Report to: Manchester Health and Wellbeing Board – 23 January 2019

Subject: Reducing Infant Mortality Strategy

Report of: Director of Population Health and Wellbeing

Summary

This report provides information on current trends, patterns and risk factors associated with infant mortality in Manchester. It highlights a concerning picture of infant mortality rates increasing since 2011-13 following a long period of year on year reductions.

The report also presents the final draft for approval, of the five year multi agency strategy to reduce infant mortality and support those affected by baby loss. The strategy contributes to the Manchester Population Health Plan "First 1000 days" priority. The draft strategy was presented to the Manchester Children and Young People Scrutiny Committee on 8 January 2019, which gave its full support to the objectives and actions contained in the strategy

Recommendations

The Board is asked to:

- Note the report;
- Approve the Strategy.

Board Priority(s) Addressed:

Health and Wellbeing Strategy priority	Summary of contribution to the strategy
Getting the youngest people in our communities off to the best start	Being in good health is essential for our children and young people in enabling them to achieve their full potential in transition to adulthood. A healthy start in life is fundamental to our young people being able to contribute to the city and will improve their life chances. Action to reduce infant mortality will have positive health benefits for families who would have been affected and the wider community.
Improving people's mental health and wellbeing	
Bringing people into employment and ensuring good work for all	
Enabling people to keep well and live independently as they grow older	
Turning round the lives of troubled families as part of the Confident and Achieving Manchester programme	
One health and care system – right care, right place, right time	
Self-care	

Background documents (available for public inspection):

The following documents disclose important facts on which the report is based and have been relied upon in preparing the report. Copies of the background documents are available up to 4 years after the date of the meeting. If you would like a copy please contact one of the contact officers above.

The Population Health Plan can be found at www.manchester.gov.uk/healthplan

Manchester Child Health Overview Panel (CDOP) Annual Report 2017/18
https://www.manchestersafeguardingboards.co.uk/wp-content/uploads/2017/07/2017-2018-Manchester-CDOP-Annual-Report-FINAL.pdf

1. Introduction

1.1. This report provides information about infant mortality and outlines our proposed strategy to reduce the number of infant deaths in Manchester.

1.2. Infant mortality is an indicator of the overall health of a population. It reflects the relationship between the causes of infant mortality and upstream determinants of population health such as economic, social and environmental conditions. Reducing infant mortality is key element of the Manchester Population Health Plan First 1000 Days priority.

2. Definitions

2.1. Infant mortality is defined as deaths that occur in the first year of a child's life. The infant mortality rate is the number of deaths at ages under 1 per 1,000 live births. Stillbirths are not normally counted as infant deaths and are not included in the calculation of the infant mortality rate. Some of the factors that contribute to a stillbirth may also be contributing factors in infant deaths.

2.2. Infant deaths can be divided into three broad stages, each with a different set of risk factors and determinants:

- Deaths under 7 days of life (perinatal mortality)
- Deaths to infants aged under 28 days (neonatal mortality)
- Deaths to infants aged 28 days to 1 year (post-neonatal mortality)

3. Data sources and limitations

3.1. There are three main sources of data and information on infant deaths in the UK:

- Vital Statistics i.e. information supplied when infant deaths are certified and registered as part of the civil registration process. This is a legal requirement and the information that is collected is prescribed in the relevant legislation. The data collected through this process is managed by the Office for National Statistics (ONS) and is usually reported based on the local authority within which the deceased was usually resident at the time of death.

- Child Death Overview Panels (CDOP) collect and review information about each child death in a local area in order to build a picture of emerging themes and patterns and inform local strategic planning on how to best safeguard and reduce harm and promote better outcomes for children in the future. Each CDOP collects data in a common format and also submits information to the Department for Education on an annual basis to inform the national picture.

- Surveillance reporting systems, notably the Mothers and Babies Reducing Risk through Audits and Confidential Enquiries (MBRRACE) system. MBRRACE is part of the national Maternal, Newborn and Infant Clinical

Outcome Review Programme, the aim of which is to provide robust national information about the causes of maternal deaths, stillbirths and infant deaths and support the delivery of safe, equitable, high quality, patient-centred maternal, newborn and infant health services across the UK.

3.2.   The information collected by each of these sources is different. For example, the restrictions on the data collected as part of the deaths registration process means that the ONS dataset contains limited information on key risk factors, such as ethnic group, mother's country of birth, maternal lifestyles and family circumstances. However, data on some of these factors is collected as part of the CDOP process. Used together, the ONS and CDOP data provide a rich and powerful picture of infant deaths in Manchester.

