

Scrutiny Review of Infant Mortality

Final Report

21.5.15

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1. Preface

The death of a child is a tragedy for the both family and the wider community.

It is important therefore to review and to challenge appropriately the impact of work being done across Wolverhampton by all key agencies to reduce the number of avoidable child deaths. In 2014 it was reported that Wolverhampton has the highest rate of infant mortality in England. The average rate of infant mortality between 2010 and 2012 in Wolverhampton was 7.7 deaths per 1,000 live births, compared to the England average of 4.3.

The review group wanted to understand the causes of infant mortality and also to review the work being done to reduce the numbers of babies dying in the first 12 months.

The causes of infant mortality are complex and it is clear from the evidence presented that no one single agency can successfully tackle them. It is clear from witness evidence provided that a sustained reduction in the number of avoidable child deaths in the first 12 months of life will require the long term commitment of commissioners, providers of services and crucially the public.

The review group has focused its work on those environmental or modifiable factors, which arise primarily because of unhealthy diet or lifestyle choices, and can be changed, for example by not smoking during pregnancy.

The review group was very impressed by the dedication and skills of staff at the neo natal unit at The Royal Wolverhampton NHS Trust and the work being done to increase survival rates of preterm babies and provide families with support and comfort at a very difficult time.

I would like to place formally on record my appreciation and thanks to the witnesses, review members and employees for their invaluable contributions. In particular, I would like to give special thanks to Ros Jervis, Service Director- Public Health and Wellbeing, and her team for their contributions during the review. The information and insights into the challenges facing key partners has helped to provide the review group with a much better understanding of the work being done to improve the situation. The information provided by all witnesses has also greatly helped in this process and in the drafting of the findings and recommendations.

As Chair of the review I fully commend this report and recommendations.

I hope the recommendations will help improve outcomes and have a positive impact on reducing the number of avoidable deaths of babies in Wolverhampton.

Clr Claire Darke
Chair – Scrutiny Review of Infant Mortality

2. Summary of report

- The issue of infant mortality is an important indicator of the health of the local population and a key priority for action locally and nationally. For the purpose of the review the following definition of infant mortality will be used - the death of a live born baby within the first year of life.
- An increase in the rate of infant mortality has major implications for efforts aimed at improving the outcomes for babies born in Wolverhampton and also for reducing the inequalities that exist between local and national measures.
- The current high rate of child infant mortality in Wolverhampton will require a long term strategy that provides information that reaches the intended target audience, particularly those groups considered to be at risk, for example, births to mothers aged 40-44 years.
- A key aspect of the review was investigating the underlying factors behind the reported figures, and getting a clear understanding of the risks and the work being done by local and regional organisations to reduce the number of infant deaths within the first 12 months of life.
- The current rate of infant deaths is a significant issue in Wolverhampton which can be addressed through tackling the modifiable factors that are associated with an increased risk of infant death. Primarily, the promotion of smoking cessation and smoke free homes will have a substantial impact on the unborn infant with benefits realised not just in the first 12 months following birth, but throughout life for the child and their family and encouraging breastfeeding.
- The review group accept that a proportion of child deaths in Wolverhampton, while regrettable, are inevitable and will not be affected by changes in policies and practices. For example, child deaths due to severe congenital abnormalities or extremely preterm babies born at or after the threshold of viability at 24 weeks gestation, where the chance of survival is low. Generally the earlier the baby is born the higher the risk of health problems and reduced chances of long term survival.
- There is agreement among witnesses about the importance of using every contact with pregnant women and their families, particularly at points when they are likely to be more receptive to, and act on positive health messages.
- The challenge for the different organisations, working to reduce the rate of infant mortality, is how to create and support a culture of continuous learning and improvement that results in a sustained reduction in the number of avoidable deaths.

- The review findings are based on written and verbal evidence from expert witnesses with knowledge of the topic that could provide answers to the questions detailed in the terms of reference. The review group has considered evidence from representatives of organisations that have a responsibility for commissioning, delivering or reviewing antenatal or post natal services provided to pregnant women.
- In preparation for the review a detailed briefing was provided by Wolverhampton Public Health of analysis of data of the numbers of deaths, the causes of infant mortality and the local risk factors. As part of the review a short questionnaire was sent to members of Infant Mortality Working Group and also to representatives of local and national bodies to get evidence needed to answer questions detailed in the terms of reference. The review group held seven meetings to consider written and verbal evidence.

3. Introduction

- In 2014 it was reported that Wolverhampton has the highest rate of infant mortality in England.
- The average rate of infant mortality between 2010 and 2012 in Wolverhampton was 7.7 deaths per 1,000 live births, compared to the England average of 4.3. According to the Child Health Profile (March 2013) 3,661 live births were recorded in Wolverhampton in 2011.
- It is important therefore to review and to challenge appropriately the impact of work being done across Wolverhampton by all key agencies to reduce the number of avoidable child deaths.
- The overall aim of this review was to assess the effectiveness of current and future work aimed at addressing modifiable factors that are the main causes of infant mortality in Wolverhampton. (see Appendix 1 for a summary of terms of reference)
- The review group accept that there is no easy or quick solution to the challenge of reducing the rate of child infant mortality in Wolverhampton.
- The review group has considered evidence about infant deaths due to severe genetic abnormalities, which are included in the national figures, but are outside the scope of this review. The review group has focused its work on those environmental or modifiable factors, which arise primarily because of unhealthy diet or lifestyle choices, and can be changed, for example by not smoking during pregnancy or following safe sleeping advice.

The review group understands that levels of poverty and deprivation in Wolverhampton are important factors that contribute to the challenge faced by local partners in encouraging positive behaviour change.

- The review group wanted to understand the causes of infant mortality, the work being done to reduce the numbers of babies dying in the first 12 months by making changes to policies and practices.
- The review group welcome the willingness of witnesses to share their views and insights, based on their professional judgement, on the issue of infant mortality and suggestions of what more can be done to improve the situation. Evidence from witnesses has greatly helped to inform the findings and recommendations in this report.
- The review group acknowledge the excellent examples of partnership working and local initiatives aimed at reducing the rate of infant mortality in Wolverhampton; but support the view that more work is needed to achieve a sustained reduction in the number of babies dying within the first 12 months.
- It is clear from witness evidence that a sustained reduction in the number of avoidable deaths in the first 12 months of life will require the long term commitment of commissioners and providers of services. The success will also depend on efforts by health partners to engaging the public and raise awareness of the factors that increase the risk of infant deaths so that people make informed choices.

4. Context - overview of infant mortality in Wolverhampton

Wolverhampton – the local picture

- Wolverhampton now has the highest rate of infant mortality in England (National Child Health Profiles, March 2014). The figures for infant mortality include babies dying at The Royal Wolverhampton NHS Trust due to significant congenital abnormalities that are not compatible with life or preventable by folic acid.
- A detailed breakdown of the infant mortality data is summarised in Appendix 2.
- During the past 30 years there has been a 33.3 per cent reduction in the national infant mortality rate, but the rate of improvement has been much slower in Wolverhampton over the same period.
- Historically, Wolverhampton along with a majority of neighbouring authorities in the West Midlands has had the highest rates of infant mortality according to national figures. However, there are differences in results at the ward level between infant mortality rates which do not correspond to rates of deprivation.

For example, the results of an analysis by electoral ward show that Penn ward has rate 6.8 deaths per 1000, compared to East Park ward which has a rate of 2.8 per 1000.

- The levels of under 18 conceptions, smoking before and after delivery in Wolverhampton are above the England average. Breastfeeding rates are lower than the England average.
- The top four major modifiable local risk factors linked to the deaths of infants in Wolverhampton are:
 - exposure to environmental tobacco smoke which was recorded in 55% of cases;
 - co-sleeping environment (bed sharing/sofa sharing) which was recorded in 44% of cases;
 - alcohol use within the last 24 hours which was recorded in 35% of cases;
 - over-heating which was recorded in 32% of cases.
- The review group has considered different theories that may explain the variation in infant mortality rates in Wolverhampton at ward level and the impact of any 'protective' factors that might be at work. For example, variations in rates of infant mortality among different ethnic groups in Wolverhampton. The influence of 'protective' factors is difficult to determine as the actual numbers of babies dying are very small and figures are based on a three year rolling average of deaths, which adds to the challenge in finding a clear link.
- The widespread effects of poverty and deprivation in Wolverhampton have been highlighted by witnesses as a major barrier to reducing the rate of infant mortality and supporting the required behaviour changes. Witnesses have also highlighted the challenge in raising awareness about the risk factors during pregnancy. There is some anecdotal evidence to suggest that there is level of mistrust by local people in the advice given by professionals and lay health workers and as a result the service has to work against established family beliefs and practices. There is a much greater reliance on advice provided by older female relatives on known risks to a baby during and after pregnancy.
- The Royal Wolverhampton NHS Trust neonatal unit (NNU) is designated a level 3 [NICU] facility with capacity to cater for the sickest and smallest babies in the region. The NNU is part of the Staffordshire Shropshire and Black Country Newborn Maternity and Newborn network which is working to increase survival rates for preterm babies. (see Appendix 3 for details of the key functions of the network.)

- Dawn Lewis ,Matron Maternity, Antenatal/Postnatal Services, The Royal Wolverhampton NHS Trust explained that in response to more babies being admitted into the neo natal unit than expected changes have been introduced. In the past the service would have intervened when a mother was 12 -14 days past their due date. The practice is now that they will look to change the timing induction of labour and to intervene when the birth is more than 10 days late. This was based on audited evidence of hospital births.
- A range of interventions are used to stop smoking during pregnancy due to the strong links to low birth weight, prematurity and poorer perinatal outcomes. This includes education on foetal health status and pharmacotherapy, motivational support. The number of women referred to the stop smoking service and the take up rate is collected. There is data on the number of pregnant women setting quit date, and the number of women who have quit at four weeks. In the same data set there are numbers of people who set a quit date using nicotine replacement therapy.

There are issues in getting reliable data on outcome of pregnant women referred to the stop smoking service for support. The percentage of mothers smoking at delivery is at highest levels in East Park, Bilston North and Bilston East and lowest in Tettenhall Wightwick, Tettenhall Regis and Penn.

