

Nottingham University Hospitals NHS Trust

MBRRACE-UK perinatal mortality report: 2019 births

This report concerns stillbirths and neonatal deaths among the 8,814 babies born within your Trust in 2019, EXCLUDING births before 24 weeks gestational age and all terminations of pregnancy. Neonatal deaths are reported by place of birth irrespective of where death occurred.

Perinatal mortality

Type of death	Number	Crude rate	Stabilised & adjusted rate (95% C.I.)	Comparison to the average for similar Trusts & Health Boards
Stillbirth	33	3.74	3.58 (3.01 to 4.30)	● Up to 5% higher or up to 5% lower
Neonatal	22	2.51	2.61 (1.75 to 3.80)	● Up to 5% higher or up to 5% lower
Extended perinatal	55	6.24	6.19 (5.28 to 7.73)	● Up to 5% higher or up to 5% lower

The crude mortality rate is the observed rate for your Trust and is a snapshot of mortality for births in 2019. The stabilised & adjusted mortality rate gives a more reliable estimate of the underlying mortality rate taking into account key factors known to increase the risk of stillbirth and neonatal mortality as well as the effects of chance variation, particularly where the number of deaths was small. While it is not possible to adjust for all potential risk factors, these measures do provide an important insight into the perinatal mortality for births within your Trust in 2019.

The stabilised & adjusted mortality rates for your Trust were similar to, or lower than, those seen across similar Trusts and Health Boards (see page 7 for more details). However, if the aspiration of your Trust is to seek rates comparable with the best performing countries, for example those in Scandinavia, a local review would be justified to ensure all avoidable factors have been identified and any appropriate changes to care implemented.

Important reporting issues

It is vital that complete, accurate data is reported to MBRRACE-UK. For births in 2019, we received 98% of information on key data items for the deaths which occurred within your Trust.

Deaths relating to births before 24 weeks gestational age have been reported separately as there is variation across the UK as to whether babies at this gestation are reported as a late fetal loss or a neonatal death which biases mortality rates. Please continue to ensure that all late fetal losses at 22 to 23 weeks gestational age are reported to MBRRACE-UK.

About this report

MBRRACE-UK

This report presents one element of the work of MBRRACE-UK, a collaboration led from the National Perinatal Epidemiology Unit at the University of Oxford with members from the University of Leicester (who lead the perinatal aspects of the work), University of Birmingham, Bradford Institute for Health Research, The Newcastle upon Tyne Hospitals NHS Foundation Trust and Sands (Stillbirth and neonatal death charity).

MBRRACE-UK is commissioned by the Healthcare Quality Improvement Partnership (HQIP) on behalf of NHS England, NHS Wales, the Scotland Government Health and Social Care Directorate, the Northern Ireland Department of Health, Social Services and Public Safety (DHSSPS), the States of Guernsey, the States of Jersey, and the Isle of Man Government.

Introduction

This is the seventh MBRRACE-UK perinatal mortality surveillance report produced for Trusts and Health Boards across the UK. It includes details of the late fetal losses (22⁺⁰ to 23⁺⁶ weeks gestational age), stillbirths and neonatal deaths for births that occurred in your Trust in 2019, as well as background information on all births. Neonatal deaths are reported by place of birth, irrespective of where the death occurred, as denominator data on the place of care is not available for all births.

Methods

Deaths were reported to MBRRACE-UK by the Trust or Health Board where the death occurred. The information about births was obtained from routine sources – the Office for National Statistics (ONS), Personal Demographics Service (PDS), National Records of Scotland (NRS), Information Services Division (ISD), Northern Ireland Maternal and Child Health (NIMACH), States of Guernsey Health and Social Services Department, and States of Jersey Health Intelligence Unit. Home births are reported where the birth was registered via a Trust or Health Board. Births and deaths are attributed according to the configuration of Trusts and Health Boards on 1 September 2020.

Deaths from all causes except termination of pregnancy are reported, including those resulting from congenital anomalies. The information in this report may not match other local or national reported rates as births before 24 weeks gestational age have been excluded from most tables due to differences in reporting by Trusts and Health Boards. Further details on the methods we have used are available from the [MBRRACE-UK website](#).

