradford district's hospital

services are of an equal standard to other hospitals in England and Wales and that the greatest benefits to maternal and infant health will be achieved through public health interventions to improve lifestyles and living conditions. The following ten areas were highlighted for development:

1. To reduce poverty and unemployment in Bradford.
2. To improve the standard of housing, in particular privately rented and temporary accommodation for pregnant women and their families.
3. To improve mothers' nutritional status by addressing over and under-nutrition, by vitamin D supplementation and by increasing breast feeding rates.
4. To improve early access to antenatal services and a full range of support programmes for pregnant women.
5. To improve social and emotional support for mothers.
6. To reduce the number of women who smoke during pregnancy.
7. To improve community understanding of genetics and the risks of babies being affected by inherited congenital disorders.
8. To improve community understanding of the full range of risk factors for infant deaths.
9. To monitor deaths and risk factors to inform the planning of interventions.
10. To continue research and development in Bradford into the causes of infant deaths.

In November 2009, the Department of Health National Support Team (NST) provided further guidance and an updated Infant Mortality Priority Action Plan (IMPAP) was developed with contributions and commitments from across the Bradford District Partnership. The Every Baby Matters steering group monitors this plan and all partners report into this group twice yearly. The current IMPAP 2011-12 can be accessed on www.everybabymatters.org.

Summary of priorities

Key areas for the Every Baby Matters Partnership Steering Group for the next 12 months include:

- Effective partnership working to implement the full range of recommendations from Bradford District Infant Mortality Commission and the revised Strategy and Action Plan 2010.
- Develop Better Start bid and mapping and ensuring resources are prioritised according to areas of greatest need
- Integrated working approach across all children services in the early years which contributes to improving both maternal and child health overall and reducing infant mortality rates
- Ensure successful delivery and implementation of Call to Action and family nurse Partnership
- Continued focus on ensuring key interventions via the Every Baby Matters Steering Group identified within the Infant Mortality Action Plan and Districts Health Inequalities plan are delivered effectively
- Reducing risk and impact on families of child poverty and poor housing with the Child Poverty Action Plan and prioritising areas through targeted interventions and resources in schools (CCG bid for school meals)
- Improving nutrition for pregnant women and increase the number of women who breastfeed their babies for at least six months
- Increasing uptake of Healthy start vitamins which include vitamin D in pregnancy and support the development of community champions
- Ensuring that women have access to a full range of antenatal services from early in pregnancy, especially if high risk by encouraging women to book direct with their midwife.
- Reducing the number of women who smoke prior to and during pregnancy.

- Offering effective interventions to those women who are at risk of alcohol or substance misuse.
- Increasing individuals and families understanding of genetic inheritance.
- Ensuring effective communications across the district and development of a new website and briefings
- Ensuring effective use of all new research, audits and public health intelligence, including the reports from the Born in Bradford study and the Child Death Overview Panel, to inform the planning of future interventions.
- Improving the health of women prior to their pregnancy, during pregnancy and the health of their young babies will improve the long-term maternal and child health of the next generation as well as reducing infant mortality rates.

References and further reading

[1] Data atlas for infant mortality in England and Wales http://www.chimat.org.uk/default.aspx?QN=CHMT1

[2] Bradford District Infant Mortality Commission Report 2006 http://www.bradford.nhs.uk/ebm/BDIMC/Pages/TheReport.aspx

[3] Born in Bradford website: http://www.borninbradford.nhs.uk/

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- *CDOP Executive Summary to Bradford Safeguarding Board 2008-2010*