- The issue of how sex and relationship teaching is delivered in schools has been highlighted as a concern by the review group. The review group support the view of witnesses about the challenge of getting a clear and consistent health messages to young people that support behaviour change and promote a healthy lifestyle. However, the autonomous position of schools means that local authorities have little influence on what is included as part of PHSE course or how it is delivered. In addition, parents can choose to withdraw their children from parts of sex and relationship education if they want.
- The Service Director, Public Health and Wellbeing, leads a multi-agency working group whose members includes the Maternity lead, Clinical Lead for Women and Children and the Executive Director for Nursing and Quality. The aim of the group is review existing practices to support changes that will lead to a reduction in the infant mortality rate.

- There are a number of organisations that are responsible for the commissioning and provision of services that contribute to reducing the rate of infant mortality in Wolverhampton. A summary is given below:

NHS England	Primary care (GPs) Vaccinations and Immunisations Antenatal and neonatal screening programmes
Public Health	Overall responsibility for population health and wellbeing Commissioning of healthy lifestyles programmes across the life course Mandated provision of public health advice to Wolverhampton Clinical Commissioning Group
Wolverhampton Clinical Commissioning Group	Maternity services Health care across the life course Enhanced services to promote healthy lifestyles
The Royal Wolverhampton NHS Trust	Acute midwifery services Obstetric care Neonatal care Community midwifery services Health visiting services Healthy lifestyles programme Acute and community paediatric care

Infant Mortality - national and regional initiatives

- The National Institute for Health and Care Excellence (NICE) has published a range of specific good practice guidance for the public, commissioners and service providers aimed at optimising the quality of care received and assist with improving outcomes for premature and very low birth weight babies. Examples of published guidance are listed below:
 - Pregnancy and complex social factors overview;
 - Quitting smoking in pregnancy and following childbirth;
 - Pregnancy and complex social factors;
 - Smoking cessation in secondary care: acute, maternity and mental health services.
- Data and evidence about infant mortality and stillbirth is published by the National Child and Maternal Health Intelligence Network (ChiMat) who are part of Public Health England. The network provides an analysis of the data which includes details about trends and variations, the causes and underlying risk factors and national policies. Data from ChiMat indicates that at a national level 71% of all infant deaths occur in the neonatal period i.e. the first 28 days of life.

The evidence also reported that at the national level the main risk factors are: smoking, low socioeconomic status, maternal obesity, maternal age, ethnicity, multiple births, diabetes and influenza.

- Responsibility for the delivery of the Healthy Child Programme (HCP) which covers 0- 5 services (see Appendix 4 for details of the services) will be transferred to Public Health, in October 2015. This will include the transfer for responsibility for commissioning of health visiting services. (In April 2013 local authorities were given a key role in improving the health of their local population, working in partnership with clinical commissioning groups, and others, through health and wellbeing boards in their localities.)
- National NHS priorities to reduce mortality and morbidity in perinatal care include the following:
 - Antenatal detection of Intra Uterine Growth Restriction(IUGR) (this is a condition where a baby's growth slows or ceases when it is in the uterus);
 - Reduction in postpartum haemorrhage (primary postpartum haemorrhage is loss of blood estimated to be more than 500 ml within 24 hours of delivery);
 - Reduction in caesarean rates without clinical indication pre 39 weeks gestation
 - Reduction in unexpected term (less than 39 weeks gestation) admissions to neonatal units.
- A national priority for Public Health England is ensuring every child has the best start in life. Reducing the rate of infant mortality is central to achieving this aim. Public Health England (West Midlands) has included infant mortality as one its priorities and has set up a number of working groups.
- West Midlands Strategic Clinical Networks exists to enable patients, professionals and organisations to work together, across the West Midlands, on large and lasting programmes of quality improvement in four areas of major healthcare challenge. The network aims to achieve the best outcomes for the population by bringing together the right people and expertise to help drive improvements.
- The West Midlands Maternity and Children's Strategic Clinical Network (SCN) was established on 1 April 2013. The Maternity and Children's SCN covers three specific areas – maternity, newborn and children. The aim of the group is to support the delivery of high quality healthcare for women during pregnancy, childbirth and the post natal period, babies, children, young people and their families across the West Midlands. There are currently a number of projects being undertaken within the West Midlands Maternity and Children's Strategic Clinical Network and Senate to achieve this.
- West Midlands Strategic Clinical Network for Maternity and Children produced a report on the findings of phase one maternity gap analysis. The objectives of the gap analysis were to:

- Identify what data capturing tools are currently in use across the region maternity services;
 - Identify any variation or common areas of concern in line with national priority areas; both across the West Midlands region and nationally;
 - Identify any existing or future planned initiatives and service developments to tackle the national priority areas.
- The report made a number of specific recommendations aimed at supporting improved outcomes and contributing to the overriding aim of reducing stillbirth and neonatal loss; and to improve the experience for families. There are a number of short-term pieces of work that have been agreed for improvement in Phase 2 of the maternity gap analysis.
 - A number of the recommendations relate directly to the issues highlighted during the review. For example, the need for more robust information for patients around the issues such as stillbirths/neonatal death, neonatal units and varying levels of care, recognising the signs of pre-eclampsia and monitoring of reduced fetal movement.
 - There are national priorities, performance standards, staffing levels and targets aimed at reducing the rate of stillbirth and early neonatal loss which have been published by British Association of Perinatal Medicine (BAPM). The stated aim of BAPM is to support newborn babies and their families by providing services that help all those involved in perinatal practice to improve the standards of perinatal care in the British Isles.
 - As part of universal antenatal care during the first visit to a midwife or GP a pregnant women will be given information about:
 - folic acid and vitamin D supplements;
 - nutrition, diet and food hygiene;
 - lifestyle factors that may affect a women's health or the health of the baby, such as smoking, recreational drug use and drinking alcohol;
 - In addition, information will be given on keeping healthy and discussion about whether there is a history complications or infections in a previous pregnancy or delivery, such as pre-eclampsia or premature birth, current treatment for chronic disease, such as diabetes or high blood pressure or family history of having a baby with an abnormality; such as spina bifida or an inherited disease, such as sickle cell or cystic fibrosis.

5. Summary of findings

The underlying causes of infant mortality in Wolverhampton

An analysis of deaths recorded at Royal Wolverhampton NHS Trust (RWT) from 2004 – 2012 was conducted in February 2014. This review relates to Wolverhampton residents and highlighted the following key issues:

- **Smoking during pregnancy:** there is a 54% increased risk of infant death for women who smoke during pregnancy, as recorded at the time of delivery, compared to women documented as non-smokers. This indicates a strong association between smoking in pregnancy and infant death. Smoking in pregnancy has a significant impact on avoidable mortality. It causes impaired foetal growth, low birth weight and pre-term birth as well as being associated with an increased risk of miscarriage, stillbirth, neonatal death and sudden infant death. Smoking in pregnancy is high in England at 12.7 % with tenfold variation between local areas. Smoking is most prevalent in young, white, expectant mothers from deprived communities, with low educational attainment.

Health Visitors recommend to fathers and other family members that they should smoke outside the home to protect a baby from the health risks of second hand smoke. In addition, smokers are advised by health visitors not to hold a baby for at least 30 minutes to avoid exposure to the harmful substances in cigarettes. This is because when a person smokes, toxins can get into their clothes and hair and will remain there. In addition, a smoker will continue to exhale toxins such as carbon monoxide for several minutes after extinguishing their cigarette.

- **Prematurity:** prematurity is defined as birth after less than 37 completed weeks of pregnancy, which usually lasts 40 weeks. Whilst most premature births occur between 34 weeks and 37 weeks of pregnancy, a small proportion of babies are born under 34 weeks. Almost 65% of infant deaths occurred in babies born under 34 weeks of completed pregnancy, whereas premature infants were only 3% of all births. This indicates that prematurity is a high risk factor for infant death.
- **Very Low birth weight:** a birth weight under 1,500g is classified as a very low birth weight. 60% of infant deaths in Wolverhampton occurred in very low birth weight infants, whereas very low birth weight infants accounted for only 1.5% of all births. This indicates that a very low birth weight is a high risk factor for infant death.
- **Maternal age:** although the highest number of infant deaths occurred in mothers aged between 20 and 34 years, the proportion of deaths was similar to the proportion of births within these age groups. However, 7.9% of infant deaths occurred in babies born to mothers aged 40 to 44 years, whereas births to mother aged 40-44 years were only, 2.5% of all births. This indicates that later maternal age is a high risk factor for infant death.
- **Ethnicity:** the proportion of infant deaths compared to total births is broadly similar across ethnic groups with the exception of babies born to black mothers. 16.4% of infant deaths occurred in babies born to black mothers, whereas births to black

mothers were 9.8% of all births. Preliminary findings from the review suggest a link between ethnicity and prematurity, with higher proportion black mothers delivering premature babies, under 34 weeks. Overall, this indicates that black ethnicity is a higher risk factor for infant death than other ethnic groups.

- Deprivation: most of the infant deaths occurred amongst the 20% most deprived mothers within the City, a slightly higher proportion of 69.4% compared to total births to mothers in this group, 65.1%.
This indicates that deprivation is a high risk factor for infant death. Socio-economic deprivation covers a number of issues, for example, poor housing, poor diet of women planning a pregnancy or during their pregnancy, the spacing of pregnancies, low income, language barriers, asylum seekers moved late in pregnancy, low educational attainment and unsupported single mothers.

Examples of modifiable or environmental risk factors

The following are examples of modifiable risk factors that potentially contribute to infant mortality recorded as 'sudden unexplained death in infancy' (SUDI) within the first year of life in Wolverhampton:

- Mother smoking before and during in pregnancy and exposing the baby to cigarette smoke;
- Bed sharing/not following safe sleeping advice;
- Low birth weight;
- Late booking for the first official antenatal appointment;
- Low breastfeeding rates;
- Drugs and alcohol misuse;
- Maternal obesity (babies of women with a pregnancy BMI (body mass index) ≥ 35 have an increased risk of perinatal mortality, being overweight or obese may double the odds of stillbirth)

There is agreement among witnesses that the causes of infant mortality are complex and often linked. Furthermore, that no one organisation can deliver the sustained changes in reducing the number of infant deaths reported annually.

Key risks in early pregnancy

It can be difficult to identify risks early in pregnancy, especially in first time pregnancies, as often little is known about the experience and abilities of the mother to be, and the characteristics of the child.