Nationally recommended actions

Trusts and Health Boards whose mortality rates are marked ● or ● should carry out an initial investigation of their data quality and possible contributing local factors that might explain the high rate. Irrespective of where they fall in the spectrum of national performance all Trusts and Health Boards should use the national PMRT to review all their stillbirths and neonatal deaths.

Definitions

<i>Late fetal loss:</i>	A baby delivered between 22 ⁺⁰ and 23 ⁺⁶ weeks gestational age showing no signs of life, irrespective of when the death occurred.
<i>Stillbirth:</i>	A baby delivered at or after 24 ⁺⁰ weeks gestational age showing no signs of life, irrespective of when the death occurred.
<i>Neonatal death:</i>	A live born baby who died before 28 completed days after birth.
<i>Extended perinatal death:</i>	A stillbirth or neonatal death.

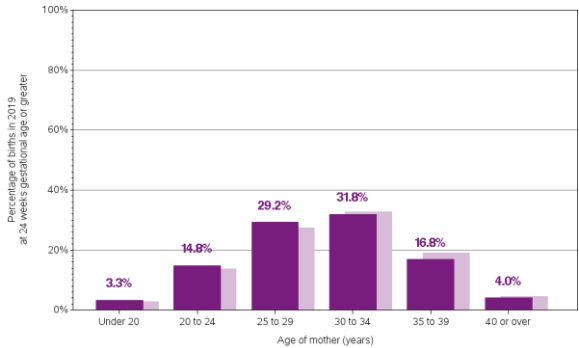
Your births

■ Your Trust □ UK-wide

Age of mother

The proportion of mothers aged 35 years old or older was lower than that of the UK as a whole: 20.9% versus 23.5%.

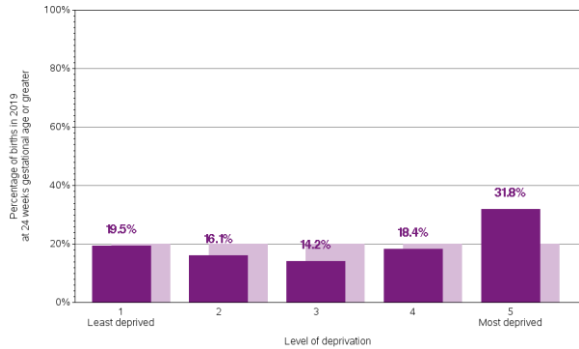
In the national MBRRACE-UK Perinatal Mortality Surveillance Report it was shown that mortality rates were higher for babies born to mothers under 25 and over 34 years of age compared to mothers aged from 25 to 34 years old.



Socio-economic deprivation

This graph shows the distribution of births by level of deprivation, based on the postcode of the mother's residence and using the [Children in Low-Income Families Local Measure](#).

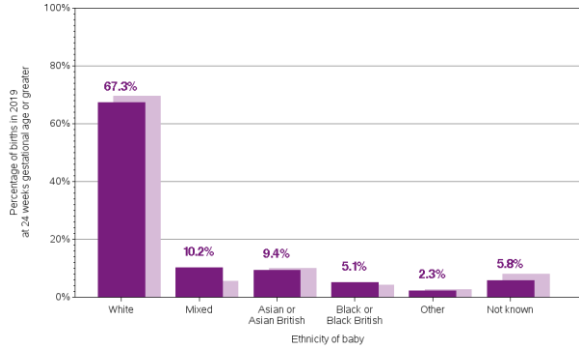
The mothers giving birth in your Trust were considerably more likely to live in areas of high deprivation than those giving birth across the UK as a whole.



Ethnicity of baby

In general, the ethnicity of the babies born in your Trust was similar to that of the UK as a whole.

