

Perinatal deaths in NSW 2017–2018



CONTENTS

Background	2
Overview of perinatal deaths	2
Maternal age	2
Table 1: Perinatal deaths by maternal age and perinatal death type, NSW 2017–2018	2
Gestational age and birthweight	2
Table 2: Gestational age by type of perinatal death, NSW 2017–2018	2
Table 3: Birthweight by type of perinatal death, NSW 2017–2018	3
Causes of perinatal deaths	3
Table 4: Perinatal deaths by PSANZ Perinatal Death Classification and type of perinatal death, NSW 2017–2018	3
Causes of neonatal deaths	4
Table 5: Neonatal deaths by PSANZ Neonatal Death Classification and gestational age, NSW 2017–2018	4
Appendices	5
Appendix 1: Methods	5
Appendix 2: Glossary	5

PERINATAL DEATHS

Perinatal deaths include stillborn babies and babies that die within the first 28 days of life. This report provides statewide data on perinatal deaths among births that occurred in NSW in 2017 and 2018. The report includes information on maternal age, gestational age and birthweight for perinatal deaths, as well as information on the causes of these deaths.

Background

Information on causes of perinatal death were obtained from the NSW Maternal and Child Health Register (MCHR) for 2017 and 2018. The underlying cause of death was assigned using the Perinatal Society of Australia and New Zealand (PSANZ) Perinatal Death Classification for both stillbirths and neonatal deaths and, in addition, the PSANZ Neonatal Death Classification for neonatal deaths.¹ Information on causes of death in this report is based on the year of birth. The MCHR includes information on all perinatal deaths, including deaths that occurred after discharge or transfer from the hospital of birth; however, the MCHR does not include death information for babies who were born in NSW and died interstate. The numbers of perinatal deaths in this report are therefore slightly higher than presented in other state and national reports (see Appendix 1: Methods).

Overview of perinatal deaths

In 2017, the perinatal mortality rate was 8.9 per 1,000 births, comprising 591 stillbirths (69.4%) and 261 neonatal deaths (30.6%). In 2018, the perinatal mortality rate was 8.5 per 1,000, comprising 595 stillbirths (73.0%) and 220 neonatal deaths (27.0%). In 2017, 118 stillbirths were reported to have occurred before the onset of labour, 23 occurred during labour and 28 occurred at an unspecified time before birth. In 2018, 174 stillbirths were reported to have occurred before the onset of labour, 26 occurred during labour and 32 occurred at an unspecified time before birth.

Maternal age

In 2018, the overall perinatal mortality rate was 8.5 deaths per 1,000 births, with higher perinatal mortality rates for babies born to women aged 12–19 years (16.6 per 1,000) than babies born to women aged 20–34 years (8.2 per 1,000) and 35 years and older (8.9 per 1,000) (Table 1).

TABLE 1: PERINATAL DEATHS BY MATERNAL AGE AND PERINATAL DEATH TYPE, NSW 2017–2018^a

Maternal age (years)	Year–Perinatal death type											
	2017						2018					
	Stillborn		Neonatal death		TOTAL		Stillborn		Neonatal death		TOTAL	
	No.	Rate/1,000 births	No.	Rate/1,000 births	No.	Rate/1,000 births	No.	Rate/1,000 births	No.	Rate/1,000 births	No.	Rate/1,000 births
12–19	22	11.7	9	4.8	31	16.4	24	13.3	6	3.3	30	16.6
20–34	411	5.9	174	2.5	585	8.3	417	6.0	152	2.2	569	8.2
35+	157	6.6	78	3.3	235	9.9	153	6.3	62	2.6	215	8.9
Not stated	1	-	0	-	1	-	1	-	0	-	1	-
TOTAL	591	6.2	261	2.7	852	8.9	595	6.2	220	2.3	815	8.5

Source: Maternal and Child Health Register (SAPHaRI). Centre for Epidemiology and Evidence, NSW Ministry of Health.

Neonatal deaths comprise babies who were born and died in NSW, including babies who died after discharge or transfer from the hospital of birth.

Gestational age and birthweight

As expected, perinatal mortality rates increased with greater prematurity and lower birthweight. Of the 815 perinatal deaths in 2018, 502 (61.6%) occurred in extremely pre-term babies (less than 28 weeks) and 444 (54.5%) in babies that weighed less than 1,000 grams (Tables 2 and 3).