The following are examples of useful predictors of the risks during pregnancy highlighted in research published by NHS Scotland:

- young parenthood, which is linked to poor socio-economic and educational circumstances;

- educational problems – parents with few or no qualifications, non-attendance or learning difficulties;
- parents who are not in education, employment or training;
- families who are living in poverty;
- families who are living in unsatisfactory accommodation;
- parents with mental health problems;
- unstable partner relationships;
- intimate partner abuse;
- parents with a history of anti-social or offending behaviour;
- families with low social capital;
- ambivalence about becoming a parent;
- stress in pregnancy;
- low self-esteem or low self-reliance; and
- a history of abuse, mental illness or alcoholism in the mother's own family.

Reducing the risk factors

Witnesses provided a range of examples of work currently being done by their service and in the future to tackle the underlying causes of infant mortality. The work is being done as part of a strategic and co-ordinated response to the situation. The following are examples of this work that were presented as evidence:

- **Royal Wolverhampton NHS Trust**
 - Analysis of health visiting data regarding smoke free homes;
 - Stop smoking team to attend the neonatal unit three times a week ;
 - Daily presence of health trainers in the antenatal clinic started on 1 October 2014;
 - Auditing of 40 maternity notes in the postnatal period to be arranged with Public Health Support;
 - A marketing campaign is required to promote the prevention agenda.
- **Dr Helen Sullivan, Consultant Obstetrician and Guidelines Lead, Royal Wolverhampton NHS Trust**
 - All pregnant women in Wolverhampton are seen repeatedly by their community midwife, including at least once at home;
 - All smokers are referred to the smoking cessation service and have to actively opt out if they do not want referral;
 - Breastfeeding is promoted to all women;
 - All women are given advice about a healthy diet and the vast majority given multivitamin supplements. There is a challenge with mothers either not maintaining a proper healthy diet during their pregnancy and or who find it difficult to follow a diet that provides the necessary vitamins and nutrients.
 - Where possible the women are seen in children's centres to help the women become familiar with this resource;
 - There is a structured handover of care from midwifery to health visiting when the baby is about two weeks old;

- Where women are thought to be particularly vulnerable they receive enhanced care from a specialist midwife for pregnant teenagers and a specialist midwife for vulnerable women; principally those with problems with drugs and alcohol, domestic abuse and severe and enduring mental health problems.
 - Recommended that the Council supports enhanced targeted interventions for high risk families with new babies. The families can be identified by maternity services. This could take many forms for example extended support from the midwives for vulnerable women and targeted work with Children's Centres' workers.
- **Dr Tilly Pillay, Neonatal Clinical Lead, SSBCNN Consultant, Royal Wolverhampton NHS Trust**
- Developing a 'Reducing the Risk' Programme
Parent advice and support for all babies leaving the NNU and a select geographical target area on:
 - Smoking cessation;
 - Advice on limiting sudden infant death;
 - Resuscitation and choking training for parents;
 - Breastfeeding support;
 - Advice on healthy diet and weaning.
 - Promoting breast feeding on discharge from the hospital and the setting up of a donor breast milk scheme. Donated breast milk is used to help save the lives of poorly and premature babies whose mothers are unable to provide their babies with enough of their own breast milk.
 - Breastfeeding women, who have established breastfeeding their own baby, must enrol as a donor before baby is 4 months old, and then can continue to donate until baby is 6 months old.
 - Developing appropriate newborn network pathways within our SSBC Newborn Network to ensure that the sickest and smallest babies in Wolverhampton are treated at the right neonatal intensive-care unit (NICU) at the right time, at the right place.
 - Participating in network wide neonatal nurse staffing review to define nursing workload on the Neonatal Unit so that optimal levels of nursing staff can be recruited to meet British Association of Perinatal Medicine standards of nursing workload, as nursing workload correlates with neonatal mortality.
 - Accurate and detailed mortality reviews with SSBC Newborn Network review, with lessons learnt being shared to augment uptake of modifiable clinical aspects of care.
 - Benchmarking neonatal outcomes against international standards.

- **Dr Helen Carter, Consultant in Public Health, Public Health England, West Midlands Centre**
 - The National Infant Mortality Support Team produced a report in December 2010\ about improving infant and maternal health outcomes. Many of the contents of this report are still very applicable today.
 - The report strongly linked infant mortality to deprivation and the wider social determinants of health with a strong focus upon the impacts of poor housing. Public Health England highlighted deprivation as being associated with increased risk of infant mortality. An analysis of data identified disadvantaged mothers as being more likely to have babies of low birth weight.
 - The report reviewed evidence and concluded that the following interventions would have the biggest impact upon reducing the infant mortality:
 - Reduce child poverty;
 - Reduce the prevalence of maternal obesity;
 - Reduce smoking in pregnancy;
 - Improve housing and reduce overcrowding;
 - Safe sleeping;
 - Reduce teenage pregnancy rates;
 - Improve breastfeeding rates.
- **Dr Angela Moore, Consultant Paediatrician. Designated Doctor for Safeguarding Children, Royal Wolverhampton NHS Trust (RWT)**
 - Safe sleep campaign in autumn/winter 13/14.
 - The CONI programme (Care Of Next Infant after a SUDI - support for families also includes near relatives and infants where there has been an Acute Life Threatening Event but not actual death) delivered by RWT - Health Visitors and Community Paediatrics.
 - Regular clinical post neonatal mortality reviews also take place.

Summary of witness evidence - main headlines

The following is a summary of the key messages from witnesses who submitted written and or verbal evidence to the review group:

- The modifiable risk factors in infant deaths in Wolverhampton were the subject of two published research papers which reviewed the causes of child infant mortality in Wolverhampton.

- The papers written by Dr Angela Moore highlighted the historical nature of the underlying causes of child infant mortality, the similarity in the causes of death, and the slow progress made in reducing the number of deaths when compared on an international basis. Dr Moore recommended that all schools in Wolverhampton should include mandatory child care in their PSHE for both boys and girls and include messages about smoking, breast feeding and prevention of SUDI (safe sleep).
- Dr Moore commented on the finding that all studies have shown increased risk of SUDI linked to sofa sharing, either parent smoking and smaller babies. The risks of SUDI increase significantly when there is a combination of modifiable factors, for example, smoking and co-sleeping. Dr Moore explained that if a parent smokes when a baby is six months or less, then they are eight times more of risk of SUDI. Dr Moore commented on the societal changes in respect of alcohol use during pregnancy.
- The risk of SUDI is higher for older mothers, but it compensated to some extent by the fact that they are likely to be financially better off and adopt a more cautious approach before and during their pregnancy.
- Poverty and deprivation were common themes contributing to poorer health outcomes and the deaths of babies. Higher rates of pre-term death were linked to people who are poor and also defects and smoking.
- The transfer of pregnant women by West Midlands Ambulance Service (WMAS) to the nearest hospital is not always appropriate. Evidence shows much better outcomes for preterm babies who are born at less than 26 weeks gestation, if they are delivered at a neonatal unit with Level 3 (NICU) capacity, rather than a lower designated unit and transferred in to a NICU. In such situations it is important for ambulances to transfer women to the most appropriate hospital with neonatal facilities that can cope with the birth and post natal support of the extremely preterm baby; which in the Black Country, would be RWT neonatal unit. There are on-going discussions within the SSBC Newborn and Maternity Networks, attempting to facilitate appropriate triage of women through creation of care pathways that will enable this.
- An audit provided evidence that 15% (90) of 600 births were to women considered to be vulnerable Evidence was presented of the challenge in persuading vulnerable women to consider contraception or the spacing of pregnancies following the birth to reduce risks linked to the death of infants and to improve outcomes.

- Community midwives ask questions about mental health and domestic abuse at the 'booking' appointment (first midwifery contact) and again at 28 weeks and at handover of care to the health visitor. Midwives notify Health Visitors at 24 weeks of pregnancy highlighting any particular issues or problems.
- Improving numbers of pregnant women for booking below 13 weeks of pregnancy. The national performance target is 12 weeks and 6 days for the first antenatal appointment.
- Evidence of the impact of debt and low income among mother's who may decide to prioritise other needs such as paying bills and give lower priority to attending clinical ante or post natal sessions with health professionals.
- Concerns expressed about the impact of the loss of funding for specialist midwives and the important resource in supporting pregnant women considered to be vulnerable or where there mental health issues.
- There is no 'single bullet' solution to the reducing the rate of infant mortality and cannot be the responsibility of anyone agency to achieve.
- Increased risk of sudden unexpected death in infancy (SUDI) associated with sofa sharing rises further if either parent smokes; the mother drinks alcohol or is obese. There is no risk from bed sharing if the mother stays awake. The safest place for a baby to sleep is in a cot in a room with parents for the first six months of life.
- Breastfeeding is protective for SUDI. Evidence presented that recently arrived migrants to Wolverhampton have a strong tradition of breastfeeding where it is considered to be the cultural norm. There is concern that this habit will change over time and more women will choose to bottle feed instead, which is more typical of the local population where breast feeding rates are low.
- 'The Baby Sleep Safe' was a successful campaign which gave advice about how to protect the baby when sleeping. There were no deaths due to co-sleeping in 2013 following the publicity campaign. An example of the campaign posted is give below:



Bed sharing increases the risk of a baby dying because of the following factors:

- Rebreathing;
 - Over-heating (head covering) ;
 - Soft surface (mattress, pillow) ;
 - Suffocation (over-laying).
- The Pedi-Pod is a type of crib which can be placed in the parent's bed to give the baby its own space and prevent over-heating/overlying. The Pedi-Pod crib was introduced in New Zealand by the Government. The crib is offered as a free gift a bed for new born babies to all mothers and encouraging the idea of separate sleeping arrangements. The programme was developed as a public health intervention aimed at more vulnerable babies. This is an example of the Pedi Pod sleep space bed.



- The review group discussed the feasibility of introducing a scheme similar to Finland where shortly before babies are born they are given a cardboard box filled with a range of useful things for the first 8-12 months. The Finnish Baby Box includes necessities to help mothers to dress and take care of their newborn. The box is provided by the state.
- The Healthy Lifestyles Service is based at RWT. The service provides support as part of the stop smoking service. The staff support women and their families to undergo quit attempts and offer home visits to pregnant women. The service provides support for the full length of the pregnancy and also relapse prevention at any time during this period. Carbon monoxide checks are done at each antenatal visit and pregnant women are also asked about their smoking status. The staff undertake carbon monoxide checks to confirm a successful quitter but if this is not possible then this will be confirmed by telephone.

