

Supplementary information regarding stillbirths and infant mortality measures, September 2021

Background:

Monthly monitoring data on the PHS Wider Impacts Dashboard has shown a higher than expected rate of neonatal mortality in Scotland in March 2022.

Since July 2020 PHS has published monthly data on stillbirths and infant deaths on the public dashboard established to monitor COVID-19 wider impacts on the health care system (<https://scotland.shinyapps.io/phs-covid-wider-impact/>). The five measures published are:

- Stillbirth rate per 1,000 live and stillbirths
- Neonatal death rate per 1,000 live births
- Extended perinatal death rate per 1,000 live and stillbirths (sum of stillbirths and neonatal deaths)
- Post-neonatal death rate per 1,000 live births
- Infant death rate per 1,000 live births

The data sources are the statutory registration of deaths, provided to PHS by NRS each week, and the NHS notifications of births from the national child health information systems. Stillbirths have to be registered within 21 days of occurrence, and infant deaths within 8 days. This means there may be some undercounting of stillbirths, as it is possible for those occurring at the end of a month not to have been registered at the point of data extract. Monthly rates are calculated by date of death.

Levels of expected variation in monthly data are established using a statistical process control approach. The centreline is based on data from July 2017 to Dec 2019, with warning (2 standard deviations) and control (3 standard deviations) set around this.

Data for March 2022 was processed in the week commencing 18/04/2022, in anticipation of pre-release access on 27/04/2022, and publication on 04/05/2022.

Summary of data to be published

March 2022

- Neonatal death rate of 4.6 per 1,000 was higher than the upper control limit of 4.4, and more than twice the centreline rate of 2.2. The actual number of deaths was 18, with an expected number of 8, at the centreline rate given the number of live births which occurred.
- The stillbirth rate was within control limits, but not lower than expected. Consequently, the extended perinatal mortality rate (9.1 per 1,000) exceeded the upper warning limit (8.4), but not the control limit (9.6). This suggests that the finding of raised neonatal deaths is not attributable to the displacement of events from the stillbirth to the neonatal category.
- Post-neonatal deaths were at expected levels.
- Infant mortality rate (5.9 per 1,000) was above the warning limit (5.1), but below the upper control limit (6.0), with this being attributable to the higher than expected number of neonatal deaths.

Trends in data

- There are 57 months of data now reported via the dashboard, from July 2017 to March 2022.

- This is the second month across that period when the upper control limit has been breached, with the previous being September 2021 (neonatal mortality rate 5.1 per 1,000). No other month in the series exceeds a rate of 3.7 per 1,000.
- This event follows a period of four months (Nov 2021 to Feb 2022) in which neonatal mortality rates were lower than the centre line, but not below the lower warning limit, however reviewing the data across the first quarter of 2022 indicates that taken together, the values suggest an increase (see table 1 below).

Annual and quarterly measures

Measures of infant mortality generally decreased in Scotland until around 2014, and then remained broadly stable until 2020. Annual data on deaths in 2021 will be released by National Records for Scotland in June 2022. Provisional calculation of mortality rates for 2021 and 2022 Q1 are shown in table 1, these are based upon the monthly data published by PHS via the Wider Impacts Dashboard. This information indicates an increase in neonatal and infant mortality in 2021, whilst stillbirths, extended perinatal and postneonatal mortality appear stable. A similar pattern is seen in 2022 Q1, although there also appears to be an increase in extended perinatal mortality.

Table 1: Infant mortality measures, Scotland, 2016-2020 (source: <https://www.nrscotland.gov.uk/statistics-and-data/statistics/statistics-by-theme/vital-events/general-publications/vital-events-reference-tables>), and 2021 and 2022 Q1 (source: <https://scotland.shinyapps.io/phs-covid-wider-impact/>)

Period	Stillbirths	Extended perinatal mortality	Neonatal mortality	Postneonatal mortality	Infant mortality	Total live births
2016	4.3	6.5	2.2	1.1	3.3	54488
2017	4.2	6.5	2.3	1.1	3.3	52861
2018	3.7	5.7	2.0	1.2	3.2	51308
2019	3.5	5.7	2.2	1.1	3.3	49863
2020	4.2	6.3	2.1	1.0	3.1	46809
2021	3.8	6.5	2.7	1.1	3.8	47704
2022 Q1	4.2	7.0	2.8	1.2	3.9	11901

Supplementary information from death registrations ****not for further circulation or publication****

This review of information is not routinely undertaken, and this content is not appropriate for further dissemination or publication due to small numbers and the sensitive nature of the information.

- The majority of deaths (12) were early neonatal deaths, occurring in the first 7 days after birth.

- Information on gestation at birth of these infants, and overall occurrence of prematurity in this month is not yet available.