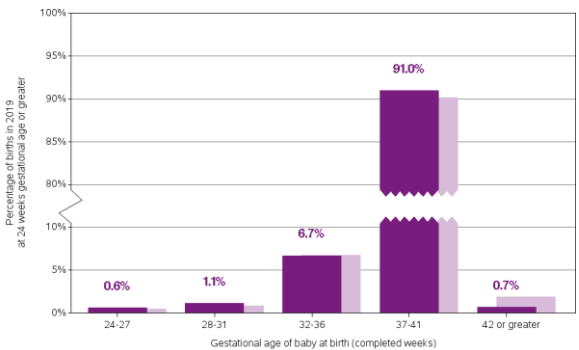
However, for 5.8% of your births the baby's ethnicity was reported as not known. This information is dependent on the accurate coding of babies' ethnicity within the routine reporting of all births.



Gestational age

In your Trust, 49 babies (0.6%) were born at 24 to 27 weeks gestational age, similar to the 0.4% seen in the UK as a whole. The percentage of babies born at 28 to 31 weeks was also similar to the national average: 1.1% versus 0.9%.

In addition, 57 babies (0.7%) were born post-term (42 weeks or greater), a lower percentage than the UK average of 1.9%.



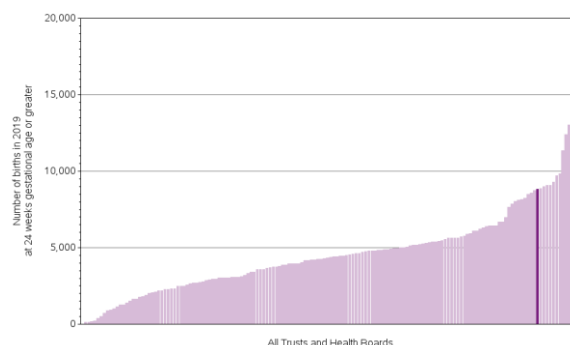
Your births *continued*

■ Your Trust □ UK-wide

Number of births

There were 8,814 births in your Trust at 24 weeks gestational age or later, excluding terminations of pregnancy.

The purple line in the graph opposite shows that the number of births in your Trust puts you in the highest third of all Trusts and Health Boards in the UK.



Percentage of births taking place in your Trust by commissioning organisation

The table below provides the percentage and number of births in your Trust at 24 weeks gestational age or later from each of the commissioning organisations for which over 1% of their births at 24 weeks gestational age or later occurred within your Trust. These organisations are Clinical Commissioning Groups (CCGs) in England, Health Boards in Scotland and Wales and Local Commissioning Groups (LCGs) in Northern Ireland.

In total, the births from these organisations accounted for 99.5% of your births at 24 weeks gestational age or later in 2019.

Commissioning organisation	% Births (N)	Commissioning organisation	% Births (N)
1. NHS Nottingham City CCG	99.6% (3795)	2. NHS Rushcliffe CCG	97.7% (1000)
3. NHS Nottingham North and East CCG	96.3% (1470)	4. NHS Nottingham West CCG	95.8% (995)
5. NHS Newark and Sherwood CCG	18.7% (202)	6. NHS South West Lincolnshire CCG	17.3% (184)
7. NHS Derby and Derbyshire CCG	6.7% (674)	8. NHS West Leicestershire CCG	5.0% (189)
9. NHS East Leicestershire and Rutland CCG	4.6% (143)	10. NHS Mansfield and Ashfield CCG	3.9% (83)
11. NHS Lincolnshire West CCG	1.4% (31)		

Your perinatal deaths

Deaths of babies born within your Trust

The crude mortality rates reported here are for babies born within your Trust, excluding births before 24 weeks gestational age and all terminations of pregnancy, together with the equivalent UK-wide rates.

These rates are subject to random variation, especially when the number of deaths is small. Stabilised & adjusted mortality rates are presented on page 7 which provide more reliable estimates of the underlying (long-term) mortality rates for your Trust.

Rates per 1,000 births	Stillbirths			Neonatal Deaths		Extended perinatal deaths
	Antepartum	Intrapartum	Unknown	Early	Late	
Your Trust <i>Rate (N)</i>	3.5 (31)	0.1 (1)	0.1 (1)	1.6 (14)	0.9 (8)	6.2 (55)
UK-wide <i>Rate</i>	3.0	0.3	0.1	1.1	0.5	5.0

The rates of extended perinatal death are shown below for your Trust by gestational age at delivery. Equivalent UK-wide rates are also shown for comparison.