TABLE 2: GESTATIONAL AGE BY TYPE OF PERINATAL DEATH, NSW 2017–2018^a

Gestational age (weeks)	Year–Perinatal death type											
	2017						2018					
	Stillborn		Neonatal death		TOTAL		Stillborn		Neonatal death		TOTAL	
	No.	Rate/1,000 births	No.	Rate/1,000 births	No.	Rate/1,000 births	No.	Rate/1,000 births	No.	Rate/1,000 births	No.	Rate/1,000 births
<28	335	469.8	159	223.0	494	692.8	366	519.1	136	192.9	502	712.1
28–31	57	88.8	19	29.6	76	118.4	61	100.3	16	26.3	77	126.6
32–36	92	16.0	34	5.9	126	21.9	77	12.8	28	4.7	105	17.5
37–41	105	1.2	48	0.5	153	1.7	89	1.0	37	0.4	126	1.4
42+	1	1.1	1	1.1	2	2.3	1	1.3	0	0.0	1	1.3
Not stated	1	-	0	-	1	-	1	-	3	-	4	-
TOTAL	591	6.2	261	2.7	852	8.9	595	6.2	220	2.3	815	8.5

Source: Maternal and Child Health Register (SAPHaRI). Centre for Epidemiology and Evidence, NSW Ministry of Health.

Neonatal deaths comprise babies who were born and died in NSW, including babies who died after discharge or transfer from the hospital of birth.

TABLE 3: BIRTHWEIGHT BY TYPE OF PERINATAL DEATH, NSW 2017–2018*

Birthweight (grams)	Year–Perinatal death type											
	2017					2018						
	Stillborn		Neonatal death		TOTAL		Stillborn		Neonatal death		TOTAL	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Less than 1,000	367	461.1	159	199.7	526	660.8	346	525.8	98	148.9	444	674.8
1,000–1,499	32	63.6	17	33.8	49	97.4	41	84.0	18	36.9	59	120.9
1,500–2,499	79	15.5	34	6.7	113	22.1	67	12.4	25	4.6	92	17.1
2,500–3,999	100	1.2	45	0.6	145	1.8	85	1.1	39	0.5	124	1.5
4,000+	6	0.7	6	0.7	12	1.3	9	1.0	2	0.2	11	1.3
Not stated	7	-	0	-	7	-	47	-	38	-	85	-
TOTAL	591	6.2	261	2.7	852	8.9	595	6.2	220	2.3	815	8.5

Source: Maternal and Child Health Register (SAPHaRI). Centre for Epidemiology and Evidence, NSW Ministry of Health.

Neonatal deaths comprise babies who were born and died in NSW, including babies who died after discharge or transfer from the hospital of birth.

Causes of perinatal deaths

The PSANZ Perinatal Death Classification was used to classify perinatal deaths according to the single most important factor which led to the chain of events that resulted in the death. In 2018, 29.3% of perinatal deaths were due to a congenital abnormality and 12.5% were due to maternal conditions such as diabetes, while 26.9% were unexplained antepartum deaths (Table 4).

TABLE 4: PERINATAL DEATHS BY PSANZ PERINATAL DEATH CLASSIFICATION AND TYPE OF PERINATAL DEATH, NSW 2017–2018*

PSANZ-PDC Major category	Year–Perinatal death type											
	2017					2018						
	Stillbirth		Neonatal death		TOTAL		Stillbirth		Neonatal death		TOTAL	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
1. Congenital abnormality	141	23.9	97	37.2	238	27.9	159	26.7	80	36.4	239	29.3
2. Perinatal infection	41	6.9	15	5.7	56	6.6	29	4.9	19	8.6	48	5.9
3. Hypertension	32	5.4	10	3.8	42	4.9	27	4.5	12	5.5	39	4.8
4. Antepartum haemorrhage (APH)	46	7.8	26	10.0	72	8.5	43	7.2	22	10.0	65	8.0
5. Maternal conditions	77	13.0	30	11.5	107	12.6	70	11.8	32	14.5	102	12.5
6. Specific perinatal conditions	21	3.6	20	7.7	41	4.8	35	5.9	15	6.8	50	6.1
7. Hypoxic peripartum death	7	1.2	11	4.2	18	2.1	9	1.5	5	2.3	14	1.7
8. Fetal growth restriction	0	0.0	5	1.9	5	0.6	2	0.3	5	2.3	7	0.9
9. Spontaneous preterm (<37 weeks gestation)	5	0.8	37	14.2	42	4.9	2	0.3	28	12.7	30	3.7
10. Unexplained antepartum death	221	37.4	0	0.0	221	25.9	219	36.8	0	0.0	219	26.9
11. No obstetric antecedent	0	0.0	10	3.8	10	1.2	0	0.0	2	0.9	2	0.2
TOTAL	591	100.0	261	100.0	852	100.0	595	100.0	220	100.0	815	100.0

Source: Maternal and Child Health Register (SAPHaRI). Centre for Epidemiology and Evidence, NSW Ministry of Health.

