



**WIRRAL  
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# **Infant Mortality**

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**October 2018**

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## Infant Mortality

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| V1              | September 2018 | Jack Font | Sarah Kinsella | Update and amend references  |
| V2              | October 2018   | Jack Font | John Highton   | Inserted a glossary as well as amended sources and wording around graphs |

### Report Overview

|                                       |  |
|---------------------------------------|--|
| <b>Abstract</b>                       |  |
| <b>Intended or potential audience</b> | <b>External</b> <ul style="list-style-type: none"><li>• Midwives</li><li>• Nurses</li><li>• Antenatal clinics</li></ul> <b>Internal</b> <ul style="list-style-type: none"><li>• JSNA Bulletin</li><li>• Public Health Managers</li></ul> |
| <b>Links with other topic areas</b>   | <ul style="list-style-type: none"><li>• <a href="#">Life Expectancy</a></li><li>• <a href="#">Children and Young People</a></li><li>• <a href="#">Maternity and Pregnancy</a></li></ul>  |

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## Glossary of terms

**Antepartum infections** – An infection that occurs just before birth

**Congenital anomalies** – Structural or functional anomalies caused by single gene defects, chromosomal disorders, multifactorial inheritance, environment teratogens and/or micronutrient deficiencies

**Early neonatal mortality rate** – the number of deaths occurring under 7 days per 1,000 live births

**Infant mortality rate** – the number of deaths of infants (aged under one year) per 1,000 live births

**Late neonatal mortality rate** – the number of deaths between 7 and 27 days per 1,000 live births

**Neonatal mortality rate** – the number of deaths occurring under 28 days per 1,000 live births

**Perinatal mortality rate** – the number of stillbirths and early neonatal deaths per 1,000 live and stillbirths

**Post-neonatal mortality rate** – the number of infants who die between 28 days and under one year, per 1,000 live births

**Statistical Neighbour** - The Councils that have the "closest" averages to Wirral are considered neighbours, the Council we tend to use is Sefton as it also the closest geographically to Wirral

**Stillbirth** – Those born after 24 weeks of completed gestation which did not breathe or show signs of life

## Key Findings

- The total number of infant deaths in 2014-16 was 41, the rate was 3.9 per 1,000 live births
- Wirral also had a higher stillbirth rate for 2014-16 than both the North West, England and nearest statistical neighbour Sefton
- Two in three (66%) of all infant deaths within Wirral occurred within the first 28 days of birth (the neonatal period). For England this figure was 71%
- Over 75% of infant deaths in England and Wales were due to immaturity related conditions and congenital anomalies. Figures for Wirral are not calculated due to such small numbers making interpretation of the results problematic
- Since 2014 neonatal and infant mortality rates have increased across England and Wales with perinatal mortality appearing to have plateaued

## Introduction

Infant mortality is widely accepted as an important Public Health indicator because it acts as a 'bellwether' for the health of the population in general.

As is also the case with [Life Expectancy](#), it reflects the relationship between health and the upstream determinants such as economic, social and environmental conditions.