Rates per 1,000 births	Extended perinatal deaths by gestational age				
	24 ⁺⁰ – 27 ⁺⁶	28 ⁺⁰ – 31 ⁺⁶	32 ⁺⁰ – 36 ⁺⁶	37 ⁺⁰ – 41 ⁺⁶	≥ 42 ⁺⁰
Your Trust <i>Rate (N)</i>	306.1 (15)	118.3 (11)	14.1 (8)	2.6 (20)	17.5 (1)
UK-wide <i>Rate</i>	325.0	97.2	18.9	1.8	1.1

Cause of death

The tables below describe the cause of death reported to MBRRACE-UK for stillbirths which occurred in your Trust and for neonatal deaths of babies who were born in your Trust. They are listed by the primary categories of the 'Cause Of Death & Associated Conditions' (CODAC) system of death classification.

Congenital anomaly is reported as the cause of death for all deaths where a congenital anomaly is coded as either the primary cause of death or an associated condition.

In your Trust, 63.6% of stillbirths were reported as having an Unknown or Missing cause of death, which is higher than the UK average. In order to ensure accurate, consistent reporting using the CODAC system of death classification, Trust and Health Board Perinatal Review groups should focus on the quality of cause of death coding.

			Infection	Neonatal	Intra-partum	Congenital anomaly	Fetal
Stillbirths	Your Trust	% (N)	3.0% (1)	3.0% (1)	0.0% (0)	0.0% (0)	0.0% (0)
	UK-wide	%	3.9%	1.6%	1.3%	9.3%	3.9%
Neonatal Deaths	Your Trust	% (N)	4.5% (1)	54.5% (12)	0.0% (0)	18.2% (4)	4.5% (1)
	UK-wide	%	8.7%	40.3%	2.2%	35.1%	3.1%

			Cord	Placental	Maternal	Unknown	Missing
Stillbirths	Your Trust	% (N)	0.0% (0)	30.3% (10)	0.0% (0)	51.5% (17)	12.1% (4)
	UK-wide	%	5.3%	33.4%	3.9%	31.5%	5.9%
Neonatal Deaths	Your Trust	% (N)	0.0% (0)	4.5% (1)	0.0% (0)	9.1% (2)	4.5% (1)
	UK-wide	%	0.3%	2.3%	0.7%	5.1%	2.0%

Your perinatal deaths *continued*

Place of neonatal death by gestational age

In the table below, information is shown that differentiates between the neonatal deaths of live born babies who were born and subsequently died within your Trust and those who were born within your Trust but died elsewhere. The percentage and number of babies in each group is shown by gestational age at birth.

Place of Death		Gestational group				
		24 ⁺⁰ – 27 ⁺⁶	28 ⁺⁰ – 31 ⁺⁶	32 ⁺⁰ – 36 ⁺⁶	37 ⁺⁰ – 41 ⁺⁶	≥ 42 ⁺⁰
Within your Trust	% (N)	100% (5)	100% (5)	100% (2)	90% (9)	(0)
Outside your Trust	% (N)	0% (0)	0% (0)	0% (0)	10% (1)	(0)

Post-mortem

The percentage of stillbirths and neonatal deaths for which parents were offered a post-mortem examination is given below, differentiating between those who were born and subsequently died within your Trust and those who were born within your Trust but died elsewhere.

For births within your Trust, a post-mortem was offered for 97% of stillbirths and 100% of neonatal deaths, compared with 98% and 88% UK-wide.

Place of Death		Post-mortem offered (as % of deaths)	
		Stillbirths	Neonatal Deaths
Within your Trust	% (n/N)	97% (32/33)	100% (21/21)
Outside your Trust	% (n/N)		100% (1/1)
UK-wide	%	98%	88%

The percentage of post-mortems offered or for which consent was obtained and where the cause of death was reported to MBRRACE-UK as Unknown is shown below. You are encouraged to update the reported cause of death on the MBRRACE-UK data reporting system once the post-mortem results are known.