3.3.   The CDOP Annual Report for Manchester for the period 2017-18 will also be presented to the Health and Wellbeing Board on 23 January 2019 to help set the context for this report and the strategy.

4.   Trends and patterns of infant deaths in Manchester

4.1.   Infant Mortality rates

Figure 1 shows the infant mortality rate for Manchester is 6.4 per 1,000 compared to 3.9 per 1,000 England 2015-17. Manchester has the fourth worst infant mortality rate in England.

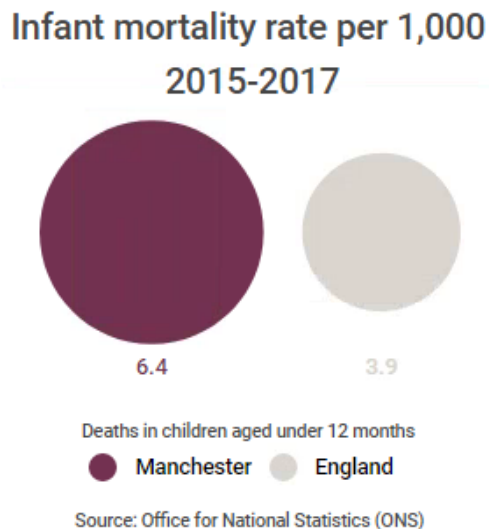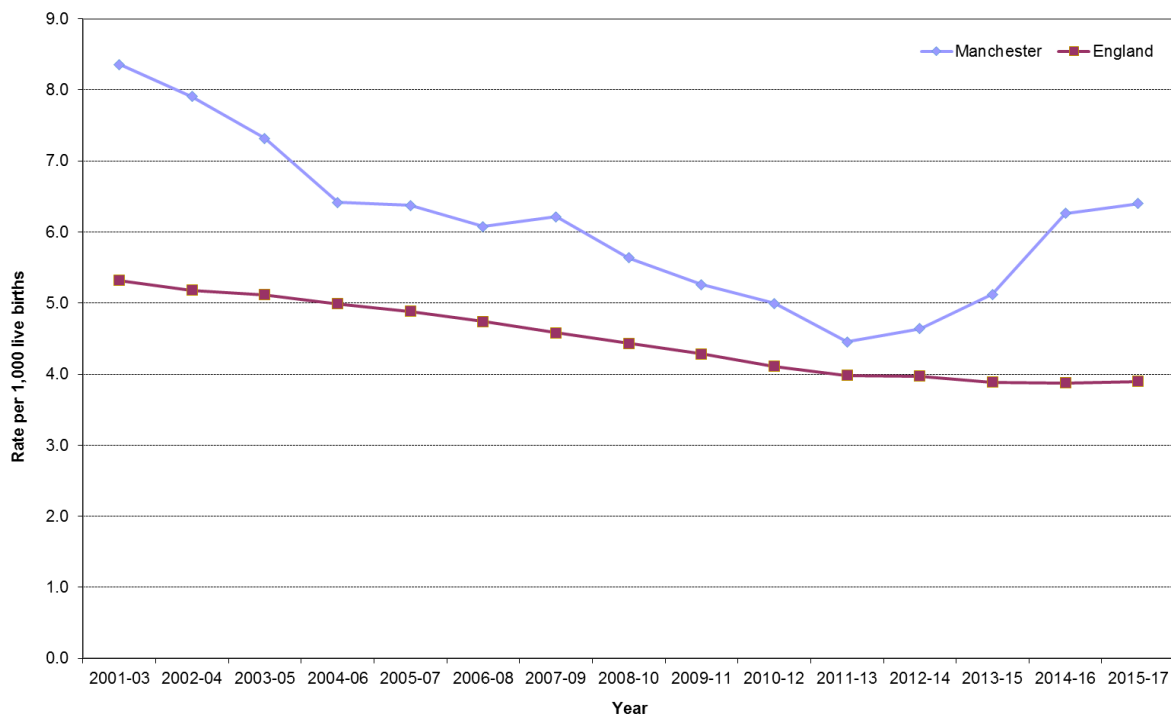Figure 1: Infant mortality rate for Manchester compared to England 2015-17

Infant mortality rate per 1,000
2015-2017

6.4   3.9

Deaths in children aged under 12 months
● Manchester   ○ England

Source: Office for National Statistics (ONS)

Figure 2: Infant mortality rate 2001-3 to 2015-17 in Manchester and England

4.2.   The infant mortality rate in Manchester has fallen substantially since the early 1900s. This is due, in part, to general improvements in healthcare combined with specific improvements in midwifery and neonatal intensive care. Between 1999-2001 and 2015-17, the infant mortality rate in Manchester fell from 9.2 per 1,000 live births to 6.4 deaths per 1,000 live births - a 30% fall in the infant mortality rate over this period (see Figure 2).