Neonatal deaths comprise babies who were born and died in NSW, including babies who died after discharge or transfer from the hospital of birth.

Congenital abnormalities

In 2018, the most common causes of deaths due to congenital abnormalities were chromosomal conditions ($n = 46$), followed by conditions of the central nervous system ($n = 43$) and cardiovascular system ($n = 41$). Two deaths were associated with diaphragmatic hernia and two deaths were associated with congenital tumours.

Perinatal infection

Of the 48 deaths classified as due to perinatal infection, 46 were associated with bacterial infection including 2 deaths due to group B streptococcal infection. Two deaths were associated with parvovirus infection.

Hypertension

In 2018, there were 27 stillbirths and 12 neonatal deaths attributed to hypertension. Of these, 12 deaths were attributed to pre-eclampsia, 3 deaths to pre-eclampsia superimposed on chronic hypertension, 6 deaths to gestational hypertension and 6 deaths due to chronic hypertension. The type of hypertension was unspecified in the remaining cases.

Antepartum haemorrhage

In 2018, there were 65 perinatal deaths that were attributed to antepartum haemorrhage. Of these, 39 were due to placental abruption, 5 were due to placental praevia and the origin of the remaining 21 cases was not specified.

Maternal conditions

There were 102 perinatal deaths that were attributed to maternal conditions in 2018. Forty perinatal deaths were attributed to diabetes and four were attributed to maternal sepsis.

Specific perinatal conditions

Twin-to-twin transfusion accounted for 14 of the 50 deaths that were attributed to specific perinatal conditions. The next most common conditions were subdural haemorrhage ($n = 11$), followed by antepartum umbilical cord complications ($n = 11$), uterine abnormalities ($n = 5$) and idiopathic hydrops ($n = 4$).

Hypoxic peripartum death

In 2018, there were 14 deaths classified as hypoxic peripartum death. Of these, six had evidence of non-reassuring fetal status in a normally grown infant and two were due to shoulder dystocia.

Fetal growth restriction

There were seven deaths attributed to fetal growth restriction. These included babies that died during labour or in the neonatal period. Fetal growth restriction was not assigned as a cause of death for stillborn babies that died before the onset of labour as these babies may be smaller than expected due to the death occurring some time before birth, and information from serial ultrasounds is not available in the MCHR.

Spontaneous preterm

In 2018, there were 30 deaths attributed to spontaneous preterm birth with no other cause identified in the mother or baby.

Unexplained antepartum death

In 2018, there were 219 unexplained stillbirths, of which 178 (81.3%) were premature and 154 (70.3%) were low birthweight.

No obstetric antecedent

There were two perinatal deaths with no known obstetric antecedent in 2018.

Causes of neonatal deaths

In 2018, the most common causes of neonatal death were extreme prematurity (40.0%), followed by congenital abnormalities (36.4%) (Table 5). Of the 220 neonatal deaths in 2018, 180 (81.8%) were born prematurely. Congenital abnormalities accounted for the majority of deaths among babies born at 37-plus weeks gestation (59.5%), followed by neurological conditions (21.6%) and cardiorespiratory conditions (10.8%).

TABLE 5: NEONATAL DEATHS BY PSANZ NEONATAL DEATH CLASSIFICATION AND GESTATIONAL AGE, NSW 2017–2018*

PSANZ-NDC Major category	Year-Gestational age (weeks)											
	2017					2018						
	Less than 37		37+		TOTAL*	Less than 37		37+		TOTAL*		
	No.	%	No.	%	No.	%	No.	%	No.	%		
1. Congenital abnormality	68	32.1	29	59.2	97	37.2	58	32.2	22	59.5	80	36.4
2. Extreme prematurity	102	48.1	0	0.0	102	39.1	85	47.2	0	0.0	88	40.0
3. Cardio-respiratory disorders	16	7.5	2	4.1	18	6.9	16	8.9	4	10.8	20	9.1
4. Infection	9	4.2	1	2.0	10	3.8	3	1.7	1	2.7	4	1.8
5. Neurological	9	4.2	14	28.6	23	8.8	12	6.7	8	21.6	20	9.1
6. Gastrointestinal	1	0.5	0	0.0	1	0.4	0	0.0	0	0.0	0	0.0
7. Other	7	3.3	3	6.1	10	3.8	6	3.3	2	5.4	8	3.6
TOTAL	212	100.0	49	100.0	261	100.0	180	100.0	37	100.0	220	100.0

Source: Maternal and Child Health Register (SAPHaRI), Centre for Epidemiology and Evidence, NSW Ministry of Health.