Place of Death		Post-mortem	
		Offered	Consent obtained
Unknown cause of death	% (N)	100% (19/19)	42% (8/19)

Babies born at 22 to 23 weeks gestation

It is vital for MBRRACE-UK to be able to present perinatal mortality rates from 22 weeks gestational age onwards, as recommended by the World Health Organization, in order that UK rates can be compared internationally. As there is no statutory registration of late fetal losses at 22 and 23 weeks gestational age, it is vital that your Trust ensures that there is a rigorous system for reporting these deaths to MBRRACE-UK.

The number of late fetal losses at 22 and 23 weeks gestational age reported by your Trust for babies born in 2019 was 7. Please continue to review this information in order to ensure that all late fetal losses are reported to MBRRACE-UK.

	Deaths at 22 ⁺⁰ to 23 ⁺⁶ weeks gestational age	
	Late fetal losses	Neonatal deaths
Your Trust N	7	7

Your perinatal deaths *continued*

Comparisons with similar Trusts, Health Boards and the UK average

The mortality rates are reported for babies born within your Trust at 24 weeks gestational age or later, excluding terminations of pregnancy. A 'crude' rate and a 'stabilised & adjusted' rate are presented for stillbirths, neonatal deaths and extended perinatal deaths. The **crude mortality rate** is the number of deaths for every 1,000 births (or 1,000 live births for neonatal mortality) and is a snapshot of mortality for your organisation for births in 2019. However, this can be misleading as a measure of the underlying (or long-term) mortality rate due to chance variation and differences between Trusts and Health Boards in the proportion of high risk pregnancies.

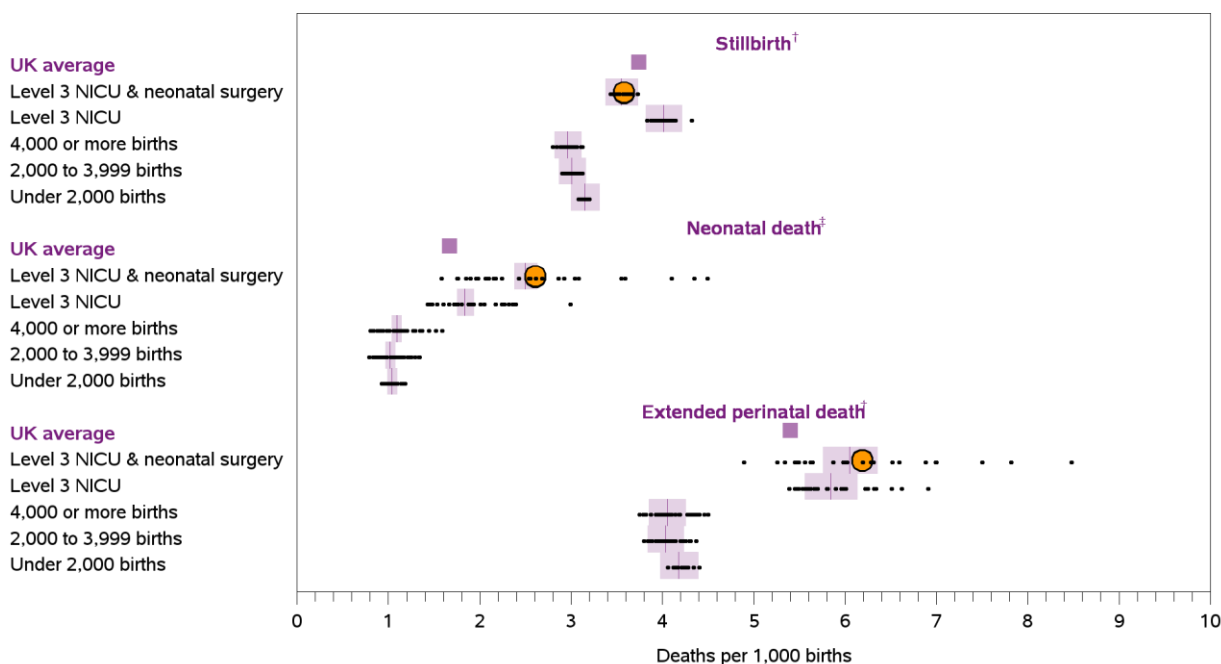
The **stabilised & adjusted mortality rate** is also reported which provides a more reliable estimate of the underlying mortality rate, accounting for mother's age, socio-economic deprivation, baby's sex and ethnicity, multiplicity, and (for neonatal deaths only) gestational age at birth. In addition, to account for the wide variation in case-mix, all Trusts and Health Boards have been classified hierarchically into five comparator groups: (i) Level 3 Neonatal Intensive Care Unit (NICU) and surgical provision (units routinely accepting for birth babies with a known congenital anomaly likely to require surgery in the neonatal period); (ii) Level 3 NICU; (iii) 4,000 or more births per annum at 22 weeks or later; (iv) 2,000-3,999 births per annum at 22 weeks or later; (v) under 2,000 births per annum at 22 weeks or later. **Your Trust has been included in the comparator group with a Level 3 NICU and neonatal surgical provision.**