4.3.   Although in Manchester the infant mortality rate remains low in historical terms, the data shows that the rate of infant deaths has started to increase again. The number of infant deaths rose from 108 in 2011-13 to 151 in 2015-17 - an increase of 39.8%. In contrast the number of live births over this period has remained relatively stable.

4.4.   Data from ONS provides a more detailed insight into the recent increase in the number of infant deaths in Manchester (see table 1 below).

Table 1: Number of infant deaths in Manchester 2012-2017 by stage of death

Year	Stage of death		
	Neonatal	Non-neonatal	Total deaths
2012	25	6	31
2013	22	12	34
2014	32	15	47
2015	28	14	42
2016	51	11	62
2017	41	7	48
Total	**198**	**65**	**263**

4.5.   The table shows that there was an unusually large increase in the number of infant deaths in 2016 compared with 2015, particularly among deaths occurring in the neonatal period (>28 days), and that this reduced in 2017 but remained above the numbers seen in 2015. Overall, around a third (35%) of infant deaths occur very shortly after birth (less than 1 day) with a further 21% occurring within the child's first week of life. The figures indicate that the increase in infant deaths observed leading up to 2016 has now started to reduce.

4.6.   CDOP discussed and closed a total of 62 child deaths during 2017/18. Of these 40% were neonatal deaths (babies who dies under 28 days of life) and a further 25% died before their first birthday. Of the neonatal deaths 72% were born prematurely (56% were extremely premature <26 weeks) and 76% were born with a low birth weight. Further detail is provided in the CDOP Annual Report.

4.7.   Infant deaths by residence

In the period from 2013 to 2017, three of the neighbourhoods, based on the previous ward boundaries in Manchester, stand out by virtue of having higher numbers of infant deaths. These are (in order of the number of deaths), Higher Blackley, Harpurhey and Charlestown, Ardwick and Longsight, and Gorton and Levenshulme. In terms of the rate per 1,000 children aged 0 years, the Neighbourhood that stands out as having the highest rate is Ardwick and Longsight and the Neighbourhood with the lowest rate is Fallowfield and Withington.

Table 2: Number, rate and percentage of child deaths in Manchester by neighbourhood

Neighbourhood	Number of deaths 2013-17	% of all deaths	Rate per 1,000 (MYE 2015)
Higher Blackley, Harpurhey and Charlestown	31	13.4%	7.5
Ardwick and Longsight	29	12.5%	11.5
Gorton and Levenshulme	28	12.1%	5.4
Miles Platting, Newton Heath, Moston and City Centre	23	9.9%	7.5
Cheetham and Crumpsall	22	9.5%	5.5
Didsbury, Burnage and Chorlton Park	21	9.1%	5.1
Ancoats, Clayton and Bradford	18	7.8%	6.1

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Moss Side, Hulme and Rusholme	17	7.3%	4.3
Wythenshawe	14	6.0%	3.7
Chorlton, Whalley Range and Fallowfield	13	5.6%	4.6
Wythenshawe and Northenden	12	5.2%	5.1
Fallowfield and Withington	<5	2.0%	2.9
Total (rounded to nearest 5)	**235**	**100%**	**5.8**

5. Causes and underlying factors of infant deaths

5.1. When discussing and closing a case at panel, in line with the Department for Education requirement, the CDOP must categorise the nature of the death and the preventability to:

- evaluate information about the child's death;
- identify lessons to be learnt and gain an understanding of child deaths at a national level.