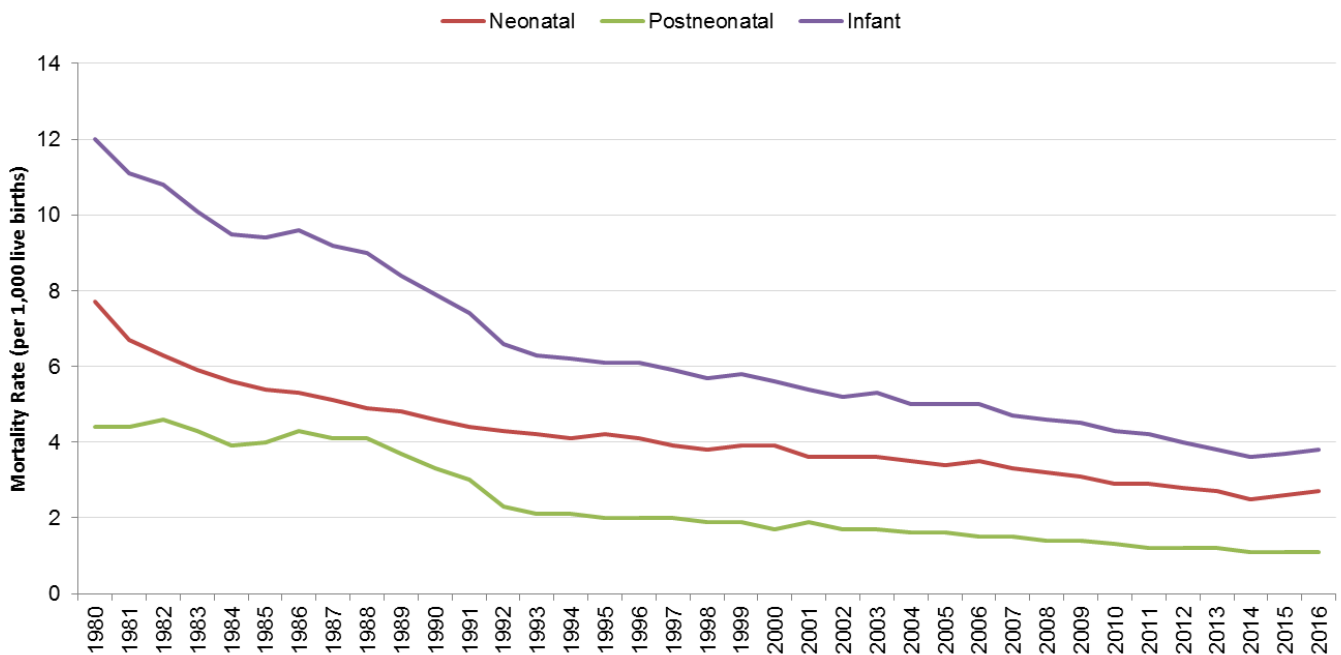
Deaths occurring during the first 28 days of life (the neonatal period) in particular, are considered to reflect the health and care of both mother and new-born (1). No current national or local targets have been set for infant mortality, but it is a [Public Health Outcomes Framework indicator \(4.01\)](#), highlighting its importance as a measure of the health of the population.

## Background

Around 2,500 babies die before their first birthday in England annually; many of these deaths are preventable. Causes and risk factors are complex, but are often associated with deprivation.

The infant mortality rate in Wirral in 2014-16 was 3.9 per 1,000 live births, compared to 4.5 in the North West and 3.9 in England. Although national rates of infant mortality have shown a downward trend over the past few decades (see Figure 1), further reducing infant mortality continues to be a Public Health priority. Rates for infant mortality are always calculated as 3 year rolling rates, to smooth out the random year on year fluctuations which characterise small datasets.

**Figure 1:** Neonatal, post-neonatal and infant mortality rates, England and Wales, 1980-2016



Source: [Office for National Statistics \(ONS\)](#), 2016

Across England and Wales, the trend of each of the different infant mortality, 1 year rolling rates, over the last 30 years has been decreasing. However, in the past few years, neonatal and infant mortality rates have shown a slight increase whereas most recently post-neonatal rates have plateaued.