The service provide advice and help to families to cook and eat healthy meals that support healthy weight gain during pregnancy and healthy weight loss post natal. The service is also able to offer support and weight management advice and help with breastfeeding problems.

- A witness from the Healthy Lifestyles Service commented that there is evidence of a lack of trust among women in the advice given by professionals and the staff have to work against beliefs and practices of older female family members about how to reduce modifiable risks.
- It is difficult to get reliable data about pregnant women setting quit smoking dates as the population profile changes during the period of assessment when Health Visitors currently identify smokers at each contact and offer cessation advice.

All health visiting staff are trained in motivational interviewing techniques to support pregnant women to stop smoking.

- Both Walsall and Dudley have successfully rolled out a quit smoking programme. The programme involves checking carbon monoxide levels using a monitor at every antenatal contact and actively working to link up events planned around National No Smoking Day and other quit smoking campaigns. (Carbon monoxide (CO) assessment is a non-invasive biochemical method for measuring CO from expired breath. It can detect exposure to CO which may come from tobacco smoke, traffic emissions or leaky gas appliances.) The service is delivered by a small team which adds to the challenge in supporting a change in behaviour.

Estimates of the number of Wolverhampton women smoking in pregnancy at time of delivery is reported to public health.

- Pregnant women who smoke and also take illegal substances may be willing to stop smoking, but less willing to stop smoking illegal substances.
- There is a set list of questions used to identify signs of post natal depression and the subsequent risk to the mother and the health of the baby.
- Evidence presented about 'preventative' factors within different ethnic groups which may explain the lower rates. For example, the rates of infant deaths for Polish mothers were lower when compared to White British mothers at the time of delivery.
- The Child Death Overview Panel (CDOP) investigates the death of every child in Wolverhampton. The key purpose of reviewing all child deaths is to learn lessons and reduce child deaths in the future. The CDOP produce an annual report which is considered by Wolverhampton Safeguarding Children Board.
- The most recent report includes a summary of Wolverhampton child death statistics covering the period 1 April 2013 to 31 March 2014. The findings of the local safeguarding children boards (LSCBs) are collated and used to complete the annual child death data collection published by Department of Education for England.
- The review group were advised by the co-ordinator of the CDOP that over the past 18 months, following the departure of the post holder responsible for collating comparative statistics, Wolverhampton's performance compared to its regional neighbours, had not been available. As a result, the previous annual report 2013/14 and the current report do not include regional statistics. The issue is unlikely to be resolved in the short term.

The respective CDOPs within the region have already raised their concerns with NHS England about the situation and its impact on their work.

- Evidence of late booking and women not knowing they are pregnant. As a result the opportunity to give important antenatal health messages and have a range of important health checks done during the early stages of their pregnancy is missed.
- ‘Early bird’ clinics were introduced two years ago as an alternative option for women who do not want to see their GP for their antenatal check-up. The clinics are available to give early health education advice via Maternity Support Workers who work alongside the community midwives. In addition, representatives of the Healthy Lifestyles Service attend the sessions as part of a ‘one stop-shop’ for pregnant women.
- Representatives of the pregnancy and beyond service are also in attendance at the clinics to offer support to women who want to give up smoking.
- The service is actively promoted to local women to encourage them to seek advice and support at early stages of their pregnancy. Where possible, women are seen in Children’s Centres to help the women become familiar with this resource. There is a structured handover of care from midwifery to health visiting when the baby is about two weeks old.
- The issue of language barriers for new migrants to Wolverhampton was highlighted. The use of interpreters is not ideal and there is concern about whether important health messages are being received and acted upon. Evidence presented about a peer support service provided by the refugee and migrant centre could be a better option for the future.
- The breastfeeding peer support network is delivered by a group of volunteers who provide part-time support and telephone advice to mothers. The scheme has an infant co-ordinator to promote the service. In addition, there are four paid support workers working part-time.
- The birth to midwife ratio is at a safe level. RWT has been reaccredited as meeting the Baby Friendly Initiative standards. The Family Nurse Partnership is an accredited programme aimed at improving outcomes for first time pregnant teenagers. The scheme has just begun and it is hoped that it will be successful.
- All women are given advice about a healthy diet and the vast majority given multivitamin supplements. Public Health is reviewing local delivery of the ‘Healthy

Start Vitamins' scheme. The means-tested scheme is a Government initiative aimed at improving nutrition and reducing rates of infant mortality.

Pregnant women or someone with a child under four years old will be eligible to get vouchers to help buy some basic foods. In addition, women and children getting 'Healthy Start' food vouchers will also get vitamin coupons to swap for free 'Healthy Start' vitamins.

- All pregnant women in Wolverhampton have a scheduled programme of antenatal appointments with their named community midwife, including at least once at home. All smokers are referred to the smoking cessation service and have to actively opt out if they do not want referred to the service. The benefits of breastfeeding are promoted to all women.
- The issue of the quality and effectiveness of sex and relationship education in schools was highlighted as an issue, particularly for girls who are reaching puberty much earlier as result rising levels of obesity.
- There is national guidance published by NICE about the importance of weight management before, during and after pregnancy and the risks to the mother and baby. The guidance provides advice to help women in achieving and maintaining recommended weight and body mass index before, during and after pregnancy.

The review group shared concerns about the variable quality of lessons at secondary schools and that parents can choose to exclude their children. Local authorities have no influence about how lessons are taught in schools and it is difficult to maintain quality of information and to check that key messages about health and wellbeing are shared in a consistent way.

- The importance of the role of fathers and other people with an interest in the health and wellbeing of the child, for example other family members and close friends was highlighted in offering support during and after.
- Following the Governments Call to Action – The Health Visiting Implementation Plan 2011 there are now 64 whole time equivalent health visitors for the Wolverhampton area. The number of health visitors allocated is based on the number of children aged 0 – 5 living in an area. The calculation of the number of health visitors does not take account of the impact of deprivation on an area.
- The average caseload size for a Wolverhampton health visitor is 368 children. Unite the Union/Community Practitioners and Health Visitors Association (CPHVA) and the Royal College of Nursing recommend that individual caseloads should ideally be 250 children per whole time equivalent (WTE) health visitor.

In areas of deprivation this should be lowered to 200. In Scandinavia, where frequent health visiting is the norm, child mortality rates are much lower than in most of the rest of the world. The Maternal and Child Health service in Denmark gives each health visitor a caseload of only 150 children.

- Health visitors do health and development checks at set stages of a baby's life and will also visit where there are concerns. Health visitors work with all parents to assess the support they need and develop appropriate programmes to help give the child the best possible start in life. Health visitors support and educate families from pregnancy through to a child's fifth birthday.
- Evidence presented of the importance of using contacts with mothers to discuss issues such as smoking, alcohol and diet. Mothers are likely to be more open to suggestions of making behaviour changes, such as the benefits of not smoking before and during the pregnancy. Health visitors provide advice and support to encourage pregnant to stop smoking. This service is also offered to other family members living in the same household who smoke.
- The issue of Public Health accessing health data was highlighted as a major issue, following the transfer of the service to the local authority and new governance rules implemented in April 2013. A statistical analysis of infant deaths needs to consider deaths over a long period to provide meaningful information as the numbers involved are small.
- An analysis of child deaths reported that in 2013, 15 of the deaths that occurred were expected. The cause of deaths was extreme prematurity or congenital abnormality. Further analysis of deaths of babies born at RWT collected annually showed a number of deaths due to significant congenital abnormalities:

2011 4/25 neonatal deaths had significant congenital abnormalities
2012 5/31 neonatal deaths had significant congenital abnormalities
2013 7/24 neonatal deaths had significant congenital abnormalities
2014 2/17 neonatal deaths had significant congenital abnormalities (preliminary data only up to mid-October)

(Not all of these abnormalities will have been detected before birth but some that were may not have led to death within the first 28 days of life but within the first year of life.)

- Evidence arguing for a shift in focus to more specialist support services and universal services aimed at vulnerable women which would have a have a major impact on Wolverhampton's infant mortality rate.

- A witness expressed concern about the significant deterioration in addiction support service and withdrawal of funding for a specialist midwife post following a change of provider. The service is provided jointly by Wolverhampton Integrated Substance Misuse Service (the key partners are NACRO and Black Country Partnership Foundation Trust). The issue of the addiction referral arrangements for pregnant women was highlighted. It was reported that an estimated 30-40 women are referred to the specialist support addiction service. The Service Director - Public Health and Wellbeing responded that the newly commissioned addiction service is focusing on risk triggers and supporting people to get better outcomes.
- The Service Director - Public Health and Wellbeing explained that the issue of post natal depression is considered during any investigation into a death of a child. The review will look at the child records. The Service Director commented on a pilot initiative to look at recognising the signs of mental health issues and also the challenge that many new mothers do not always have an established support network. This lack of support for new mothers can be a real issue where it involves a difficult birth, which can add to stress levels.
- There is need to establish an enhanced family planning service for vulnerable women to avoid early, repeat pregnancy and the spacing of pregnancy. It is important that the issue of contraception is discussed following the birth.
- Pregnancy and the period following birth can provide a number of psychological, psycho-social and physiological challenges for women and their families. The onset of pregnancy can have an impact on hormone levels which can affect mental health state leading to changes in eating habits and other physical changes which can affect a person's mental state and general wellbeing.
- There are specialist services available at RWT to support the pregnant women with mental health issues. There is also provision for pregnant women to be referred to either St George's Hospital (Stafford) or Birmingham and Solihull Mental Health NHS Trust for women experiencing mental health problems during pregnancy requiring hospitalisation. Both units allow the mother where possible to stay with their baby. Community mental health services in Wolverhampton are delivered by Black Country Partnership Foundation Trust.