	Mortality rate per 1,000 births [§] (95% confidence interval)					
	Stillbirth [†]		Neonatal [‡]		Extended perinatal [†]	
Crude	3.74		2.51		6.24	
Stabilised & adjusted [◊]	3.58	(3.01 to 4.30)	2.61	(1.75 to 3.80)	6.19	(5.28 to 7.73)

[§] excluding terminations of pregnancy and births <24⁺; [†] per 1,000 total births; [‡] per 1,000 live births.

Your estimated stabilised & adjusted mortality rate for each type of death has been compared with the average mortality rate for Trusts and Health Boards in the same comparator group and is shown below as a circle:

- more than 15% lower than the average for the group
- more than 5% and up to 15% lower than the average for the group
- up to 5% higher or up to 5% lower than the average for the group
- more than 5% higher than the average for the group

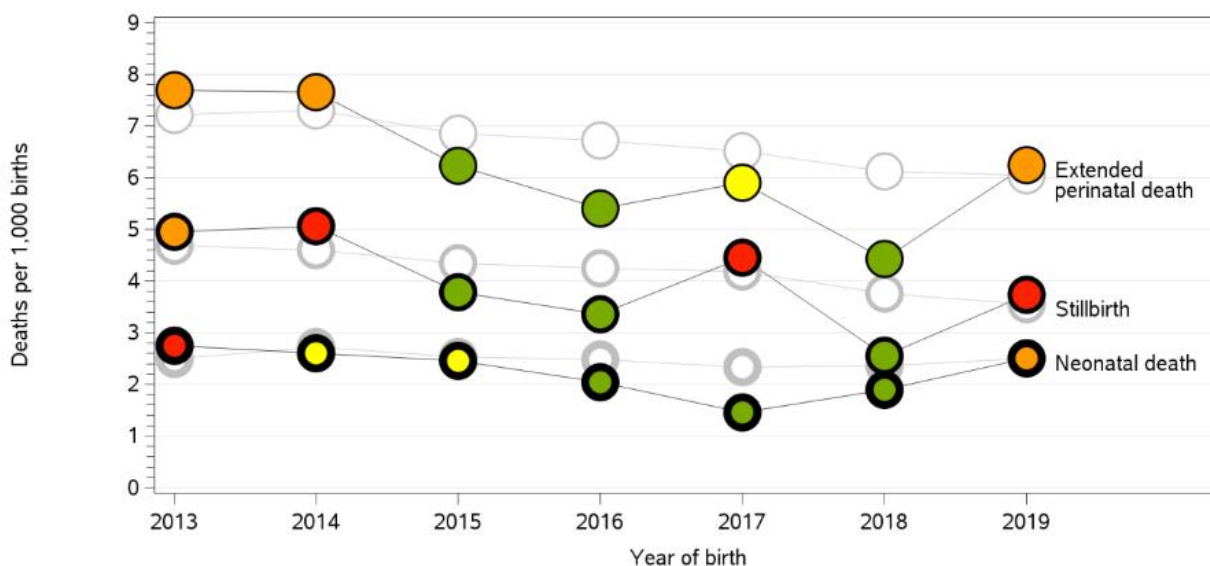


Mortality rates over time

Crude mortality by year of birth

Crude mortality rates for each type of death compared to the average mortality rate for Trusts and Health Boards in the same comparator group (shown in grey) by year of birth.