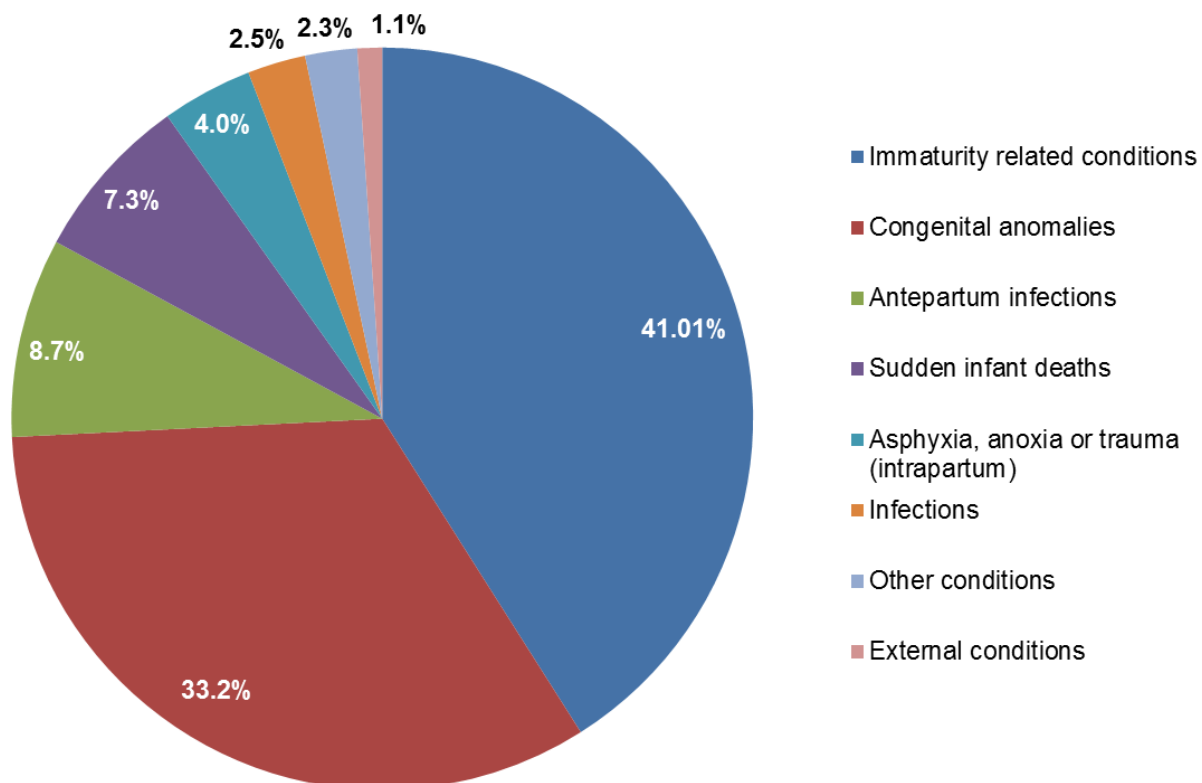
## Causes and Risk Factors

Most of the causes of infant mortality show a socio-economic gradient (2). The causes of infant mortality are not presented for Wirral due to small numbers making interpretation problematic.

Figure 2 below shows that the majority of infant deaths in England & Wales are primarily a result of:

- Immaturity related conditions - pre-term births less than 37 weeks gestation
- Congenital anomalies – conditions present before or at the time of birth
- Antepartum infections
- Sudden and unexpected death in infancy (SUDI)

**Figure 2:** Breakdown of infant deaths by ONS cause group in England and Wales, 2016



Source: [Office for National Statistics \(ONS\)](https://www.ons.gov.uk), 2016

Risk factors for infant mortality are complex and interacting, these are summarised in Table 1.

The Marmot Review (3) highlights the health inequalities of infant mortality, stating that “*in a study of all infant deaths in England and Wales (excluding multiple births), deprivation, births outside marriage, non-white ethnicity of the infant, maternal age (being under the age of 20) and male gender of the infant were all independently associated with an increased risk of infant mortality. A trend of increasing risk of death with increasing deprivation persisted after adjustment for these other factors.*”