Neonatal deaths comprise babies who were born and died in NSW, including babies who died after discharge or transfer from the hospital of birth.

* Includes neonatal deaths where gestational age was missing.

APPENDICES

Appendix 1: Methods

Maternal and Child Health Register

The Maternal and Child Health Register is a dataset of linked de-identified records that has been established under the Public Health and Disease Registers provisions of the *NSW Public Health Act 2010*. It includes records from the following data collections for children and young people aged less than 16 years and women aged 12 to 55 years:

- NSW Perinatal Data Collection for the period 1994 onwards (all records)
- NSW Admitted Patient Data Collection (public hospitals) and the NSW Private Hospital Inpatient Statistics Collection for the period 1 July 2001 onwards (children and young people aged less than 16 years and women aged 12 to 55 years)
- NSW Emergency Department Data Collection for the period 1 July 2005 onwards (children and young people aged less than 16 years and women aged 12 to 55 years)
- NSW Register of Congenital Conditions for the most recently available 5-year period (all records)
- Australian Bureau of Statistics Cause of Perinatal Death Unit Record File for the period 2017 onwards
- Notifiable Conditions Information Management System for the period 1994 onwards (children and young people aged less than 16 years and women aged 12 to 55 years)
- NSW Registry of Births, Deaths and Marriages death registrations for the period 1994 onwards (children and young people aged less than 16 years and women aged 12 to 55 years)
- Australian Coordinating Registry Cause of Death Unit Record File for the period 1994 onwards (children and young people aged less than 16 years and women aged 12 to 55 years).

Causes of perinatal deaths

Information on causes of death were obtained from the NSW Maternal and Child Health Register (MCHR) for 2017 and 2018. The MCHR includes information on all perinatal deaths, including deaths that occurred after discharge or transfer from the hospital of birth; however, the MCHR does not include death information for babies who were born in NSW and died interstate. Information on causes of death is reported on the basis of the year of birth.

Where a stillbirth was recorded on the Perinatal Data Collection, information from the Perinatal Cause of Death Unit Record File (PCODURF) and the mother's Admitted Patient Data Collection (APDC) record for the birth were used to classify the perinatal cause of death to the Perinatal Society of Australia and New Zealand (PSANZ) Perinatal Death Classification.¹

Reference

1. Perinatal Society of Australia and New Zealand. Clinical Practice Guideline for Perinatal Mortality—second edition, version 2.2, April 2009. Available at <https://sanda.psanz.com.au/assets/Uploads/Section-1-Version-2.2-April-2009.pdf>. Accessed 27 October 2020

Where a livebirth was recorded on the Perinatal Data Collection and there was evidence that the baby died in the first 28 days of life, the death was classified to the PSANZ Perinatal Death Classification and the PSANZ Neonatal Death Classification. This included neonates that were discharged or transferred according to the Perinatal Data Collection. To classify deaths in accordance with the PSANZ Perinatal Death Classification, information from the PCODURF, the Cause of Death Unit Record File (CODURF), and both the mother's and baby's APDC records were used. To classify deaths in accordance with the PSANZ Neonatal Death Classification, information from the CODURF record and the APDC record when the infant was reported to have died were used.

Appendix 2: Glossary

Birthweight

The newborn infant's first bare weight in grams.
Low birthweight: birthweight less than 2,500 grams.
Very low birthweight: birthweight less than 1,500 grams.
Extremely low birthweight: birthweight less than 1,000 grams.

Gestational age

The duration of pregnancy in completed weeks from the first day of the last normal menstrual period. Where accurate information on the date of the last menstrual period is not available, a clinical estimate of gestational age may be obtained from ultrasound during the first half of pregnancy or by examination of the newborn infant. The "best estimate" is used in this report.

Perinatal death

A stillbirth or neonatal death.

Perinatal mortality rate

The number of perinatal deaths (stillbirths and neonatal deaths) per 1,000 total births in a year (live births and stillbirths combined).

Premature infant

An infant born before 37 completed weeks gestation.

Stillbirth

The complete expulsion or extraction from its mother of a product of conception of at least 20 weeks gestation or 400 grams birthweight who did not, at any time after birth, breathe, or show any evidence of life such as a heartbeat.