Of the 131 cases closed between April 2015 and March 2018, the CDOP categorised the deaths as follows:

Figure 3: Categorisation of deaths Manchester CDOP cases closed April 2015 - March 2018
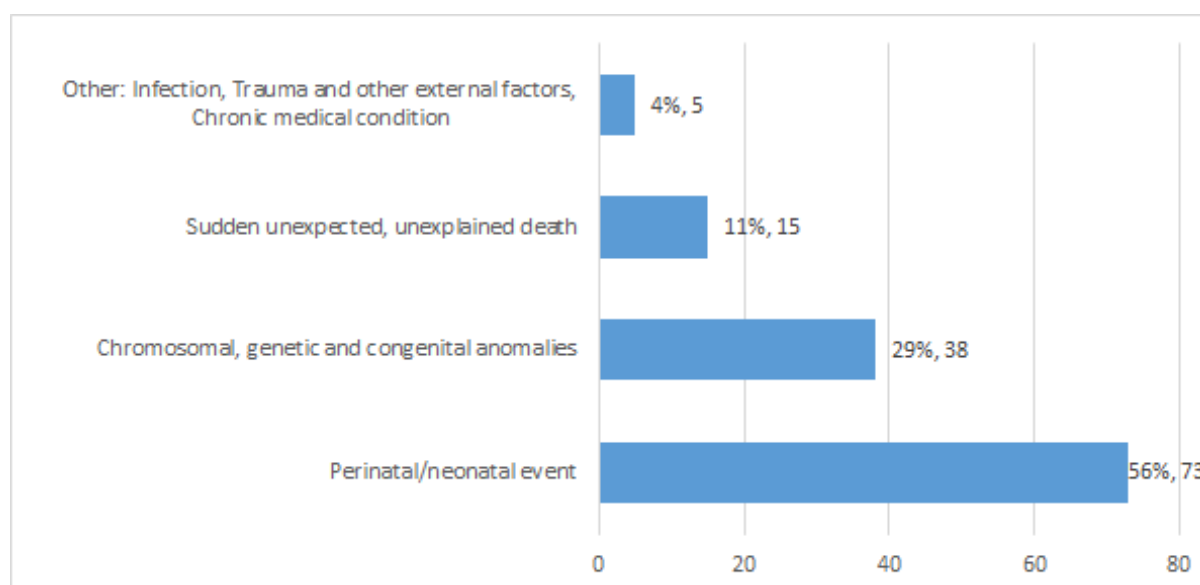
5.2.   The CDOP categorised just over half (56%) as a perinatal (under 7 days) / neonatal (under 28 days) event. 29% of cases were categorised as chromosomal, genetic and congenital anomalies. For these anomalies deaths are often expected due to the nature of the child's condition, however issues within service provision and whether or not families have accessed genetic counselling can be highlighted as a modifiable factor. For a small number of cases categorised as genetic, chromosomal or congenital parents stated that they were in a consanguineous relationship (1st or 2nd cousins) which increases the risk of inherited autosomal recessive disorders.

5.3.   For deaths categorised as a perinatal / neonatal event, the majority of deaths are expected although there may be a number of risk factors both antenatally and postnatally which increase the likelihood of an infant death.

5.4.   CDOP reviews age of mother when considering cases. Table 3 below shows maternal age for all perinatal / neonatal deaths for cases closed between 2015 / 18. There were no deaths of infants to teenage mothers recorded among cases reviewed during this period, although national research indicates infants of teenage mothers are at increased risk. This shows that the additional support offered to teenage parents in Manchester has a protective factor. The largest group were mothers ages 30-34 although this reflects the greatest number of births in this group. The highest rate of infant deaths occurred where mothers were 40+.

Table 3: Maternal age of mother - Manchester CDOP cases closed 2015-2018

Age of mother	No. of infant deaths	% of infant deaths	Births 2015/17	Rate per 1,000 births
Mothers Aged under 20	0	0%	731	0.0
Mothers Aged 20 - 24	15	21%	3,623	4.1
Mothers Aged 25 - 29	15	21%	6,854	2.2
Mothers Aged 30 - 34	**25**	**34%**	**7,093**	3.5
Mothers Aged 35 - 39	10	14%	4,166	2.4
Mothers Aged 40+	8	11%	997	**8.0**

5.5.   The ethnicity of the mother or the child are not collected at the time of registering a birth or death and, therefore, it is not possible to produce an ethnic breakdown of infant deaths using the data provided by ONS. However, national data shows that of babies with known gestational age, babies born in the White Other ethnic group (White Irish and any other White background) had the lowest infant mortality rate. In contrast, Pakistani and Black African babies had the highest infant mortality rates.