**Table 1:** Risk factors for infant mortality (4)

| <b>Risk factor</b>            | <b>Association with infant mortality</b>  |
|-------------------------------|---|
| <i>Parental/pre-birth</i>     |   |
| Ethnicity                     | Infants of Black, Asian and minority ethnic (BAME) parents show the highest rates of infant mortality.  |
| Infection during pregnancy    | Contracting infections such as influenza increase the risk of infant mortality.   |
| Maternal age                  | Mothers under 20 and over 35 years old have the highest risk of infant mortality.   |
| Maternal nutrition            | Maternal obesity is associated with conditions that increase the risk of infant mortality such as gestational diabetes and pre-eclampsia.   |
| Maternal smoking              | Smoking during pregnancy exposes the foetus to harmful chemicals such as nicotine and carbon monoxide, reducing nutrient and oxygen availability and increasing the risk of infant mortality. |
| Maternal substance misuse     | Alcohol and illicit substances consumed during pregnancy increase the risk of infant mortality.   |
| Maternity booking appointment | Booking after 12 weeks gestation and non-attendance are risk factors of infant mortality.   |
| Parental socioeconomic status | Infants born to parents in the most deprived areas are the most likely to experience infant death. Deprivation is associated with many other risk factors of infant mortality.                |
| Parents marital status        | Births outside marriage increase the risk of infant mortality.  |
| Previous stillbirth           | If a previous stillbirth has been experienced the risk of infant mortality is increased.  |
| <i>Infant/post-birth</i>      |   |
| Birthweight                   | Low birthweight increases the risk of infant mortality.   |
| Exclusive breastfeeding       | Breastfeeding reduces the risk of infant mortality.   |
| Infant immunisations          | Lack of infant immunisations increases the risk of infant mortality.  |
| Multiple births               | Multiple births increase the risk of infant mortality, and are also associated with low birthweight and prematurity.  |
| Prematurity                   | Prematurity increases the risk of infant mortality.   |

## Current local picture

During 2014-16 in Wirral there were 51 stillbirths and 41 infant deaths. Two in three (66%) of these 41 infant deaths occurred before the infant was 28 days old (the neonatal period). For England, this figure was 71%. The infant mortality rate for Wirral is the same as the England average and lower than Sefton, its nearest statistical neighbour (Table 2).

**Table 2:** Comparison of mortality rates (per 1,000) and number, 2014-16

| Indicator               | Wirral |                | England |                | North West |                | Sefton |                |
|-------------------------|--------|----------------|---------|----------------|------------|----------------|--------|----------------|
|                         | Number | Rate per 1,000 | Number  | Rate per 1,000 | Number     | Rate per 1,000 | Number | Rate per 1,000 |
| Stillbirths             | 51     | 4.8            | 8,894   | 4.5            | 1,172      | 4.5            | 35     | 4.2            |
| Neonatal mortality      | 27     | 2.6            | 5,446   | 2.7            | 759        | 3.0            | 22     | 2.6            |
| Post-neonatal mortality | 14     | 1.3            | 2,264   | 1.1            | 387        | 1.5            | 13     | 1.6            |
| Infant mortality        | 41     | 3.9            | 7,710   | 3.9            | 1,146      | 4.5            | 35     | 4.2            |

Source: [Child and Maternal Health Fingertips Profile](#)



## Trends

Figure 3 shows that infant mortality rates have, in general, been declining nationally, regionally and locally for a long period of time. National rates have shown a steady decrease from 5.4 deaths per 1,000 live births in 2001-03 to 3.9 per 1,000 live births in 2014-16. Wirral rates have shown a fluctuating decline in this period, peaking in 2003-05 and 2010-12 with 5.2 deaths per 1,000 live births, but showing a sharp decrease from 2011 to 2014. Although Wirral rates have risen sharply again for the most recent time period, it is still the 2<sup>nd</sup> lowest the rate has ever been for Wirral. For the majority of the time periods shown, infant mortality rates in Wirral have generally been below the North West average.