- For women with pre-existing mental health conditions the confirmation of pregnancy may require a change in medication. For women experiencing severe post-partum mental health conditions there is evidence of the positive benefits of electroconvulsive therapy. The numbers of mothers needing specialist hospital care is about 1-3 annually. Women with pre-existing mental health issues and also difficulties such as substance or alcohol misuse can be especially vulnerable. Community care pathways will be developed by Wolverhampton CCG to support pregnant women with this in mind.
- Current community care pathways are being reviewed. The Wolverhampton Clinical Commissioning Group will develop a written guide regarding perinatal mental health services. There are also discussions on-going about the development of an electronic tool that could be used to show the different treatment care pathways based on the circumstances and the services available to pregnant women.

6. Conclusions

The review has increased level of awareness and knowledge among Councillors about the work being done by key agencies to reduce levels of child infant mortality in Wolverhampton and a better understanding of the issue. The review has also provided evidence of the work being done by different local partners, individually and collectively, to reduce the rate of infant mortality in Wolverhampton.

It is clear from witness evidence presented that an important part of achieving the desired sustained reduction in the rate of infant mortality is supporting and promoting public awareness of the range of support available. In addition, this should be supported by improving existing practices and procedures and applying learning about what can be done to reduce the risks of a baby dying during the first 12 months.

A sustained reduction in infant mortality rate will require getting the right balance between the provision of enhanced universal services and specialist support services that will increase the likelihood of a successful pregnancy and address the modifiable causes of infant deaths in Wolverhampton.

There will need to be a targeted approach to meet the needs of specific groups such as mothers who smoke in pregnancy, older mothers, black mothers and mothers from the most deprived areas of the city. However, a universal approach is also required to deliver routine care and identify potential changes that may indicate an increased risk of infant mortality. The review has highlighted the opportunities for Councillors in their day to day meetings with the public to get important health messages to people when discussions arise about pregnancy and what practical steps they can take to reduce risks or simply to raise awareness about where to get advice and help if they have concerns.

The importance of making every contact by the service with a pregnant women count was highlighted.

Evidence presented of the impact of lower educational attainment among young mothers, leading to lack of aspirations and poor decision making in relation to the timing and spacing of births. The importance of giving mothers appropriate contraceptive advice following the birth was highlighted.

The review group shared the concerns of the Service Director - Public Health and Wellbeing about the amount of the budget that will follow the transfer of responsibility for delivering health visiting services to Public Health and meeting key performance targets. The new national health visiting service specifications will require an extra 300 contacts.

The review group welcomes the renewed commitment by representatives of key agencies to work together to improve practices and policies and make changes based on learning both locally and nationally, that has been used successfully to improve outcomes for babies.

7. Recommendations

The aim of these recommendations is to create and support a culture of continuous learning and improvement across all the organisations working to reduce the number of child deaths in Wolverhampton, by highlighting what works and what promotes good practice locally. The recommendations are intended to support improved performance and contribute to the achievement of a sustained reduction in the current rate of infant mortality in Wolverhampton.

The importance of co-ordinating local efforts to tackle the underlying causes of infant mortality in Wolverhampton

1. The Service Director- Public Health and Wellbeing to be responsible for collating a coordinated response from the officers responsible for to the following recommendations listed below. The Service Director to and advising Scrutiny present a report to Scrutiny Board with details of progress in implementing all the accepted recommendations and necessary follow up action, as appropriate, where accepted recommendations have not been implemented. The Scrutiny Board report to be presented to the Infant Mortality Working Group for information and comment:
 - a) Royal Wolverhampton NHS Trust to coordinate a response from the maternity, healthy lifestyles living and health visiting services which details specific actions aimed at reducing the percentage of pregnant women setting a smoking quit date, where the results are either not known or lost to follow up. The report to include details of the take-up rate of nicotine replacement therapy and the number who have set a quit date.
 - b) Royal Wolverhampton NHS Trust to coordinate a report from maternity, healthy living lifestyles and health visiting services on progress in the use and results of carbon monoxide testing of pregnant women at every contact. The report to include feedback from pregnant women recorded as smoking and subsequently referred, about their experiences of the stop smoking service.
 - c) Royal Wolverhampton NHS Trust to present a report on a review of effective interventions aimed at reducing the numbers of women smoking during and after pregnancy.
 - d) The lead officer for infant mortality at Wolverhampton Clinical Commissioning Group (CCG) to report on current commissioning arrangements and the extent to which services for pregnancy and infancy are delivering the right mix of enhanced and targeted interventions for pregnant women, particularly vulnerable women considered to be at risk.

e) A report on the benefits of providing a Pepi-Pod crib or similar alternative cot in Wolverhampton. A report of the potential value of using a mobile phone app for parents and parents-to-be with personalised information and content approved by doctors and midwives that spans from pregnancy right through to the first six months after birth. The schemes, if introduced, should be initially targeted a vulnerable women and the findings published with recommendations about a possible future roll out across the City.

f) The Service Director – Public Health and Wellbeing to work with lead officers from key partners to for infant mortality at Wolverhampton CCG to detail proposals to discuss proposals to make best use of available local intelligence in order to help with the early identification better of identify vulnerable pregnant women mothers and provide appropriate targeted interventions that can support them. that will contribute to the overall aim of reducing the numbers of infant deaths. The findings to be shared with the Wolverhampton Health and Wellbeing Board, and Wolverhampton CCG Governing Body and the Infant Mortality Working Group.

g) To invite Directors of Public Health across the West Midlands region to share examples of best practice in respect of delivering an effective smoking cessation programme to pregnant women and to discuss further opportunities to promote the adoption of best practice across the region.

h) The Service Director – Public Health and Wellbeing and the Chair of the Child Death Overview Panel (CDOP) to jointly report on progress in recruiting staff to collate current and future statistics. Analysis of comparative data at a regional level to be included in future annual reports.

i) The Chair of the Child Death Overview Panel (CDOP) to publish the annual report for Wolverhampton to be published prominently on the Council's website and also the findings shared with key local agencies to promote good practice and improve the quality of local intelligence.

j) The Service Director- Public Health and Wellbeing to report on outcome of review of the national funding formula for 2016/17. (The formula is used to calculate the number of health visitors that an area needs to deliver safe and effective services.)

2. Wolverhampton Clinical Commissioning Group (CCG) and the Service Director - Public Health and Wellbeing to agree a programme of work that supports enhanced targeted interventions for high risk families or vulnerable mothers with new babies identified by maternity services; including advice on contraception to avoid unplanned early repeat pregnancy, and support pregnancy spacing. This should include post natal support in the first few weeks of life aimed at parent education and support to reduce the risk of infant death after discharge from the neonatal unit/post natal ward.

3. The Black Country clinical representative of West Midlands Maternity and Children's Strategic Clinical Network in discussion with representatives of SSBC Newborn and Maternity Networks to jointly present a report to the Infant Mortality Working Group regarding care pathways for anticipated extreme preterm births.

The report to include an update on work towards improving survival rates for this cohort and also progress on the outcome of discussions with West Midlands Ambulance Services about improving care pathways for intrauterine transfers of pregnant women in preterm labour. The overall aim of the policy is for pregnant women in preterm labour to be taken to the most appropriate hospital for the safe delivery and on-going care of their baby.

A strategic and co-ordinated response to tackle the modifiable causes of infant mortality in Wolverhampton and also respond to the challenges of dealing with the effects of poverty and deprivation.

4. The review group endorse the recommendations of the Infant Mortality Working Group Action Plan 2015 – 2018. A joint report to be presented by the lead officer for infant mortality at Wolverhampton CCG and Public Health to the Wolverhampton Health and Wellbeing Board on a six monthly basis on progress and achievements against recommendations accepted in the Infant Mortality Action Plan.

The Service Director - Public Health and Wellbeing to ensure the action plan is reviewed and updated to include emerging risks and further services changes. The findings to be shared with all key partner agencies.

5. The findings and progress of the Infant Mortality Working Group to be shared with organisations with a special interest in reducing the number of child deaths, for example, the CDOP, SANDS, BLISS and the Lullaby Trust for comment.

Representatives to be invited to comment on progress and invited to share learning locally and nationally on further improvements in the co-ordination of care from a neonatal setting, to home and whether there are any specific recommendations to build on good practice.

6. The Service Director – Public Health and Wellbeing to draft terms of reference and agree membership for a task and finish group to review vulnerable pregnant women's care pathway. Representatives of Wolverhampton Integrated Substance Misuse Service (Recovery Near You) need to participate in a review of the effectiveness of the current working arrangements for supporting women referred to the service; particularly those involving drugs, alcohol, domestic abuse or long term mental health issues. A report of the findings to be reported to the Health and Wellbeing Board and Scrutiny Board.

Changing practices and policies and apply learning based on reliable evidence as to their impact and effectiveness in reducing the rate of infant mortality.

7. Royal Wolverhampton NHS Trust to provide a detailed response to the NICE published guidance that all NHS hospitals and clinics should become completely smoke-free zones and to set out detailed proposals for implementation and a timetable for achieving this to be presented to a meeting of the Health and Wellbeing Board.

8. The lead officer for infant mortality at Wolverhampton CCG to consider the availability of genetic screening and counselling support across Wolverhampton and to raise awareness generally of the service. The findings to be presented to the Health Scrutiny Board.

9. Service Director - Public Health and Wellbeing, to work with partner agencies to create a public resource document similar to Bradford's 'Every Baby Matters' which explains the risk factors and provides practical advice and support that can help reduce the numbers of avoidable deaths of babies.

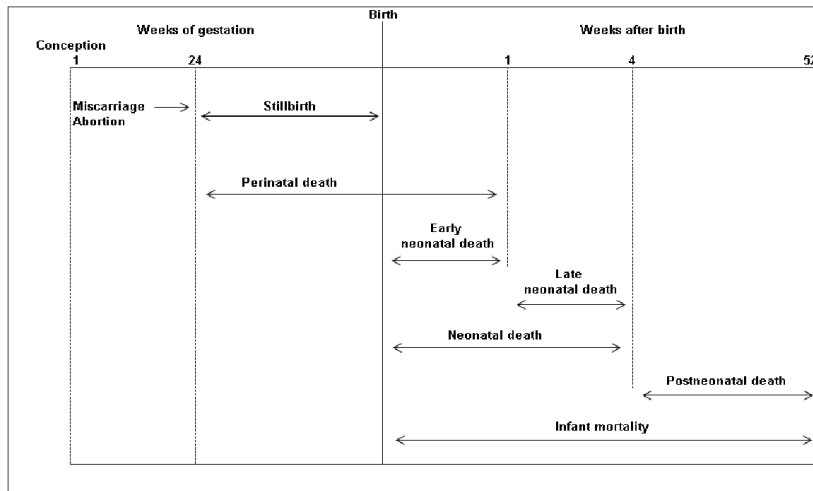
The resource should be built into any planned public awareness campaigns and include details of the impact of lifestyle behaviours, such as smoking and alcohol that increases the risks of child dying. The document should promote positive health messages and signpost families to sources of available support and useful information.