5.6.   Ethnicity is collected as part of the CDOP process. Table 4 below shows infant deaths reported to CDOP 2015/2018

Table 4: Ethnic groups - Manchester CDOP cases closed 2015-2018

Ethnic Groups	No. of infant deaths	% of infant deaths	2011 census data (under 5s)	Primary Schools roll data January 2018
White	49	40%	67%	42%
Black/African/Caribbean/Black British	31	25%	9%	17%
Asian or Asian British	30	25%	17%	22%
Mixed/ multiple ethnic groups	12	10%		9%
Other ethnic group	0	0%		
Total	122	100%		

5.7.   These deaths have been considered alongside census data and primary school roll data. This suggests that deaths amongst Black/African/Caribbean/Black British and Asian or Asian British ethnic groups were more likely to die under the age of 1 compared with what might be expected, in line with ethnic distribution of the Manchester child population.

5.8.   In part, this can be linked to the fact that the prevalence of some lifestyle factors known to increase the risk of infant mortality are higher in certain ethnic groups. For example, the prevalence of obesity is known to be higher among

women of Black Caribbean, Black African and Pakistani origin compared with other ethnic groups. It may also be the case that BME women are accessing maternity services less frequently (and later in their pregnancy) due to previous experiences and uncertain awareness of important prenatal testing.

5.9.   Infant deaths are linked to deprivation. For cases closed at CDOP during 2017/18, 78% occurred where residence was in the most deprived quintile. A similar pattern has been seen over a number of years.

5.10.   A number of the perinatal/neonatal deaths reviewed by the CDOP were recorded as being multiple pregnancies (i.e. twins or triplets). Some of the multiple pregnancies also resulted in miscarriages and stillbirths.

5.11.   The CDOP also noted that in some cases the mother had sought IVF treatment, a number of whom had travelled abroad for treatment. Issues were highlighted by the CDOP regarding 3 or more eggs being implanted, putting both the mother and baby at increased risk of complications during pregnancy and childbirth and having a lower birth weight.

5.12.   Maternal obesity during pregnancy can lead to increased health risks for mother and baby. For perinatal / neonatal cases closed by CDOP 2015-18, 34% of mothers had a Body Mass Index (BMI) of 30+ at time of booking (obese, morbidly obese) a further 37% (27) of mothers were overweight (BMI between 25 - 29.9). Maternal obesity more prevalent in mothers aged 30+

5.13.   Smoking in pregnancy is the single biggest risk factor for infant mortality. Of the 41 infant deaths closed by CDOP in 2017/18, 20% of mothers stated that they smoked during pregnancy. A further 7% stated that they did not smoke in pregnancy but smoked postnatally.

5.14.   As well as risk factors there are a number of protective factors against infant deaths. These include vaccinations (including flu vaccination for pregnant women), breastfeeding and safe sleeping practices (putting babies to sleep on their backs in a separate cot or moses basket in the same room as parents)[1]

6.   **Modifiable factors**

6.1.   Figure 4 below summarises the range of modifiable / risk factors identified in infant deaths in Manchester. All of these factors can either increase the risk of prematurity, or that the infant will not be born in the best possible condition or make sudden infant death syndrome more likely. It is identified that modifiable factors occur in around one third of infant deaths. Modifiable factors act as a multiplier effect, where there are two or more factors present, the vulnerability of the child increases.

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[1] https://www.lullabytrust.org.uk/safer-sleep-advice/

