



## Neonatal Mortality Review in pan-Lancashire 2008-11

### EXECUTIVE SUMMARY

#### Introduction

Over recent years there have been steady decreases in neonatal mortality rates for England and Wales from around 6.7 neonatal deaths per 1000 live births in 1981, to 2.9 deaths per 1000 live births in 2011. Improvements in maternal healthcare have greatly contributed to this reduction. Despite this there is evidence that many deaths taking place in early infancy are linked to modifiable or lifestyle factors such as smoking, alcohol and obesity. Consanguinity also has an important role to play in excess infant mortality locally and rates tend to be higher in some south Asian communities.

#### Aim

The aim of this study was to identify modifiable risk factors associated with neonatal deaths using data for 2009-2011 extracted from the Lancashire, Blackburn and Blackpool Child Death Overview Panel (CDOP). Cases were included in the study if they met the inclusion criteria: death in an infant with a gestational age of 24 weeks+; born alive and died at less than 28 days old between April 1st 2008 and March 31<sup>st</sup> 2011; the place of residence- Lancashire, Blackpool or Blackburn with Darwen; and the death had been reviewed by CDOP. Cases were excluded if they were stillbirths, births at less than 24 weeks gestation and late termination of pregnancies.

#### Methods

A total of 110 cases were included in the study. 65/110 cases (59%) of cases were male; 44/110 cases were female; 1 case was unrecorded. In the study period the majority of neonatal deaths 81/110 occurred within the first week (73.6%).

#### Characteristics of cases

- There were 81/110 (73.6%) deaths that took place in the early neonatal period (< 7 days old).
- The majority of deaths were in pre-term infants-69/110 (62.7%). Pre-term relates to infants that have a gestational age of less than 37 weeks.
- Conditions relating to prematurity were common causes of death for premature infants. For term infants the majority of deaths were caused by congenital or chromosomal factors.
- Data on weight and gestational age was available for 91/110 cases. Low birth weight was indicated in 62/91 cases (68%). Low birth weight is defined as infants born with a birth weight less than 2500g regardless of gestational age.

## Characteristics of mothers

- Around 50% of mothers were aged between 25-34 years. However national fertility rates are also highest in this age group. Further analysis would require adjusting for age.
- Neonatal mortality demonstrates a social gradient with the majority of cases being from the poorest neighbourhoods. 50 cases (45.5%) were from the most deprived groups. However lower socio-economic groups tend to also have a higher fertility rate so a disproportionate number of infants are born to those groups compared with more affluent neighbourhoods
- In terms of mothers ethnicity 61/110 (55.5%) were recorded as white British; 19/110 (17.3%) were recorded as Pakistani; 7/100 (6.4%) were recorded as Indian; 10/110 (9%) were from other ethnic groupings and 13/110 (11%) were unrecorded or blank records
- Consanguinity was recorded in 21/110 (19.1%) of cases –many residing in Blackburn with Darwen. Of those recorded cases 16/21 cases were of Pakistani heritage, smaller numbers were recorded as Indian, any other Asian background, or had blank records.
- 5/110 of cases were recorded as ‘alcohol misusing’; substance misuse was recorded in 5/110 of cases; smoking status was recorded in 26/110 (23.6%) of cases. It should be noted that the majority of smoking mothers gave birth to preterm babies (84.6%). 22/26 cases with mothers recorded as smokers were preterm (< 37 weeks at birth). But there was significant under-recording issues for a range of lifestyle factors leading to limitations in statistical analyses

## Data issues

- There should be processes implemented to ensure that death notifications to CDOP are timely and complete through verification with ONS death records. It should be noted that an audit carried out by the Centre for Maternal and Child Enquiries (CMACE) recorded a regional ascertainment rate of 96.5% for 2009-2010 indicating that not every death is referred for review.
- The CDOP database is comprehensive but with limited data fields. For the purposes of this study a bespoke database had to be constructed and individual records accessed to populate fields. This was a very onerous and time consuming process.

## Recommendations

1. To carry out further analysis and explore the evidence base around modifiable risk factors associated with *pre-term* births as this group may be affected

more by lifestyle issues whereas term births are linked more with chromosomal factors.

2. Review the definitions used by Child Death Overview Panel to categorise 'cause of death' and look at other ways of providing more detail for analysis.
3. Look at the feasibility of reporting 'weight for gestational age' for infant mortality cases as this presents a more accurate picture than birth weight.
4. Explore ways of calculating neonatal mortality rates adjusted for maternal age and deprivation. This would provide information on further factors that may be associated with early infant death.
5. Explore the apparent excess of mortality associated with consanguinity in Blackburn with Darwen as part of the larger scale public health genetics programme of work.
6. Review local weight management pathways and initiatives given the high rates of women recorded as 'overweight' or 'obese' at booking.
7. To improve completeness of recording information in maternity notes on health and lifestyle issues including BMI, smoking status, alcohol use and substance misuse. Data quality has improved however reporting agencies should be reminded of the importance of completing all data fields for public health research and statistical analysis.
8. To review local pathways and initiatives for lifestyle and risk taking behaviours including smoking, alcohol use and substance misuse.
9. CDOP should consider investing in a comprehensive database that can be used to analyse trends and generate hypotheses for further study.

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