10. All newly elected Councillors to be given a briefing on the issue of infant mortality in Wolverhampton and the practical advice and information they can give when they meet people as part of their work. This should be presented as briefing of the key health messages and the main risks including sofa/bed-sharing, as well as smoking and alcohol in the lifestyle behaviours.

11. Service Director - Public Health and Wellbeing, to report on progress in resolving the issue of getting access to personal confidential health data needed to assess the effectiveness of changes introduced to reduce the infant mortality rate.

12. The scrutiny review of infant mortality report to be sent to Wolverhampton CCG, Royal Wolverhampton NHS Trust and CDOP for information and comment and they are invited to give comments on the findings and recommendations. A progress report on those recommendations accepted by the Cabinet is reported to the Wolverhampton Health and Wellbeing Board in 6 months. The report recommendations to be tracked and monitored by Scrutiny Board at the same time.

Definitions



Early neonatal: death occurring up to 7 days after a live birth

Late neonatal: death occurring from 7 days and up to 28 days after a live birth

Post neonatal: death occurring after 28 days following a live birth

Infant: death occurring in the first year of life following a live birth (includes all three time periods above)

Late booking - defined as booking an appointment with a GP or midwife after 13 weeks 6 days.

Successful Quitters - A person is counted as a 'self-reported 4-week quitter' if when assessed 4 weeks after the designated quit date, they declare that they have not smoked, even a single puff on a cigarette, in the past two weeks. Clients who self-report as having quit at the 4-week follow up are required to have their Carbon Monoxide (CO) levels monitored as a validation of their quit attempt (unless the intervention was by telephone).

Preterm birth is birth that occurs before 37 weeks of pregnancy. It usually follows spontaneous preterm labour, which may be preceded by preterm pre-labour rupture of membranes. However, around 25% of women have a planned preterm birth following iatrogenic intervention (induction of labour or planned caesarean section) to avoid continuing risk to the mother or baby from complications of pregnancy.

Councillors on the review

Councillor Claire Darke (Chair) (Lab)
Councillor Phil Bateman (Lab)
Councillor Ian Claymore (Lab)
Councillor Dr Michael Hardacre (Lab)
Councillor Rita Potter (Lab)
Councillor Judith Rowley (Lab)
Councillor Bert Turner (Lab)
Councillor Mrs Wendy Thompson (Con)
Councillor Pat Patten (Con)
Councillor Richard Whitehouse (LD)

Witnesses - Verbal evidence

- Ros Jervis, Service Director- Public Health and Wellbeing, Wolverhampton Council
- Glenda Augustine, Consultant in Public Health, Wolverhampton Council
- Debra Hickman, Head of Nursing and Midwifery, The Royal Wolverhampton NHS Trust
- Dr Angela Moore, Consultant Paediatrician. Designated Doctor for Safeguarding Children, The Royal Wolverhampton NHS Trust
- Sarah Brackwell, Health Visiting Service Manager, The Royal Wolverhampton NHS Trust
- Dr Tilly Pillay, Neonatal Clinical Lead, SSBCNN Consultant, The Royal Wolverhampton NHS Trust
- Dawn Lewis, Matron Maternity, Antenatal/Postnatal Services, The Royal Wolverhampton NHS Trust
- Anne Macleod, Manager, Healthy Lifestyles Department, The Royal Wolverhampton NHS Trust
- Dr Helen Carter, Consultant in Public Health, Public Health England, West Midlands Centre
- Dr Helen Sullivan, Consultant Obstetrician and Guidelines Lead, The Royal Wolverhampton NHS Trust
- Sarah Fellows, Mental Health Commissioning Manager, WCCG

Witnesses - Written evidence

- Hilary Osborne, Business Manager, National Child and Maternal (ChiMat) Health Intelligence Network
- Dr Rajcholan GP, Wolverhampton CCG board member women's health and paediatrics
- Jason Gwinnett, Principal Public Health Information Analyst, Wolverhampton Council
- Sharon Walton, Interim Senior Public Health Intelligence Analyst, Knowledge and Intelligence Team (West Midlands), Public Health England
- Sue McKie, Health Improvement Principal (NHS Facing), Wolverhampton Council
- Gill Hateley, Coordinator, Child Death Overview Panel
- Clare Barratt, Development Manager, Wolverhampton CCG
- Laura Price PhD, Research and Information Officer, SANDS

Documentary Evidence

- Public Health Intelligence Briefing for the Health Scrutiny Review Panel: Infant Mortality in Wolverhampton, Public Health Wolverhampton (4.9.14)
- Final draft Wolverhampton Infant Mortality Action Plan 2015-2018
- Public Health England – Child and Maternal Health Knowledge Update 19 December 2014
- West Midlands Strategic Clinical Network for Maternity and Children. Maternity Gap Analysis Final Report (November 2014)
- Bradford Every Child Matters
- Child Health Profile Wolverhampton (March 2013)

Appendix 1: Terms of Reference – Summary

Key questions for the review:

1. What is the rate of infant mortality in Wolverhampton and how does this compare locally and nationally?
2. Are there any marked imbalances in infant mortality figures in Wolverhampton between localities and communities, and if so what are the causes of the imbalance?
3. What are the specific causes of infant mortality in Wolverhampton?
4. What is your understanding of the “underlying” causes of infant mortality in Wolverhampton?
5. Briefly describe the strategic approach that your organisation is taking to tackle the modifiable causes of infant mortality across Wolverhampton?
6. Briefly outline your evidence to show that you are making progress towards your organisational objectives aimed at reducing the number of infant deaths?
7. Briefly described evidence-based targeted actions being taken to reduce to reduce levels of child infant mortality. How effective have these actions been?
8. Do you have examples of best practice locally or nationally that can be shared with the review that will make a positive impact on reducing the infant mortality rate?
9. What more do you think can be done, now or in the future, to reduce the current rate of infant mortality in Wolverhampton?

Outcomes expected from conducting this work

1. An increased level of awareness and knowledge among Councillors about the work being done by key agencies to reduce levels of child infant mortality in Wolverhampton.
2. Evidence that local key partners are applying good practice, individually and collectively, to improve outcomes for children and families in Wolverhampton.
3. A set of practical evidence based recommendations that support improved performance and contribute to the achievement of a long and sustained reduction in the current rate of infant mortality in Wolverhampton.
4. Public reassurance that there is proper peer challenge among the key agencies involved to evidence that there is a shared commitment to reduce levels of infant mortality and there is the appropriate level of challenge and scrutiny

Appendix 2: Child Infant Mortality Data.

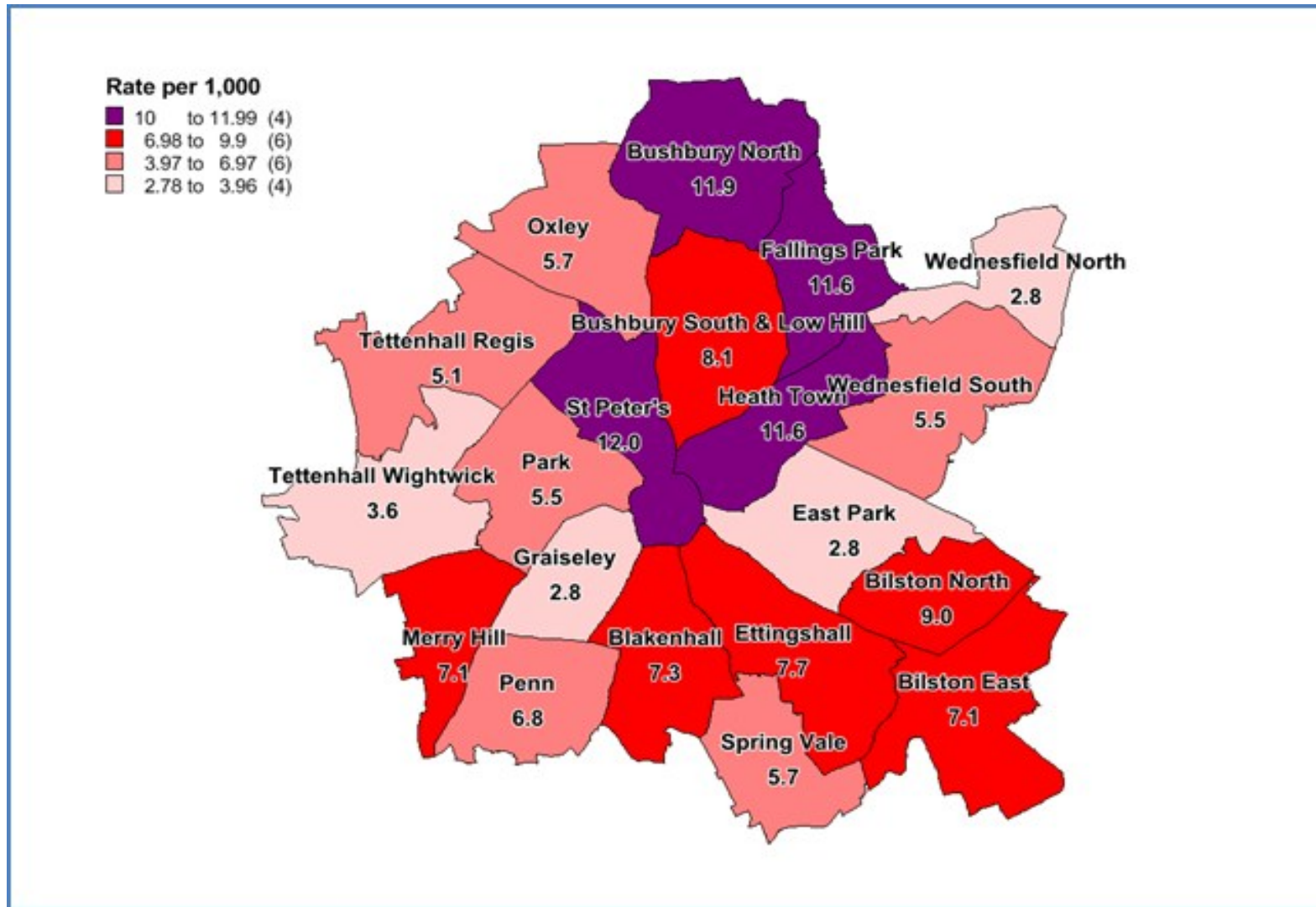
Historically, the rate of infant mortality in Wolverhampton has been almost double the national rate, with an average of 14 deaths per 1,000 live births between 1987 and 1989. However, when the National Child Health Profiles was published in March 2014 it was reported that Wolverhampton now has the highest rate of infant mortality in England at 7.7/1000 compared to the England average of 4.3/1000. The following figures for neighbouring authorities provide a comparison of local performance