**Figure 3:** Trend in infant mortality rate: Wirral, North West and England, 2001 to 2016 (3 year rolling rates)



Source: [Child and Maternal Health Fingertips Profile](#)

Table 3 below shows the comparison of infant mortality risk factors between Wirral, England, the North West and Wirral's nearest statistical neighbour, Sefton. Wirral performs worse than England on the majority of risk factors. These include but aren't limited to: deprivation score, breastfeeding initiation and smoking at the time of delivery. The most significant difference in risk factor is the percentage (%) breastfeeding at initiation. This is described as the percentage of all mothers who breastfeed their babies within the first 48 hours after delivery. It is vitally important that new mothers do this because it provides babies with ideal nutrients in the first stages of their life. It also helps to reduce illness in young children, have health benefits for the infant and the mother and result in cost savings to the NHS through reduced hospital admission for the treatment of infection in infants (5). Slightly less than 60% of Wirral mothers breastfeed their child at initiation compared to almost 75% for England.

**Table 3:** Comparison of infant mortality risk factors

| Risk factor   | Period  | Wirral | England | North West | Sefton |
|---|---------|--------|---------|------------|--------|
| Deprivation score (IMD 2015) <sup>I</sup>   | 2015    | 26.9   | 21.8    | -          | 25.7   |
| % Teenage mothers (mothers under 18 years) <sup>I</sup>                           | 2016/17 | 0.9    | 0.8     | 0.9        | 0.8    |
| % deliveries to women aged 35 years or above <sup>I</sup>                         | 2016/17 | 19.2   | 21.6    | 18.6       | 19.6   |
| % deliveries to mothers from Black and Minority Ethnic (BME) groups <sup>I</sup>  | 2016/17 | 4.5    | 23.3    | 18.8       | 6.0    |
| % births outside marriage <sup>II</sup>   | 2016    | 58.4   | 47.6**  | -          | -      |
| % smoking at time of delivery <sup>I</sup>  | 2016/17 | 12.0   | 10.7    | 13.4       | 13.1   |
| % seasonal flu immunisation uptake amongst pregnant women <sup>III</sup>          | 2016/17 | 46.0   | 44.9    | 47.8       | 48.2   |
| % low birthweight of all babies (<2,500g) <sup>I</sup>                            | 2016    | 8.5    | 7.3     | 7.5        | 6.6    |
| Multiple births (rate per 1,000) <sup>I</sup>                                     | 2016    | 16.5   | 15.9    | 14.4       | 11.9   |
| % breastfeeding initiation <sup>I</sup>   | 2016/17 | 59.4   | 74.5    | 64.5       | 57.9   |
| % breastfeeding prevalence at 6-8 weeks after birth <sup>I</sup>                  | 2016/17 | 33.9   | 44.4    | *          | 29.6   |
| % completed Diphtheria, Tetanus, Polio, Pertussis, Hib by age 1 year <sup>I</sup> | 2016/17 | 96.3   | 93.4    | 94.7       | 94.2   |
| % completed MenC immunisation course by age 1 year <sup>I</sup>                   | 2015/16 | 98.1   | *       | *          | 96.8   |
| % children in low income families aged 0 to 4 <sup>I</sup>                        | 2013    | 25.8   | 20.2    | 23.5       | 22.8   |

Source I. Public Health England <https://fingertips.phe.org.uk/profile-group/child-health/profile/child-health-overview>

Source II. ONS Birth data

Source III. Public Health England <https://www.gov.uk/government/statistics/seasonal-flu-vaccine-uptake-in-gp-patients-in-england-winter-season-2016-to-2017>

**Notes:**

Colour coded using RAG ratings (Red = worse than England; Amber = Similar to England; Green = better than England).

\* Not shown due to data quality issues

\*\* Figure for England and Wales

## Low Birth Weight and Deprivation

**Table 4:** Percentage of low birth weight babies (as a percentage of all births) by deprivation quintile, Wirral, 2016

| % of low birth weight babies | Deprivation Quintile |      |      |      |      | Wirral |
|------------------------------|----------------------|------|------|------|------|--------|
|                              | 1                    | 2    | 3    | 4    | 5    |        |
|                              | 9.56                 | 5.44 | 5.39 | 5.67 | 5.52 |        |

Source: Office for National Statistics (ONS)

Notes: 1 = most deprived quintile, 5 = least deprived quintile

Both deprivation and low birth weight (live and stillborn infants with a stated birth weight of less than 2,500 grams/5lb 8oz) are some of the most important risk factors for infant mortality.