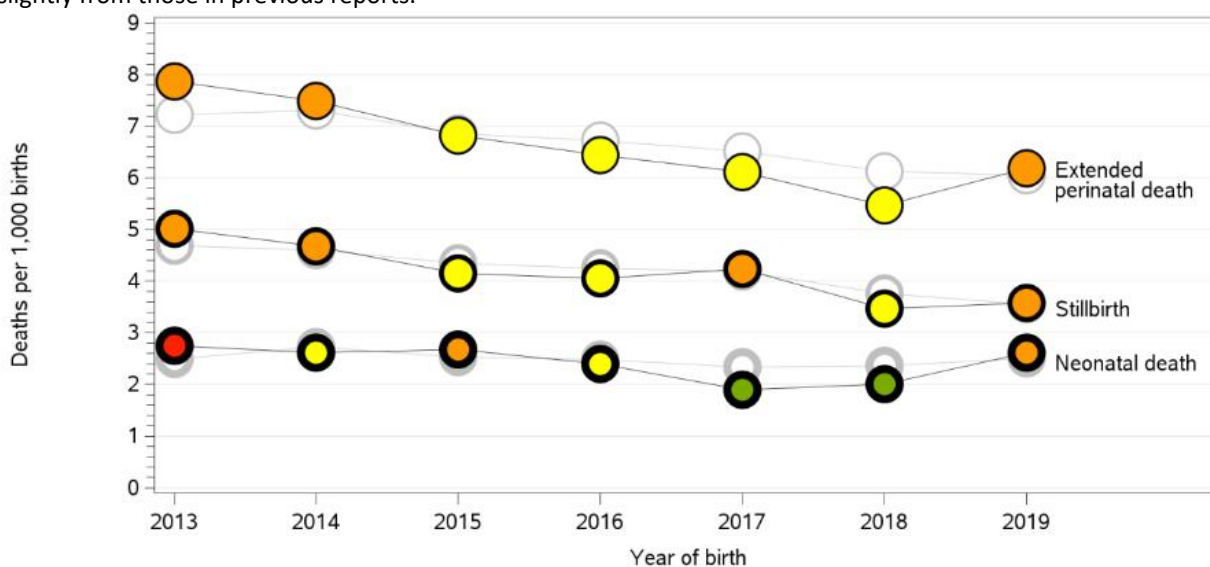
Due to updates to the data, these results might differ slightly from those in previous reports.



Stabilised & adjusted mortality by year of birth

Stabilised & adjusted mortality rates for each type of death compared to the average mortality rate for Trusts and Health Boards in the same comparator group (shown in grey) by year of birth.

Due to updates to the data and improvements to the statistical methodology used, these results might differ slightly from those in previous reports.



Data reporting

Completeness of key data items for DEATHS AT YOUR TRUST

The tables below provide details of completeness for key items in the data collection form. While the rest of this report concerns babies born within your Trust, these tables show the overall completeness of data for **deaths at your Trust no matter where they were born**. The percentage of data reported is given for each item, together with a coloured diamond denoting the level of completeness:

- ◆ less than 70.0% complete
- ◆ 70.0% to 84.9% complete
- ◆ 85.0% to 96.9% complete
- ◆ 97.0% to 99.9% complete
- ◆ 100% complete

These data items have been assessed as they are all readily available and essential to the accurate reporting of extended perinatal mortality for your Trust. For those items scoring red, orange or yellow it is essential that completeness is improved. Achieving this may well require collaboration with receiving and referring units.