Figure 4: Modifiable risks factors identified in infant deaths in Manchester
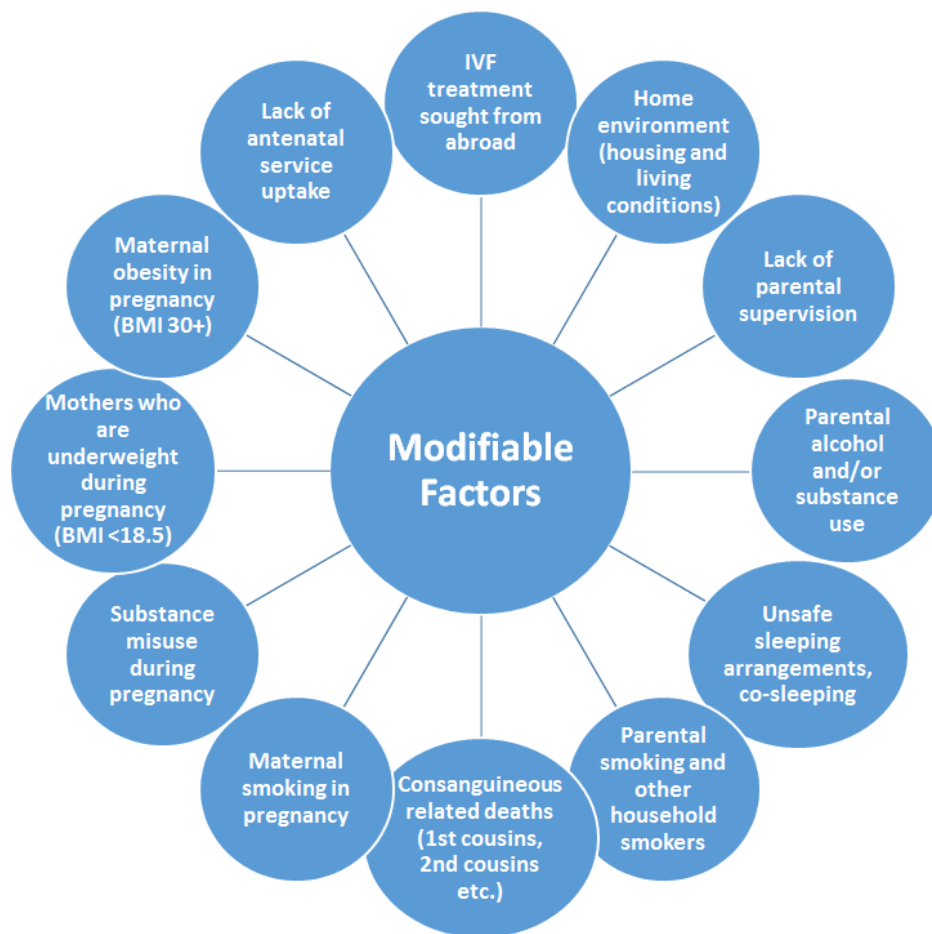
7. About the strategy for reducing infant mortality

7.1. In order to try to reverse the trends in infant mortality rates in Manchester and ensure that those who experience baby loss get the support they need, a multi-agency strategy has been drafted and is attached as Annex 1. The work to develop the strategy has been led by the Population Health and Wellbeing Team with a steering group who will oversee the implementation of the strategy. The steering group includes key partners with a role to play in the delivery of the strategy and influencing others including maternity services, health visiting services, strategic housing, early help, early years, CDOP, safeguarding and the VCSE

7.2. The development of the strategy has included the following elements to ensure it reflects local and national evidence and the experiences of professionals and families:

- Analysis of trends, data and research relating to infant mortality locally and nationally including CDOP annual reports, North West Sector Led Improvement Project on Infant Mortality 2016, Maternity Experiences in North Manchester Research.

- Establishment of a steering group to oversee the writing of the strategy and support its implementation in the coming months and years.
- Two multi agency workshops to engage a wider range of partners and gather ideas and expertise
- Specialist meetings on key issues including genetics and bereavement support
- Consultation with delegates attending the Manchester Preventing Infant Deaths Conference in October 2018

7.3.   There is already a strong network of organisations and programmes in the city focused on supporting healthy pregnancy and the first years of a baby's life. The approach of the strategy will be to embed priorities in the provision of quality services. It will also support current and developing work programmes and to test and implement new approaches to improving the health and wellbeing of mothers and infants.

7.4.   Our Reducing Infant Mortality Strategy will span five years from 2019 to 2024 to allow time for longer term outcomes to be realised. Reducing infant mortality is a complex picture of interrelated factors including the wider determinants of health. Whilst we have described and simplified the strategy under themes and objectives, it is recognised that this belies the complicated system wide nature of this important priority.

8.   Next steps

8.1.   Following approval, the strategy will be published and launched in early March and disseminated to key boards and groups.

8.2.   A partnership steering group comprising of partners who developed the strategy will oversee the delivery and provide regular updates to Children and Young People Scrutiny Committee, MSCB, the Children's Board and Health and Wellbeing Board.

9.   Conclusion and recommendations

9.1   The City Council and partners represented on the Health and Wellbeing Board are extremely concerned by the recent rise in infant mortality. The Strategy is a clear indication of our collective commitment to ensure that we reverse the recent rise in infant mortality and by co-ordinating efforts across the city we are confident that we can start to see a downward trend once again.

9.3   The Board is asked to:

- Note the report;
- Approve the Strategy.