- Walsall 7.6/1000
- Birmingham 7.2/1000
- Sandwell 7.1 /1000
- Dudley 4.5./10000

Reference: Wolverhampton Child Health Profile – March 2014

PUBLIC
[NOT PROTECTIVELY MARKED]

Map of infant mortality by electoral ward in Wolverhampton (2003-2012)



Child Health Data – Child Death Overview Panel Annual Report 1.4.13 – 31.3.14 (Summary)

Indicator	Local value	England average	Regional average
Breastfeeding initiation % 2012\13	64.5	73.9	67.9
Smoking in pregnancy % 2012\13	18.6	12.7	14.2
Low birth weight (<2500g) % 2012	7.5	7.3	8.2
Antenatal assessment by 12 weeks %	87.8	87.5	90.5
Completed MMR (measles, mumps, and rubella) (by age 2 years) %	89.5	91.2	92.0
Completed Diphtheria, Tetanus, Polio, Pertussis, hib immunisations %	95.5	96.1	96.8
Data Source: ChiMat 2008-2011			

The highest number of reported deaths occurred in the age group 0-28 days (Neonatal).

PUBLIC
[NOT PROTECTIVELY MARKED]

There is a regional variation in registering live births according to gestational age category. For instance, an infant born at 20 weeks gestation may be regarded as a miscarriage in the North East but as a live birth and then subsequently a neonatal death in the West Midlands.

A live birth occurs when an infant shows some sign of life at birth, for example, breathes or shows evidence of life such as voluntary movement, heartbeat, pulsation of the umbilical cord or definite movements of voluntary muscles.

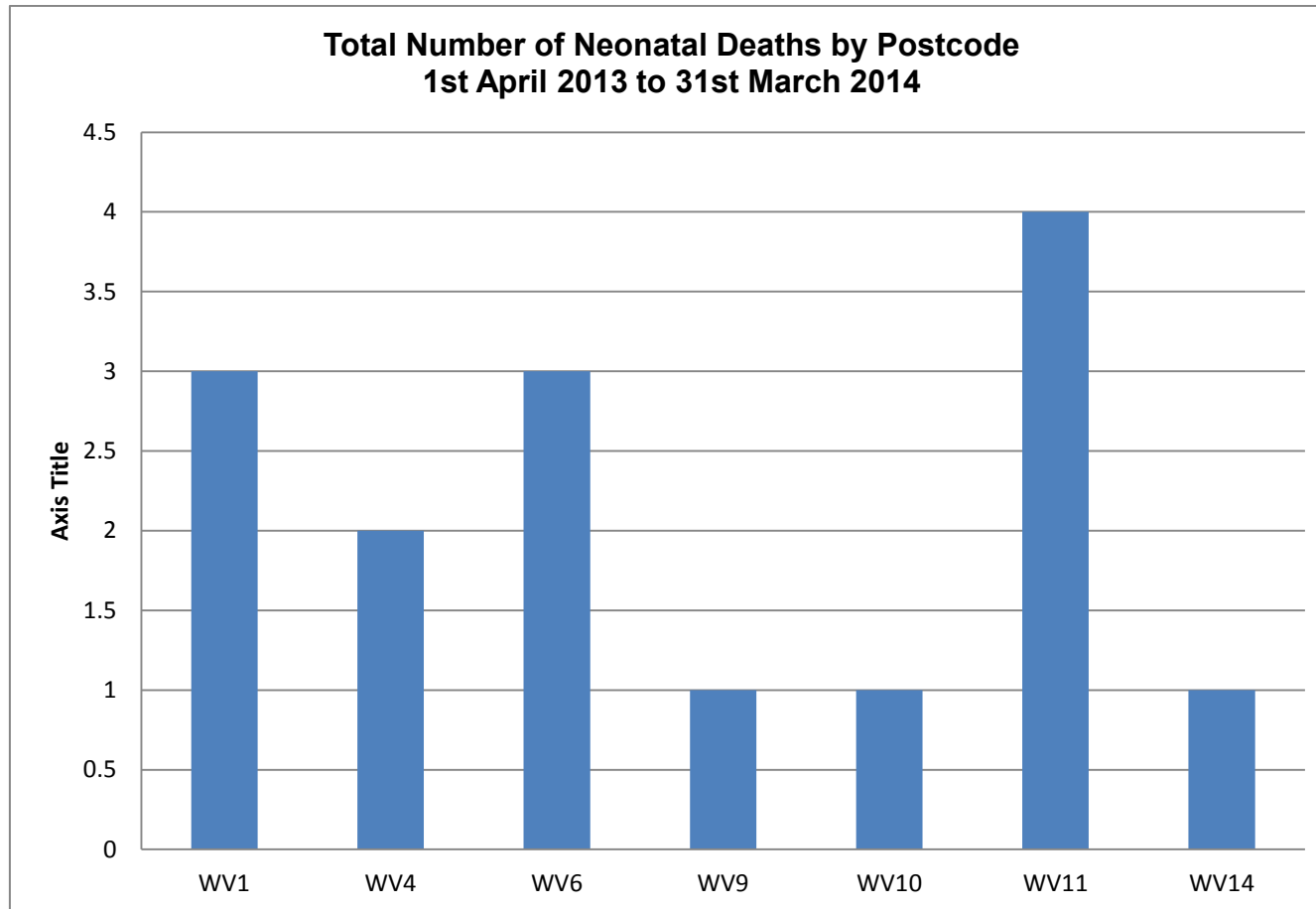
15 neonatal deaths have occurred in Wolverhampton this year (47 per cent male and 53 per cent female). With the exception of 2012\13 trend patterns indicate the number of neonatal deaths marginally decreasing year on year.

2012\13	2011\12	2010\11	2009\10	2008\09
16	14	18	21	25
Data Source: CDOP Statistics – actual number of deaths				

The main causes of death during 2013\14 are due to immaturity related conditions and congenital abnormalities including cardiac within the first 3 weeks of life with an average gestational age category of 23 weeks and the average age of mothers being 29 years.

Of the total number of neonatal deaths 15 recorded 34 per cent had ethnicity White-British; 13 per cent had any Other White Background (East European); Black African, Indian and White Black Caribbean ethnicity respectively. Seven per cent of deaths had Other Asian Background and Black Caribbean ethnicity.

The geographic distribution of neonatal deaths is varied with the highest proportion of these deaths occurring in the City Centre (WV1), Ashmore Park\Wednesfield\Fallings Park (WV11) and Whitmore Reans (WV6) – recognised areas of socio-economic deprivation within the city.



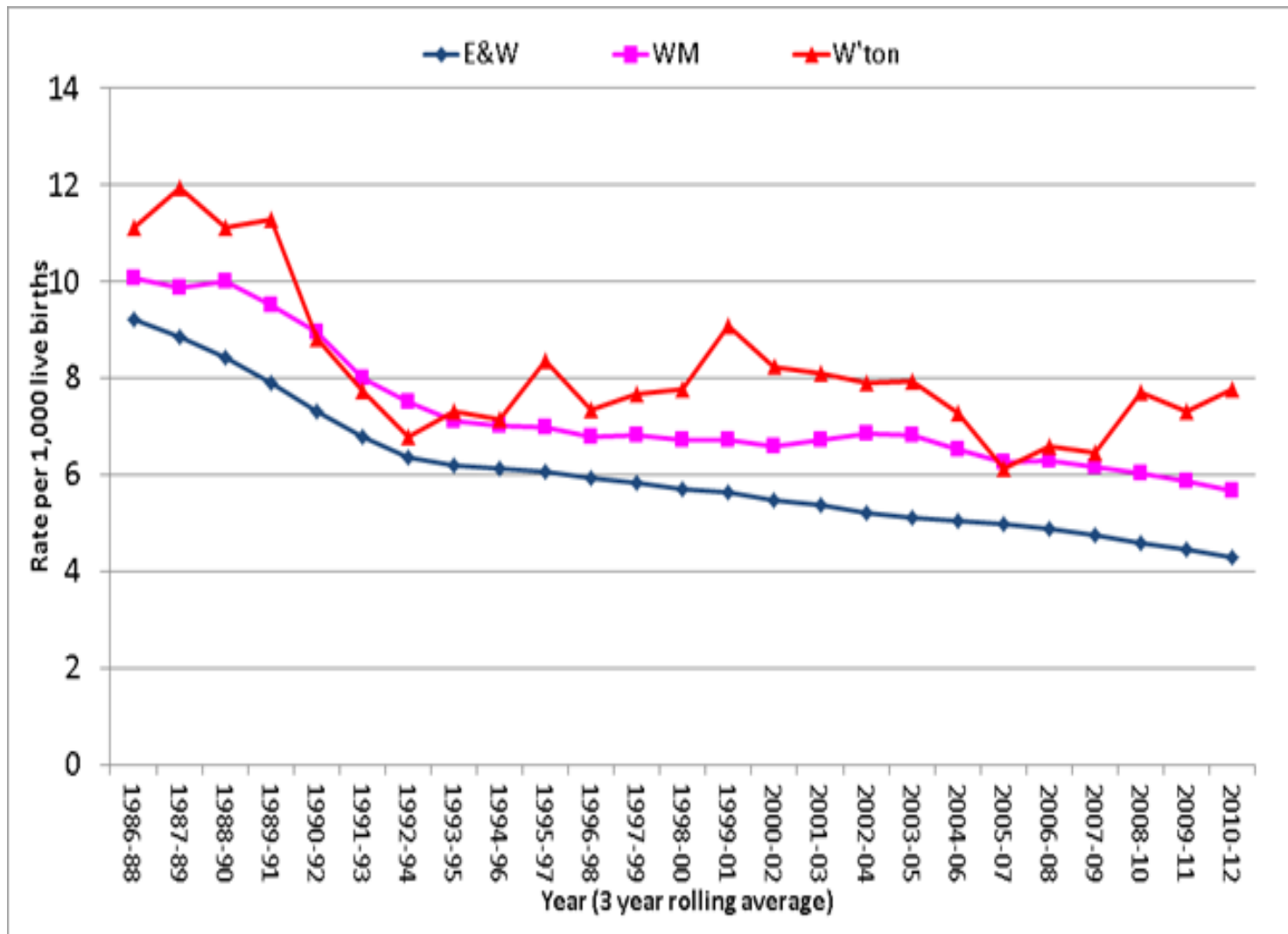
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[NOT PROTECTIVELY MARKED]

Overall CDOP trend analysis for infant deaths 29 days to under 1 year indicate a decrease in the number of reportable deaths year on year from 2011 to 2013; but with no noticeable change in the number of reportable deaths for infants 0-28 days of age.