Mother's details		Completeness		Birth		Completeness	
Name		100.0%	◆	Type of onset of labour		100.0%	◆
	UK-wide	100.0%			UK-wide	99.3%	
Postcode of residence		100.0%	◆	Actual place of birth		100.0%	◆
	UK-wide	99.9%			UK-wide	99.5%	
Ethnicity		91.5%	◆	Date and time of birth		94.9%	◆
	UK-wide	95.8%			UK-wide	98.9%	
Age		100.0%	◆	Final mode of birth		100.0%	◆
	UK-wide	100.0%			UK-wide	99.8%	
Booking and antenatal care [†]		Completeness		Baby's outcome		Completeness	
Smoking		94.9%	◆	Date death confirmed [‡]		100.0%	◆
	UK-wide	96.5%			UK-wide	99.3%	
Body mass index		100.0%	◆	Whether alive at onset of care [‡]		96.8%	◆
	UK-wide	100.0%			UK-wide	96.1%	
Intended type of care at booking		100.0%	◆	Whether admitted to NNU [§]		100.0%	◆
	UK-wide	98.3%			UK-wide	99.8%	
Estimated date of delivery		96.6%	◆	Main cause of death		91.5%	◆
	UK-wide	97.0%			UK-wide	95.3%	
Baby's characteristics		Completeness					
Birth weight		98.3%	◆				
	UK-wide	99.0%					
Gestational age at birth		100.0%	◆				
	UK-wide	99.2%					

[†] excluding mothers reported as never booked; [‡] this data item is collected for stillbirths only; [§] this data item is collected for neonatal deaths only.

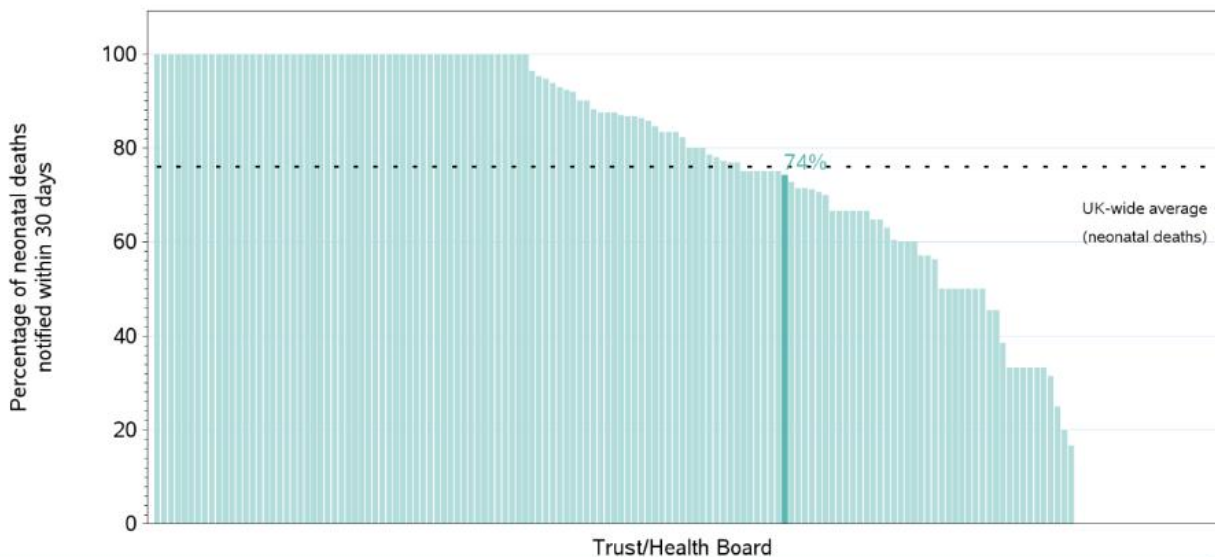
Data reporting *continued*

Percentage of deaths notified by your Trust within 30 days

The MBRRACE-UK timeliness benchmarks for the notification of deaths and completion of surveillance data for this period were:

- 1) All deaths should be **notified** to MBRRACE-UK within 30 days of the death occurring. The full data does not have to be complete at this point.
- 2) Trusts and Health Boards should aim to **complete** data entry for each death within 90 days of the death occurring.

The graphs below show the percentage of stillbirths & late fetal losses and neonatal deaths notified by your Trust within the 30-day benchmark period.



MBRRACE-UK

Department of Health Sciences, University of Leicester, George Davies Centre, Leicester, LE1 7RH.

Tel: +44 (0)116 252 5425

Email: mbrrace-uk@npeu.ox.ac.uk

Web: <http://www.npeu.ox.ac.uk/mbrrace-uk>



© 2021 The Infant Mortality and Morbidity Studies, Department of Health Sciences, University of Leicester