As Table 4 shows – almost 1 in 10 babies born in the most deprived areas of Wirral are of a low birth weight. It is almost two times less likely to be born of a low birth weight in the remaining deprivation quintiles in Wirral. Overall, 7.2% of babies born in Wirral are of a low birth weight (or 1 in 14 babies).

## Public Health Interventions

A number of national and local public health interventions are provided in Wirral to reduce the health inequalities of infant mortality and improve infant and maternal outcomes, summarised in Table 5. In 2015, NHS England commissioned a [National Maternity Review](#) (6) report to further drive these improvements and meet the changing needs of women and babies. Seven key priorities were highlighted:

1. Personalised care
2. Continuity of carer
3. Better postnatal and perinatal mental health care
4. A payment system to fairly compensate providers for delivering different types of care
5. Safer care
6. Multi-professional working
7. Working across boundaries

**Table 5:** National and local interventions to target infant mortality

| Intervention                           | Description  |
|--|--|
| <i>National</i>                        |  |
| Infant Mortality National Support Team | Established in 2008 to help disadvantaged local areas address inequalities in infant mortality and improve infant and maternal health outcomes.                            |
| National Childbirth Trust              | A UK-based charity offering information and support during pregnancy, childbirth and early parenthood.   |
| <i>Local</i>                           |  |
| Home Start Wirral                      | Provides a range of services and support to families, tailored to their needs using a responsive and user-led approach.  |
| Infant Feeding Team                    | Provides information, support and training to healthcare professionals to ensure a high standard of care for pregnant women and breastfeeding mothers and babies.          |
| 0-19 Health and Wellbeing Service      | Offers services starting in the antenatal period including support from the health visiting and nurse partnership team, regular health reviews and infant feeding support. |
| Mums and Midwife Shop, Birkenhead      | Run by Community Midwives to provide support throughout and a month after pregnancy. Located in the most deprived ward of the Wirral to reach vulnerable populations.      |
| Parentcraft (Antenatal) Sessions       | Offer practical guidance and advice for the first few months of parenthood. Take place in the community, often in local Children's Centres.                                |

In November 2017 there was an [announcement](#) from the government that from April 2018 every stillbirth, early neonatal death and severe brain injury cases will be referred to the Healthcare Safety Investigation Branch, a new NHS safety investigator led by safety experts.

It was hoped they would help drive the goal of halving the overall rate of stillbirths, deaths and brain injuries by 2025 (five years earlier than previously announced). It is unknown when a progress report regarding this announcement will be published but it is expected to be released [here](#).

## References

- 1) Public Health England, Child and Maternal Health Fingertips Profile  
<https://fingertips.phe.org.uk/profile/child-health-profiles>
- 2) Tackling Health Inequalities in Infant and Maternal Health Outcomes Report, Department of Health (2010) <https://www.gov.uk/government/publications/tackling-health-inequalities-in-infant-and-maternal-health-outcomes-report-of-the-infant-mortality-national-support-team>
- 3) The Marmot Review (2010). Fair Society, Healthy Lives: The Marmot Review  
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<https://www.bmj.com/content/346/bmj.f108>
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<http://pediatrics.aappublications.org/content/119/4/e837>
- 6) National Maternity Review: Better Births – Improving outcomes of maternity services in England, NHS England (2016) <https://www.england.nhs.uk/wp-content/uploads/2016/02/national-maternity-review-report.pdf>

## Further Reading/Links

- Wirral JSNA: <https://www.wirralintelligenceservice.org/>
- Saving Babies' Lives: A care bundle for reducing stillbirth: <https://www.england.nhs.uk/wp-content/uploads/2016/03/saving-babies-lives-car-bundl.pdf>

## Contact Us

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