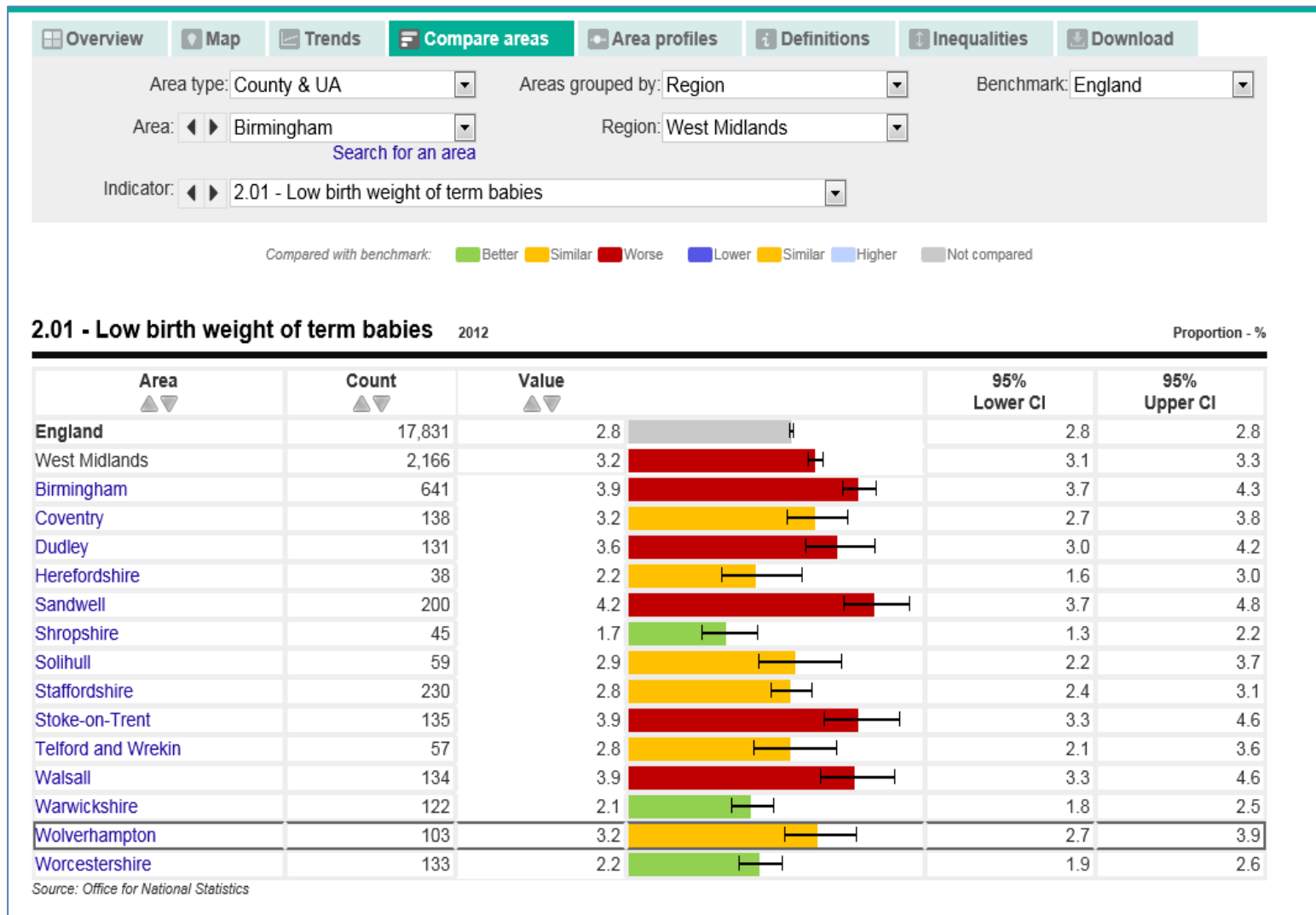
Age	2013\14	2012\13	2011\12	2010\11	2009\10	2008\09
0-28 days	15	15	14	18	21	25
29 days to <1 year	2	7	13	9	6	5
Total	17	22	27	27	27	30
Data Source: CDOP statistics – actual number of reportable deaths						

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Wolverhampton infant mortality rate time trend compared to regional and national averages



Comparison of low birth weight



Wolverhampton Trend data for low birth Weight

Overview Map **Trends** Compare areas Area profiles Definitions Inequalities Download

Area type: County & UA Areas grouped by: Region Benchmark: England

Area: Wolverhampton Region: West Midlands [Search for an area](#)

Indicator: 2.01 - Low birth weight of term babies Show all indicators

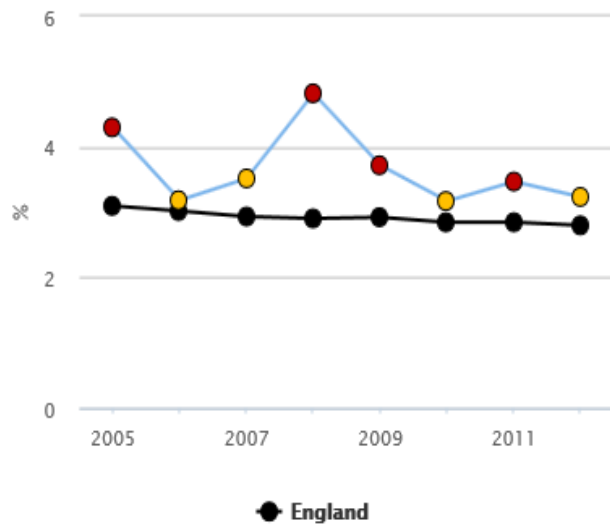
Compared with benchmark:
 ● Better
 ● Similar
 ● Worse
 ● Lower
 ● Similar
 ● Higher

○ Not compared

Trends for: **Wolverhampton**

2.01 - Low birth weight of term babies Wolverhampton

Proportion - %



Period	Sig	Count	Value	Lower CI	Upper CI	West Midlands	England
2005	●	120	4.3	3.6	5.1	3.5	3.1
2006	●	93	3.2	2.6	3.9	3.3	3.0
2007	●	106	3.5	2.9	4.2	3.4	2.9
2008	●	146	4.8	4.1	5.6	3.5	2.9
2009	●	112	3.7	3.1	4.5	3.4	2.9
2010	●	100	3.2	2.6	3.8	3.3	2.8
2011	●	115	3.5	2.9	4.1	3.3	2.8
2012	●	103	3.2	2.7	3.9	3.2	2.8

Source: Office for National Statistics

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[NOT PROTECTIVELY MARKED]

Appendix 3: Staffordshire Shropshire and Black Country Newborn (SSBC) Maternity and Newborn network

At the regional level the Staffordshire Shropshire and Black Country Newborn (SSBC) Maternity and Newborn network has been established.

The key functions of the network are:

- Ensure effective clinical flows through the provider system through clinical collaboration for networked provision of services.
- Take a whole system collaborative provision approach to ensuring the delivery of safe and effective services across the patient pathway, adding value for all its stakeholders.
- Improve cross-organisational multi-professional clinical engagement and patient/carer engagement to improve pathways of care.
- Enable the development of consistent provider guidance and improved service standards, ensuring a consistent patient and family experience.
- Focus on quality and effectiveness through facilitation of comparative benchmarking and auditing of services, with implementation of required improvements.
- Fulfil a key role in assuring providers and commissioners of all aspects of quality as well as coordinating provider resources to secure the best outcomes for patients across wide geographic areas.
- Support capacity planning and activity monitoring with collaborative forecasting of demand, and matching of demand and supply.

Draft Update 3 September 2013

The Royal Wolverhampton NHS Trust has a Level 3 Neo Natal Unit and is part of the SSBC Newborn Network which is working to ensure that the sickest and smallest babies in Wolverhampton are treated at the right hospital (NICU), at the right time, at the right place. Where it is suspected that a baby will be born very prematurely then the safest option is to transfer you to a neo natal unit before the birth as the baby will still be protected so that it will access to appropriate equipment and expertise.

Research evidence demonstrates that the place of birth can influence survival in the very small preterm baby. Babies delivered and managed at level 3 unit have the best survival changes.

This is known as in utero transfer. The following hospitals are part of the SSBC Newborn Network:

- University Hospital of North Staffordshire
- Staffordshire General Hospital
- Manor Hospital Walsall
- Russells Hall Hospital Dudley
- Royal Shrewsbury Hospital

Appendix 4: Healthy Child Programme responsibilities

The programme provides the basis for agreeing with each family how they will access the Healthy Child Programme over the next stage of their child's life. Any system of early identification has to be able to:

- identify the risk factors that make some children more likely to experience poorer
- outcomes in later childhood, including family and environmental factors;
- include protective factors as well as risks;
- be acceptable to both parents;
- promote engagement in services and be non-stigmatising;
- be linked to effective interventions;
- capture the changes that take place in the lives of children and families;
- include parental and child risks and protective factors; and
- identify safeguarding risks for the child.